SYMPOSIUM DT

Defects and Transport Mechanisms in Solid Electrolytes and Mixed Conductors
July 18 - July 22, 2022

Symposium Organizers
George Harrington, Kyushu University / MIT
Rotraut Merkle, Max Planck Institute for Solid State Research
Alexander Opitz, Technische Universität Wien

* Invited Paper

SESSION DT09: Poster Session I: Oxides
Monday Afternoon, July 18, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

DT09.01
Numerical Simulations of the Hebb-Wagner Polarization Method of Perovskite-Type Oxides Nadja Ahr and Manfred Martin; Rheinisch-Westfalische Technische Hochschule Aachen, Germany

DT09.02
Effect of Lanthanum Doping on Ceria Fluorite Structure and the Relation with Transport Properties Sergio Damasceno[1], Fabiane d. Trindade[1], Raphael A. Martins Pires de Oliveira[1,2], Fabio Fonseca[2], Daniel Z. Florio[1] and Andre S. Ferlauto[1]; [1]Universidade Federal do ABC, Brazil; [2]Instituto de Pesquisas Energeticas e Nucleares, Brazil

DT09.04
Relaxation Dispersion of Ionic Conductivity of Doped Ceria Ceramics Studied by Impedance Spectroscopy Marcin Malys[1], Maciej Wójcik[1], Aleksandra Dziegielewska[1], Marzena Leszczynska-Redek[1], Wojciech Wrobel[1], Jan Jamroz[1], Franciszek Krok[1] and Isaac Abrahams[2]; [1]Politechnika Warszawska, Poland; [2]Queen Mary University of London, United Kingdom

DT09.05
Relaxation Dispersion of Ionic Conductivity of Doped NBT ($Na_{0.5+x}Bi_{0.5-x}Ti_{1-y}Me_yO_{3-\delta}$) Ceramics Marcin Malys[1], Konrad Kwatek[1], Aleksandra Dziegielewska[1], Marcin Krynski[1], Wojciech Wrobel[1], Isaac Abrahams[2] and Franciszek Krok[1]; [1]Politechnika Warszawska, Poland; [2]Queen Mary University of London, United Kingdom

DT09.06
Effect of Aid-Sintering Additives in Processing of Solid Oxide Fuel Cells Electrolytes Sofia Cuello[1,2], Joaquin Rodriguez[1,2], Laura Baqué[1,2] and Liliana V. Mogni[1,2]; [1]CONICET Patagonia Norte, Argentina; [2]Comision Nacional de Energia Atomica, Argentina

DT09.07
Partial Covalent Interactions Effect on Oxygen Diffusion in CeO_2, ZrO_2, and Bi_2O_3 Nguyen X. Thi and Aleksandar Staykov; Kyushu Daigaku, Japan

DT09.08
Enhancing the Total Ionic Conductivity of Gadolinia Doped Ceria Electrolyte for SOFC Using Co-Precipitation Prerna H. Vinchhi[1], Ranjan Pati[2], Abhijit Ray[1] and Indrajit Mukhopadhyay[2]; [1]Pandit Deendayal Energy University School of Solar Energy, India; [2]Pandit Deendayal Energy University, India

DT09.10
Systematic Investigation of Unsteady-State Redox Properties of CuO/Perovskite Materials Giacomo Peron[1], Donato Pinto[2], Giovanni Carollo[1], Atsushi Urakawa[2] and Antonella Glisenti[1]; [1]Universita degli Studi di Padova, Italy; [2]Technische Universiteit Delft, Netherlands

DT09.12
Electrical Conductivity in Iron Phosphate Glasses—Insights into the Role of B_2O_3 and HfO_2 from Model-Free Scaling Analysis of Conductivity Spectra Luka Pavić[1], Arijeta Bafti[2], Shiro Kubuki[3], Hüseyin Ertap[4], Mustafa Yüksek[5], Mevlut Karabulut[6] and Andrea Mogu-Milanković[1]; [1]Rudjer Bošković Institute, Croatia; [2]Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia; [3]Tokyo Metropolitan University, Japan; [4]Kafkas University, Turkey; [5]Iskenderun Technical University, Turkey; [6]Gebze Technical University, Turkey

DT09.13
Electrochemical Observation of Compressive Strain Built-Up During Pulsed Laser Deposition Christoph Riedl[1], Matthäus Siebenhofer[1,2], Sergej Raznjevic[3], Zaoli Zhang[3], Markus Kubicek[1], Alexander K. Opitz[1] and Juergen Fleig[1]; [1]Technische Universitat Wien, Austria; [2]CEST Kompetenzzentrum fur elektrochemische Oberflachentechnologie GmbH, Austria; [3]Erich Schmid Institute of Materials Science of the Austrian Academy of Sciences, Austria

DT09.15 WITHDRAWN
Study of the Oxygen Reduction Reaction in the $Ca_3Co_4O_{9+\delta}$ / CGO Composite SOFC Cathode Fatima-Ezzahra El Bassiri[1,2], Aurélie Rolle[2,1], Jean-Philippe Dacquin[3,1], Edouard Capoen[3,1], Bernard Boukamp[4] and Rose-Noëlle Vannier[2,1]; [1]Unite de Catalyse et Chimie du Solide, France; [2]Centrale Lille Institut, France; [3]Universite de Lille, France; [4]Universiteit Twente, Netherlands

DT09.16
Charge Transport and Acoustic Loss in Lithium Niobate-Lithium Tantalate Solid Solutions Holger Fritze[1], Yuriy Suhak[1], Steffen Ganschow[2], Dimitry Roshchupkin[3], Claudia Kofahl[1], Bujar Jerliu[1] and Harald Schmidt[1]; [1]Technische Universitat Clausthal, Germany; [2]Leibniz-Institut fur Kristallzuchtung im Forschungsverbund Berlin eV, Germany; [3]Institut problem tehnologii mikroelektroniki i osobocistyh materialov RAN, Russian Federation

DT09.17
Defect Chemistry of p-Type Perovskite Oxide $La_{0.2}Sr_{0.8}FeO_{3-\delta}$—A Combined Experimental and Computational Study Hohan Bae[1], Yonghun Shin[2], Donghwi Shin[1], Junghyun Park[1], Saron Park[1], Donghwa Lee[2] and Sun-Ju Song[1]; [1]Chonnam National University, Korea (the Republic of); [2]Department of Materials Science and Engineering, Pohang University Science and Technology, Korea (the Republic of)

DT09.18
SCAN and SCAN+U Approximations to Investigate YBCO-Related Mixed Conductors Marianela Gómez-Toledo, López-Paz Sara, García-Martín Susana and Arroyo-de Dompablo Elena M.; Universidad Complutense de Madrid Facultad de Ciencias Quimicas, Spain

DT09.20
Oxygen Nonstoichiometry Effect on Perovskite Oxygen Transport Ivan Kovalev, Rostislav Guskov, Mikhail Popov, Sergey Bychkov, Stanislav Chizhik and Alexander Nemudry; Institute of Solid State Chemistry and Mechanochemistry, SB RAS, Russian Federation

DT09.21
On Unraveling the Ionic Conductivity of $Bi_{1-x}P_xO_{1.5}$—An *Ab Initio* and Experimental Study Marcin Krynski[1], Jan Jamroz[1], Michal M. Struzik[1], Franciszek Krok[1], Isaac Abrahams[2] and Wojciech Wrobel[1]; [1]Politechnika Warszawska, Poland; [2]Queen Mary University of London, United Kingdom

DT09.22
Investigation of Influence of Gas Atmosphere on Conductivity and Crystal Structure of $Ce_{1-x}Pr_xO_{2-\delta}$ (x = 0.1, 0.2, 0.3) Marzena Leszczynska-Redek[1], Kamil Kowalski[1], Marcin Malys[1], Aleksandra Dziegielewska[1], Stephen Hull[2], Wojciech Wrobel[1], Franciszek Krok[1] and Isaac Abrahams[3]; [1]Politechnika Warszawska, Poland; [2]Rutherford Appleton Laboratory, United Kingdom; [3]Queen Mary University of London, United Kingdom

DT09.23
Computational Study for Cr and S Poisoning Pathways on $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ Surfaces Bill Liu, Filip Grajkowski, Sophie C. Coppieters 't Wallant and Bilge Yildiz; Massachusetts Institute of Technology, United States

DT09.24
Kinetic Roughening of Boundaries Between Two Phases During Electrocoloration in an Oxide Thin Film Heung-Sik Park, Ji Soo Lim, Jeonghun Suh and Chan-Ho Yang; Korea Advanced Institute of Science and Technology, Korea (the Republic of)

DT09.25
Effect of Molybdenum Concentration in $SrFe_{1-x}Mo_xO_{3-\delta}$ on Transport Properties and Kinetics of CO_2 Reduction Ahmad Shaur and Bernard Boukamp; Universiteit Twente Faculteit Technische Natuurwetenschappen, Netherlands

DT09.26
Observation of Multi-Level Ionic Conductivity in Ca-Doped Bismuth Ferrite Thin Films Jeonghun Suh, Ji Soo Lim, Heung-Sik Park and Chan-Ho Yang; Korea Advanced Institute of Science and Technology, Korea (the Republic of)

DT09.27
Thermodynamic and Electrochemical Stability of the $Bi_{1-x}Pr_xO_{1.5}$ Rhombohedral System Jan Jamroz[1], Wojciech Wrobel[1], Marcin Malys[1], Isaac Abrahams[2] and Franciszek Krok[1]; [1]Politechnika Warszawska, Poland; [2]Queen Mary University of London, United Kingdom

DT09.28
Setting up a Multi-Analytical Tool for Pulsed Laser Deposition (i-PLD) Tobias M. Huber[1,2], Matthäus Siebenhofer[1,3], Christin Boehme[1], Alexander Schmid[1], Christoph Riedl[1], Andreas Nenning[1], Alexander K. Opitz[1], Markus Kubicek[1] and Juergen Fleig[1]; [1]Technische Universitat Wien, Austria; [2]Huber Scientific, Austria; [3]Center for Electrochemistry and Surface Science, Austria

DT09.29
Application of Neutron Multi-Scale Structure Measurement to Structure Analysis of Cell Materials Haruyuki Takahashi, Hideaki Ichimura, Nana Fukaya, Takumi Inada, Yohei Noda and Satoshi Koizumi; Ibaraki Daigaku Kogakubu, Japan

DT09.30
Thin-Film Oxide Electrodes with Varying Conductivity for High-Temperature Piezoelectric Resonators Hendrik Wulfmeier, Sebastian Schlack, René Feder and Holger Fritze; Technische Universitat Clausthal, Germany

DT09.32
Ionic Conductivity of a Thin Film YSZ Layer on a GDC Substrate Isabel Fernandez Romero[1,2], Stefanie Taibl[2] and Juergen Fleig[2]; [1]Robert Bosch GmbH, Germany; [2]Technische Universitat Wien, Austria

SYMPOSIUM EF

Energy and Fuels Conversion
July 18 - July 22, 2022

Symposium Organizers
Sean Bishop, Sandia National Laboratories
Georgios Dimitrakopoulos, Massachusetts Institute of Technology
Jong-Ho Lee, Korea Institute of Science and Technology (KIST)

* Invited Paper

SESSION EF05: Poster Session I: Energy and Fuels Conversion I
Session Chair: Georgios Dimitrakopoulos
Monday Afternoon, July 18, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

EF05.01
Ruthenium Doped LSCF Based Cathode for Enhanced Performance of Solid Oxide Fuel Cells Abid Ullah[1,2], Basharat Hussain[1] and Sayed Sajid Hussain[3]; [1]Korea Advanced Institute of Science and Technology, Korea (the Republic of); [2]University of Science and Technology South Korea, Korea (the Republic of); [3]Chungnam National University, Korea (the Republic of)

EF05.02
Fabrication of $PrBa_{0.5}Sr_{0.5}Co_{1.5}Fe_{0.5}O_{5+\delta}$ Cathode for High Performance Proton Ceramic Fuel Cells Using a Piezoelectric Inkjet Printer Joon Hyung Shim[1], Wanhyuk Chang[1], Eun Heui Kang[1], Gwon Deok Han[2], Heon Jun Jeong[1] and Dong Hwan Kim[1]; [1]Korea University, Korea (the Republic of); [2]Stanford University, United States

EF05.03
Energetics of Formation of High Entropy Proton Conductors Aleksandra Mielewczyk-Gryn[1], Daniel Jaworski[1], Arkadiusz Dawczak[1], Wojciech Skubida[1], Iga Szpunar[1], Tamilarasan Subramani[2], Tadeusz Miruszewski[1], Kristina Lilova[2], Alexandra Navrotsky[2] and Maria Gazda[1]; [1]Politechnika Gdanska, Poland; [2]Arizona State University, United States

EF05.04
Electrophoretic Deposition of $Cu_{1.35}Mn_{1.65}O_4$ Spinel Powders for Interconnector Protective Coatings in SOFC Seong-Uk Oh, Dokyum Kim, Chan-Sik Choi, Woo Seop Shin, Sumi Kim, Eunji Kim, Seung Hyan Kim, Jung–A Lee, Young-Woo Heo and Joon-Hyung Lee; Kyungpook National University, Korea (the Republic of)

EF05.05
Synthesis and Characterization of Nanocrystalline Ceria $Ce_{1-x}M_xO_2$ (M = Mn, Fe, Co, Ni, Cu, x= 0.1, 0.15, 0.2) Agata Ducka[1], Patryk Blaszczak[1], Adrian Mizera[2] and Beata M. Bochentyn[1]; [1]Politechnika Gdanska, Poland; [2]Akademia Gorniczo-Hutnicza imienia Stanislawa Staszica w Krakowie, Poland

EF05.06
Minimising Sr Precipitation on LSCF Electrodes—Chemical Surface Modifications Can Enhance Electrode Activity and Stability Filip Grajkowski, Sophie C. Coppieters 't Wallant, Bill Liu and Bilge Yildiz; Massachusetts Institute of Technology, United States

EF05.07
Identification of Morphological Changes of Mixed Conducting Oxides Upon Anodic Polarization by an Electrochemical Method Martin Krammer[1], Alexander Schmid[1], Matthäus Siebenhofer[1,2], Christopher Herzig[1], Andreas Limbeck[1], Markus Kubicek[1] and Juergen Fleig[1]; [1]Technische Universitat Wien, Austria; [2]Centre for Electrochemical Surface Technology GmbH, Austria

EF05.08
Relationship Between Performance and Hydrogen Production Efficiency in Different Thickness of Cathode Materials for Solid Oxide Electrolyzer Cells Wei Cheng Chin, Hang Wen Wei and Yi Hsuan Lee; National Taipei University of Technology, Taiwan

EF05.09
Design of Anode Functional Layers for Protonic Solid Oxide Electrolysis Cells Chunmei Tang, Sho Kitano, Hiroki Habazaki and Yoshitaka Aoki; Hokkaido University, Japan

EF05.10
Highly Active Non-Precious Metal Oxide and Carbon Nanopstructure Composite for Sea Water Reduction Seung Hyun Hur, Jayasmita Jana and Tran Van Phuc; University of Ulsan, Korea (the Republic of)

EF05.11
Non-Toxic (HF-Free) Synthesis of MXene and There Optimization for H2 Evolution Activity and Stability Ranjit D. Mohili, Monika Patel and Nitin K. Chaudhari; Pandit Deendayal Energy University School of Technology, India

EF05.12
Effects of Irradiation Conditions on LDPE-Based Anion Exchange Membranes Properties—Performance and Stability Andrey S. Barbosa[1], Ana Laura G. Biancolli[1], Alexandre Jose C. Lanfredi[2], Orlando Rodrigues Jr[1], Fabio Fonseca[1] and Elisabete I. Santiago[1]; [1]Instituto de Pesquisas Energeticas e Nucleares, Brazil; [2]Universidade Federal do ABC, Brazil

EF05.13
Bio-Synthesis of Nanoscaled Er2O3 Using Egyptian *H.Thebaica* Plant Extract—Physical Properties & Photocatalytic Activity Hamza Mohamed[1,2]; [1]UNESCO-UNISA Africa Chair in Nanoscience and Nanotechnology College of Graduates Studies, University of South Africa, South Africa; [2]Nanosciences African Network (NANOAFNET), iThemba LABS-National Research Foundation, South Africa

EF05.15
Design of Highly Dispersed Metal Alloy Catalysts on Exsolved Nano-Socket in Supports for Hydrogen Production Hyung Jun Kim, Dongjae Shin, Tae Yong Kim and Jeong Woo Han; Pohang University of Science and Technology, Korea (the Republic of)

EF05.16
Nucleation and Growth of Cu_2O—Effect of pH, Potential and Substrate Akhilender J. Singh, Garima Aggarwal, Sushobhita Chawla, Chandan Das and K. R. Balasubramaniam; Indian Institute of Technology Bombay, India

EF05.17
Gadolinia Doped Ceria Infiltration into Ni-$(Y_2O_3)_{0.08}(ZrO_2)_{0.92}$ Fuel Electrodes—Effects on Reversible Solid Oxide Cell Stability Jerren J. Grimes, Junsung Hong and Scott Barnett; Northwestern University, United States

SYMPOSIUM EI

Electrochemical Interfaces
July 18 - July 22, 2022

Symposium Organizers
Koji Amezawa, Tohoku University
WooChul Jung, Korea Advanced Institute of Science and Technology
Jonathan Polfus, University of Oslo

* Invited Paper

SESSION EI05: Poster Session
Session Chairs: WooChul Jung and Jonathan Polfus
Monday Afternoon, July 18, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

EI05.01
The Influence of the Oxygen Partial Pressure on the Exsolution in $Ba_{0.5}La_{0.5}Co_{1-x}Fe_xO_3$ Daria D. Balcerzak, Sebastian Wachowski, Iga Szpunar and Maria Gazda; Politechnika Gdanska, Poland

EI05.02
Oxygen Exchange Kinetics of $BaGd_{0.3}La_{0.7}Co_2O_{6-\delta}$ Steam Electrodes for Proton Ceramic Electrochemical Cells Jonina B. Gudmundsdottir[1], Einar Vøllestad[2], Jonathan Polfus[1] and Vincent Thoréton[1]; [1]Universitetet i Oslo Det Matematisk-naturvitenskapelige Fakultet, Norway; [2]SINTEF, Norway

EI05.03
Surface Composition Control on $(La_{0.6}Sr_{0.4})_{0.95}Co_{0.2}Fe_{0.8}O_{3-\delta}$ to Eliminate Sr Segregation and Cr and S Poisoning Sophie C. Coppieters 't Wallant, Filip Grajkowski, Bill Liu and Bilge Yildiz; Massachusetts Institute of Technology, United States

EI05.05
Revealing the True Capabilities of SOFC Cathode Materials and Fundamental Degradation Processes by *In Situ* PLD Impedance Spectroscopy Matthäus Siebenhofer[1,2], Christoph Riedl[1], Andreas Nenning[1], Juergen Fleig[1] and Markus Kubicek[1]; [1]Technische Universitat Wien, Austria; [2]Center for Electrochemistry and Surface Technology CEST, Austria

EI05.06
Unveiling the Interaction of CH_4 with Ni-Doped Sr(Ti,Fe)O_3 (STFN) Electrodes Decorated with Exsolved Fe-Ni Nanoparticles—An *Operando* AP-XPS Study on STFN Model Cells Mauricio D. Arce[1,2], Catalina Jimenez[1], Mariano Santaya[2], Lucia Toscani[2], Nadia S. Gamba[2], Ignacio J. Villar-García[3], Virginia Pérez-Dieste[3], Liliana V. Mogni[2] and Marcus Bär[1]; [1]Helmholtz-Zentrum Berlin fur Materialien und Energie GmbH, Germany; [2]Instituto de Nanociencia y Nanotecnologia, Argentina; [3]ALBA Synchrotron, Spain

EI05.07
Chemical Stability of Proton Conducting $BaZr_{1-x}Ce_xO_3$-Based Electrolytes in Pressurized CO_2 -Containing Atmospheres Belma Talic[1], Einar Vøllestad[1], Elena Stefan[1], Martin F. Sunding[1] and Jonathan Polfus[1,2]; [1]SINTEF, Norway; [2]Universitetet i Oslo, Norway

EI05.08
Understanding the Chemical and Structural Changes in $SrFeO_3$ During Electrochemical Oxidation and Oxygen Evolution (OER) Jan M. Bosse and Andrew R. Akbashev; Paul Scherrer Institut, Switzerland

EI05.09
Flexible Synthesis of Mixed-Anion Compounds by Electrochemical Reactors Takuya Katsumata[1], Hajime Yamamoto[1], Ryotaro Aso[2], Yuta Kimura[1], Koji Amezawa[1] and Takashi Nakamura[1,3]; [1]Tohoku Daigaku, Japan; [2]Kyushu Daigaku, Japan; [3]PRESTO,JST, Japan

EI05.11
Cation Aggregation on Extended Defects, Grain Boundaries and Phase Boundaries in LSM/YSZ Composite Cathodes Yoosuf Picard[1,2], Jonathan Poplawsky[3] and Harry W. Abernathy[4]; [1]National Energy Technology Laboratory, United States; [2]NETL Support Contract, United States; [3]Oak Ridge National Laboratory Center for Nanophase Materials Sciences, United States; [4]National Energy Technology Laboratory Morgantown, United States

EI05.12
Unexpected Room-Temperature Conductivity on $SrTiO_3$ Single Crystal Surfaces Induced by Adsorbed Water Layers Matthäus Siebenhofer[1,2], Juergen Fleig[1] and Markus Kubicek[1]; [1]Technische Universitat Wien, Austria; [2]Center for Electrochemistry and Surface Technology CEST, Austria

EI05.14
Plasma Driven Exsolution for Nanoscale Functionalization of Perovskite Oxides Vasileios Kyriakou[1], Rakesh N. Sharma[2], Dragos Neagu[2], Floran Peeters[2], Stefan Welzel[2], Mauritius C.M. (Richard) van de Sanden[2] and Michalis N. Tsampas[2]; [1]Rijksuniversiteit Groningen, Netherlands; [2]DIFFER, Netherlands

EI05.15
Understanding Current Distribution at the Na Metal/NaSICON Interface Through Surface Analysis Studies Sivakkumaran Sukumaran[1], Stephen J. Skinner[1], Ainara Aguadero[1,2], Richard Dawson[3] and Joana Azevado[3]; [1]Imperial College London, United Kingdom; [2]Instituto de Ciencia de Materiales de Madrid, Spain; [3]LiNa Energy Limited, United Kingdom

EI05.16
Current Constriction at the $Li|Li_7La_3Zr_2O_{12}$ Interface Janis K. Eckhardt[1,1], Till Fuchs[2,1], Simon Burkhardt[2,1], Jürgen Janek[2,1], Peter J. Klar[3,1] and Christian Heiliger[1,1]; [1]Justus Liebig Universitat Giessen, Germany; [2]Justus Liebig Universität Giessen, Germany; [3]Justus Liebig Universitat Giessen, Justus Liebig Universitat Giessen, Giessen, Hessen, DE, academic, Germany

EI05.17
Single Side Interface Modification Layered Composite Electrolyte Pu-Yang Chen and Tzu-Ying Lin; National Tsing Hua University, Taiwan

EI05.18
Effect of $LiPF_6$ concentration on lithium intercalation rate at $LiCoO_2$/ organic electrolyte interfaces characterized by neutron reflectometry Huangkai Zhou, Jun Izumi, Sho Asano, Kotaro Ito, Keisuke Shimizu, Kota Suzuki, Ryoji Kanno and Masaaki Hirayama; Tokyo Kogyo Daigaku Busshitsu Rikogakuin Oyo Kagakukei, Japan

EI05.19
Experimental and Theoretical Study of Ir-Fe Bimetallic Electrocatalyst as an Excellent Anode in Both Electrolyte Cell and Fuel Cell Hyeonjung Jung and Jeong Woo Han; Pohang University of Science and Technology, Korea (the Republic of)

SYMPOSIUM ES

Energy Storage
July 18 - July 22, 2022

Symposium Organizers
Ainara Aguadero, Imperial College London and Instituto de Ciencia de Materiales de Madrid
Yifei Mo, University of Maryland
Daniel Rettenwander, Norwegian University of Science and Technology (NTNU)

* Invited Paper

SESSION ES03: Poster Session I: Energy Storage I
Monday Afternoon, July 18, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

ES03.01
$A_3Ti_5NbO_{14}$ Family with A=H, Li, Na, K—Insertion and Ionic Exchange Audric Neveu[1], Justine Jean[1], Philippe Boullay[1] and Valerie Pralong[1,2]; [1]Normandie Universite, France; [2]CNRS ENSICAEN, France

ES03.02
Long-Range Ordering of Two-Dimensional Wide Bandgap Tantalum Oxide Nanosheets in Printed Films Melvin Timmerman, Rui Xia, Mark Huijben and Johan E. ten Elshof; Universiteit Twente Faculteit Technische Natuurwetenschappen, Netherlands

ES03.03
Elemental Inhomogeneity the Cause of Ga-Doped LLZO Failure? Nomaan Nabi; Imperial College London, United Kingdom

ES03.04
Studies on Electrochemical Performance of Co and Fe-Doped CuO Nanostructured as Electrode Material Beer Pal Singh[1] and Rahul Singhal[2]; [1]Chaudhary Charan Singh University, India; [2]Central Connecticut State University, United States

ES03.05
Towards High-Capacity 3D Thin-Film Batteries—Atomic Layer Deposition of $Li_4Ti_5O_{12}$ Jan Speulmanns, Sascha Bönhardt, Malte Czernohorsky and Wenke Weinreich; Fraunhofer IPMS, Germany

ES03.06
Fluoride Ion Conductivity of Cs-Doped $KSbF_4$ Kazuaki Kawahara[1], Ryo Ishikawa[1], Naoya Shibata[1,2] and Yuichi Ikuhara[1,2]; [1]Tokyo Daigaku, Japan; [2]Ippan Zaidan Hojin Fine Ceramics Center, Japan

ES03.08
Synthesis of $Na_{3-x}P_{1-x}W_xS_4$ ($0<x$ Akira Nasu, Fumika Tsuji, Kota Motohashi, Atsushi Sakuda, Masahiro Tatsumisago and Akitoshi Hayashi; Osaka-fu, Japan

ES03.09
Size Effect of All-Solid-State Battery Performance with Pulverization of $Li_{10.35}Ge_{1.35}P_{1.65}S_{12}$ Hanseul Kim, Kota Suzuki, Ryoji Kanno and Masaaki Hirayama; Tokyo Kogyo Daigaku, Japan

ES03.11
Super Halogen Based Double Anti-Perovskite Composite Electrolyte for Solid State Lithium-Metal Batteries Md Mominul Islam; South Dakota State University, United States

ES03.12
High Performance Sulfur Cathode in Platelet N-Doped Mesoporous Carbon for All-Solid-State Lithium-Sulfur Batteries Jeong-Hoon Yu[1], Tianwei Jin[2], Byong-June Lee[1], Yuan Yang[2] and Jong-Sung Yu[1]; [1]Daegu Gyeongbuk Institute of Science & Technology, Korea (the Republic of); [2]Columbia University, United States

ES03.13
Proton-Conductive Coordination Polymer Glass for Solid-State Anhydrous Proton Batteries Nattapol Ma and Satoshi Horike; Kyoto Univeristy, Japan

ES03.14
Thermally-Driven Reactivity of $Li_{0.35}La_{0.55}TiO_3$ Solid Electrolyte with $LiCoO_2$ Cathode Subhash Chandra[1], Younggyu Kim[1], Daniele Vivona[1], Iradwikanari Waluyo[2], Adrian Hunt[2], Christoph Schlueter[3], Jeong Beom Lee[4], Yang Shao-Horn[1] and Bilge Yildiz[1]; [1]Massachusetts Institute of Technology, United States; [2]Brookhaven National Laboratory, United States; [3]Deutsches Elektronen-Synchrotron DESY, Germany; [4]LG Energy Solution, Ltd., Korea;

SYMPOSIUM DT

Defects and Transport Mechanisms in Solid Electrolytes and Mixed Conductors
July 18 - July 22, 2022

Symposium Organizers
George Harrington, Kyushu University / MIT
Rotraut Merkle, Max Planck Institute for Solid State Research
Alexander Opitz, Technische Universität Wien

* Invited Paper

SESSION DT18: Poster Session II: Protons
Tuesday Afternoon, July 19, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

DT18.01
Impact of Na Concentration on the Phase Transition Behavior and H^- Conductivities of $Ba_2(Li_{1-x}Na_x)H_3O$ Solid Solution Kei Okamoto[1,2], Fumitaka Takeiri[1,2,3], Masao Yonemura[4], Takashi Saito[2,4], Kazutaka Ikeda[2,4], Toshiya Otomo[2,4], Takashi Kamiyama[2,4] and Genki Kobayashi[1,2]; [1]Bunshi Kagaku Kenkyujo, Japan; [2]Sogo Kenkyu Daigakuin Daigaku, Japan; [3]Kagaku Gijutsu Shinko Kiko, Japan; [4]Daigaku Kyodo Riyo Kikan Hojin Ko Energy Kasokuki Kenkyu Kiko, Japan

DT18.02
Effect of H^- Concentration on Electrode Properties for Perovskite-Type Oxyhydride $BaTiO_{3-x}H_x$ Tasuku Uchimura[1,2], Fumitaka Takeiri[1,2,3], Kei Okamoto[1,2], Takashi Saito[4,5], Takashi Kamiyama[4,5] and Genki Kobayashi[1,2]; [1]Bunshi Kagaku Kenkyujo, Japan; [2]The Graduate University for Advanced Studies (SOKENDAI), Japan; [3]Kagaku Gijutsu Shinko Kiko, Japan; [4]Daigaku Kyodo Riyo Kikan Hojin Ko Energy Kasokuki Kenkyu Kiko, Japan; [5]Sogo Kenkyu Daigakuin Daigaku, Japan

DT18.03
Structure and Proton Conduction in $CsHSO_4$-$H_3PW_{12}O_{40}$ Composites Nana Fukaya, Ryuya Nakaomoya, Takumi Inada, Yohei Noda, Satoshi Koizumi and Haruyuki Takahashi; Ibaraki Daigaku, Japan

DT18.04
Structure, Microstructure and Electrical Transport Properties of High-Entropy $BaZr_{0.2}Hf_{0.2}Sn_{0.2}Ti_{0.2}M_{0.2}O_3$ (M = TM, RE) Perovskite Oxide Group Daniel Jaworski, Wojciech Skubida, Aleksandra Mielewczyk-Gryn, Sebastian Wachowski, Tadeusz Miruszewski and Maria Gazda; Politechnika Gdanska, Poland

DT18.06
Hydration Entropy of Triple Conducting Perovskites—Correlations Derived from DFT Calculations and Experimental Data Petter Rosander[1], Maximilian F. Hoedl[2], Rotraut Merkle[2], Göran Wahnström[1], Eugene Kotomin[2] and Joachim Maier[2]; [1]Chalmers University, Sweden; [2]Max Planck Institute for Solid State Research, Germany

DT18.07
Proton Conductivity in $BaZrO_3$-Based Thin Film Prepared by Pulsed Laser Deposition Eiki Niwa, Taiki Kawashita, Hyo Y. Kim, Niki Nakagawa, Jun T. Song, Atsushi Takagaki and Tatsumi Ishihara; Kyushu Daigaku, Japan

DT18.08
Water Uptake Kinetics in High Entropy Oxides Wojciech Skubida, Daniel Jaworski, Tadeusz Miruszewski and Maria Gazda; Politechnika Gdanska, Poland

DT18.09
Hydrogenation Transformation of $BaZr_{0.5}In_{0.5}O_{2.75}$ Cubic Perovskite Hajime Toriumi, Sho Kitano, Hiroki Habazaki and Yoshitaka Aoki; Hokkaido University, Japan

DT18.11
Biomaterial "HAp-Collagen Complex" of Non-Humidified Proton Conductivity Tomoki Furuseki and Yasumitsu Matsuo; Setsunan Daigaku, Japan

DT18.13
Proton Conductivity in Hydrated Dipeptides Crystal Gly-Ser and Gly-Pro Hitoki Semizo, Haruka Kai, Hitoshi Nishimura and Yasumitsu Matsuo; Setsunan University, Japan

DT18.14
Molecular Water Incorporation—From Doping to Confined Quasi-Liquid Transport Markus Joos[1], Maurice Conrad[2], Christian Schneider[3], Rotraut Merkle[1], Thomas Schleid[2], Bettina V. Lotsch[3,4] and Joachim Maier[1]; [1]Max-Planck-Institut fur Festkorperforschung, Germany; [2]Universitat Stuttgart, Germany; [3]Max-Planck-Institut fur Festkorperforschung Abteilung fur Nanochemie, Germany; [4]Ludwig-Maximilians-Universitat Munchen, Germany

DT18.15
Electrochemical and Thermoelectrical Characterization of Mixed-Conducting High-Entropy Oxides Tadeusz Miruszewski, Daniel Jaworski, Wojciech Skubida and Maria Gazda; Politechnika Gdanska, Poland

DT18.17
Manufacturing of Mixed Proton-Electron Conducting Ceramics—3D-Printing and Laser Post-Processing Joanna Pospiech, Malgorzata Nadolska, Mateusz Cieslik, Aleksandra Mielewczyk-Gryn, Maria Gazda and Sebastian Wachowski; Politechnika Gdanska, Poland

DT18.18
Tailoring the $Ba_{0.5}La_{0.5}CoO_{3-\delta}$ Properties by Iron Substitution Iga Szpunar[1], Aleksandra Mielewczyk-Gryn[1], Daria D. Balcerzak[1], Ragnar Strandbakke[2], Einar Vøllestad[3], Maria Balaguer[4], Alfonso J. Carrillo[4], Jose M. Serra[4], Maria Gazda[1] and Sebastian Wachowski[1]; [1]Politechnika Gdanska, Poland; [2]Universitetet i Oslo, Norway; [3]SINTEF Industri, Norway; [4]Instituto de Tecnologia Quimica, Spain

DT18.19
Electrical Conductivity and Transport Properties of $La_{0.9}Sr_{0.1}MO_{3-d}$ (M=Al, Ga, In, Er, Y) Perovskites Under Various Oxygen Partial Pressures Cai Yen He and Yi Hsuan Lee; National Taipei University of Technology College of Mechanical and Electrical Engineering, Taiwan

DT18.21
Compositional and Structural Control in LLZO Solid Electrolytes Kade Parascos[1], Joshua L. Watts[1], Jose A. Alarco[1], Yan Chen[2] and Peter C. Talbot[1]; [1]Queensland University of Technology, Australia; [2]Oak Ridge National Laboratory, United States

SYMPOSIUM EF

Energy and Fuels Conversion
July 18 - July 22, 2022

Symposium Organizers
Sean Bishop, Sandia National Laboratories
Georgios Dimitrakopoulos, Massachusetts Institute of Technology
Jong-Ho Lee, Korea Institute of Science and Technology (KIST)

* Invited Paper

SESSION EF10: Poster Session II: Energy and Fuels Conversion II
Session Chair: Georgios Dimitrakopoulos
Tuesday Afternoon, July 19, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

EF10.01
Leveraging Experiment and DFT to Tune Exsolution of Ni Nanoparticles from $SrTiO_3$ Willis O'Leary[1], Livia Giordano[1,2], Yang Shao-Horn[1,1] and Jennifer Rupp[3,1]; [1]Massachusetts Institute of Technology, United States; [2]University of Milano-Bicocca, Italy; [3]Technische Universitat Munchen, Germany

EF10.02
Equivalent Circuit Analysis of Gas/Solid Phase Reaction in Proton Ceramic Fuel Cells Soichiro Ebata[1], Keiji Yashiro[1], Masami Sato[2,3], Reika Nomura[4], Mayu Muramatsu[5], Kenjiro Terada[4] and Tatsuya Kawada[1]; [1]Graduate School of Environmental Studies, Tohoku University, 6-6-01, Aoba, Aramaki, Aoba-ku, Japan; [2]Mechanical Design & Analysis Corporation AXIS Chofu 2F, 1-40-2 Fuda, Japan; [3]Graduate School of Engineering, Tohoku University 468-1-S403, Aoba, Aramaki, Aoba-ku, Japan; [4]International Research Institute of Disaster Science, Tohoku University, 468-1-S403, Aoba, Aramaki, Aoba-ku, Japan; [5]Department of Mechanical Engineering, Keio University, Hiyoshi 3-14-1, Kohoku-ku, Japan

EF10.03
***In Situ* Growth of Palladium Nanoparticles on A-Site Layered Double Perovskite $PrBaMn_2O_{5+\delta}$** Ritika Vastani, Eleonora Cali, Sivaprakash Sengodan and Stephen J. Skinner; Imperial College London, United Kingdom

EF10.04
Introducing A-Site Deficiency to Enhance the Properties of Intermediate Temperature Solid Oxide Fuel Cells Cathodes—A Case Study on $(Ba_{0.95}La_{0.05})_{1-x}FeO_{3-\delta}$ Alessio Belotti and Francesco Ciucci; The Hong Kong University of Science and Technology, Hong Kong

EF10.05 WITHDRAWN
Effect of Ca Concentration on the Electrochemical and Crystallographic Properties of $La_{0.2}Sr_{0.7-x}Ca_xTi_{0.95}Fe_{0.05}O_{3-\delta}$ Fuel Electrode at Solid Oxide Fuel Cell Conditions Sara Paydar, Kuno Kooser, Priit Möller, Enn Lust and Gunnar Nurk; Tartu Ulikool, Estonia

EF10.07
Electron Microscopic Characterization of Solid State Electrolyzer Cells (SOEC) After Long-Term Operation Tibor Lehnert[1], Florian Wankmueller[1], Cedric Großelindemann[1], Chen-Yu Tsai[2], Dagmar Gerthsen[1], Andre Weber[1] and Heike Stoermer[1]; [1]Karlsruher Institut fur Technologie, Germany; [2]Sunfire GmbH, Germany

EF10.08
Raw Material Availability—How Scalable are Compositions and Designs for Solid-State Ionics-Based Devices? George Harrington[1,2,3], Dino Klotz[2,3] and Israel Mendonça dos Santos[4]; [1]Rheinisch-Westfalische Technische Hochschule Aachen, Germany; [2]Kyushu Daigaku, Japan; [3]Massachusetts Institute of Technology, United States; [4]Kumamoto Daigaku, Japan

EF10.09
Highly Efficient and Flexible High Temperature CO_2-H_2O Co-Electrolysis Over Nanoengineered Perovskite Electrocatalysts Roelf Maring and Vasileios Kyriakou; Rijksuniversiteit Groningen, Netherlands

EF10.10
Manganese Dioxide Nanotubes Catalyst for Oxygen Reduction Reaction at Cathode Side of PEMFC Abid Ullah[1,2], Basharat Hussain[1] and Sayed Sajid Hussain[3]; [1]University of Science and Technology South Korea, Korea (the Republic of); [2]Korea Advanced Institute of Science and Technology, Korea (the Republic of); [3]Chungnam National University, Korea (the Republic of)

EF10.11
Electrochemical Reduction of Methane to Value-Added Products Using Bifunctional CeO_2/ZrO_2 Catalysts Nicole B. Patricio[1], Juliano C. Cardoso[1], Marcia T. Escote[2], Alexandre Jose C. Lanfredi[2] and Elisabete I. Santiago[1]; [1]Instituto de Pesquisas Energeticas e Nucleares, Brazil; [2]Universidade Federal do ABC, Brazil

EF10.12
Effects of La Content in Ceria-Lanthana Thin Films Prepared by Pulsed Laser Deposition Raphael A. Martins Pires de Oliveira[1], Andre S. Ferlauto[1], Fabiane d. Trindade[1], Daniel Z. Florio[1] and Fabio Fonseca[2]; [1]Universidade Federal do ABC, Brazil; [2]Instituto de Pesquisas Energeticas e Nucleares, Brazil

EF10.13
Fabrication of Bundle-Type Columnar Cuprous Oxide Photocathodes with Vertical Grain-Boundaries by Metallic Seeds and Their Enhanced Photoelectrochemical Water Splitting Performance Ji Hoon Choi, Dong Su Kim, Hak Hyeon Lee and Hyung Koun Cho; Sungkyunkwan University College of Natural Science, Korea (the Republic of)

EF10.14
Novel High Entropy Oxides for Oxygen Storage and Generation Alicja Klimkowicz[1,2], Shotaro Dokin[1] and Akito Takasaki[1]; [1]Shibaura Kogyo Daigaku, Japan; [2]Kanagawa Daigaku, Japan

EF10.15
NMR Investigation of Proton Transport in Mechanically Robust Polybenzimidazole/Polyphosphoric Acid Membranes Laura Murdock[1], Tawhid Pranto[2], Mounesha Garaga[3], Sophia Suarez[4], Brian Benicewicz[1] and Steve Greenbaum[3]; [1]University of South Carolina, United States; [2]CUNY The Graduate Center, United States; [3]Hunter College of CUNY, United States; [4]Brooklyn College, United States

EF10.16
Tuning of Shape, Disorder and Oxygen Vacancies in Lanthanum-Doped (0-70%) Ceria Shaped Nanoparticles for Oxidative Coupling of Methane Fabiane d. Trindade[1], Sergio Damasceno[1], Larissa Otubo[2], Daniel Z. Florio[1], Fabio Fonseca[2] and Andre S. Ferlauto[1]; [1]Universidade Federal do ABC, Brazil; [2]Instituto de Pesquisas Energeticas e Nucleares, Brazil

EF10.17
Doping Effect on the Hydrogen Production via Microwave Assisted Water Splitting in Doped-Ceria Materials Aitor Domínguez[1], Laura Navarrete[1], María Balaguer[1], Joaquin Santos[1], Pedro José Plaza[2], José Manuel Catalá[2] and José Manuel Serra[1]; [1]Instituto de Tecnologia Quimica, Spain; [2]Institute of Information and Communication, Spain

EF10.18
Experiment Driven Computational Analysis of Solar Thermochemical Hydrogen Production Materials Andrew I. Smith; Sandia National Laboratories, United States

SYMPOSIUM ES

Energy Storage
July 18 - July 22, 2022

Symposium Organizers
Ainara Aguadero, Imperial College London and Instituto de Ciencia de Materiales de Madrid
Yifei Mo, University of Maryland
Daniel Rettenwander, Norwegian University of Science and Technology (NTNU)

* Invited Paper

SESSION ES06: Poster Session II: Energy Storage II
Tuesday Afternoon, July 19, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

ES06.01
Cycling Propertyf of High-Crystalline $LiMn_{1.5}Ni_{0.5}O_4$ Cathode Tatsuya Nakamura[1], Takayuki Konya[1], Mitsuharu Tabuchi[2] and Yo Kobayashi[3]; [1]Hyogo Kenritsu Daigaku - Himeji Kogaku Campus, Japan; [2]National Inst of AIST, Japan; [3]Denryoku Chuo Kenkyujo Denryoku Gijutsu Kenkyujo, Japan

ES06.02
Superior Lithium Dendrite Suppression Ability and Air Stability of Sc_2O_3 Substituted Li-Argyrodites Superionic Conductor and Admirable Cyclability in Lithium Solid-State Batteries Yuvaraj Subramanian and Kwang-Sun Ryu; University of Ulsan, Korea (the Republic of)

ES06.04
On the Electrochemical Stability of the Li-Electrolyte $Li_7La_3Zr_2O_{12}$ Joseph R. Ring[1], Andreas Bumberger[1], Andreas Nenning[1], Markus Kubicek[1], Sergey Volkov[2], Vedran Vonk[2], Thomas Schachinger[3] and Herbert Hutter[1]; [1]Technische Universitat Wien, Austria; [2]Deutsches Elektronen-Synchrotron, Germany; [3]Technische Universitat Wien Institut fur Festkorperphysik, Austria

ES06.05
Interpreting Impedance Spectra of Li-Intercalation Thin Films Andreas Bumberger, Claudia Schrenk, Matthias Kogler, Andreas Nenning and Juergen Fleig; Technische Universitat Wien, Austria

ES06.06
Enhanced Ionic Conductivity and Electrochemical Stability of poly(ethylene oxide) Electrolyte by Multiple-Functional Metal-Organic-Framework Fillers for Solid-State Lithium Batteries Jeong Jae Kim, Cheol Hyoun Ahn, Won Seok Yang and Hyung Koun Cho; Sungkyunkwan University, Korea (the Republic of)

ES06.07
The Influence of Mg and Li Substitutions on Structural, Transport and Electrochemical Properties of Sodium-Manganese Layered Oxide as a Cathode for Na-Ion Batteries Gabriela K. Wazny, Katarzyna Walczak and Janina Molenda; Akademia Gorniczo-Hutnicza imienia Stanislawa Staszica w Krakowie Wydzial Energetyki i Paliw, Poland

ES06.08
Unrevealing the Mechanism of Antimony-Based Anodes Sodiation Through the Operando and *Ex Situ* Measurements in Na-Ion Batteries Justyna Plotek, Andrzej J. Kulka and Janina Molenda; Akademia Gorniczo-Hutnicza imienia Stanislawa Staszica w Krakowie Wydzial Energetyki i Paliw, Poland

ES06.10
Understanding the Na-Ion Diffusivity for P2-$Na_{2/3}Mn_{1-x}Fe_xO_2$ (x= 0, 1/3, 1/2) Sodium-Ion Battery Cathode Material Priyanka Gupta[1], Sujatha Pushpakanth[2], Madhulika Gupta[3], M. Ali Haider[1] and Suddhasatwa Basu[1,4]; [1]Indian Institute of Technology Delhi, India; [2]Bharat Forge Ltd, India; [3]Indian Institute of Technology, India; [4]CSIR- Institute of Minerals and Materials Technology, Bhubaneswar, India

ES06.11
Computational Design of Sustainable and Low-Cost High-Entropy Disordered-Rocksalt Li-Ion Cathode Materials Alex G. Squires[1,2] and David O. Scanlon[1,2,3]; [1]University College London, United Kingdom; [2]The Faraday Institution, United Kingdom; [3]Thomas Young Centre, United Kingdom

ES06.12
Amorphization of Germanium Selenide Driven by Chemical Interaction with Carbon and Realization of Reversible Conversion-Alloying Reaction for Superior K-Ion Storage Kwang Kim; Yonsei University, Korea (the Republic of)

SYMPOSIUM IE

Iono-Eletronics
July 18 - July 21, 2022

Symposium Organizers
Geoffrey Beach, Massachusetts Institute of Technology
Monica Burriel, CNRS - Grenoble INP
YiYang Li, University of Michigan

* Invited Paper

SESSION IE06: Poster Session: Iono-Electronics
Tuesday Afternoon, July 19, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

IE06.01
Protonic Neuromorphic Memory with Perovskite Nickelates Tae Joon Park and Shriram Ramanathan; Purdue University, United States

IE06.03
Synthesis, Structural and Vibrational Properties of Neodymium Substituted Nickel Tungstates and Molybdates Asmaa El Khouri; Universite Cadi Ayyad Faculte des Sciences Semlalia, Morocco

IE06.04
Physical Reservoir Computing Based on Solid-State Electric Double Layer Effect Daiki Nishioka[1,2], Takashi Tsuchiya[1], Wataru Namiki[1], Makoto Takayanagi[1,2], Tohru Higuchi[2] and Kazuya Terabe[1]; [1]WPI Center for Materials Nanoachitectonics (MANA), National Institute for Materials Science (NIMS), Japan; [2]Tokyo University of Science, Japan

IE06.05
Understanding Non-Volatile Programming in $LiNbO_2$ Memristors via Electrochemical Impedance Spectroscopy (EIS) Aheli Ghosh, Alex S. Weidenbach, Bill Zivasatienraj, Timothy M. McCrone and W. A. Doolittle; Georgia Institute of Technology, United States

IE06.06
All-Solid-State Redox Transistor for *In Situ* Manipulation of Perpendicular Magnetic Anisotropy in Half-Metallic $NiCo_2O_4$ Thin Film Tomoki Wada[1,2], Wataru Namiki[1], Takashi Tsuchiya[1,2], Daisuke Kan[3], Yuichi Shimakawa[3], Tohru Higuchi[2] and Kazuya Terabe[1]; [1]Busshitsu Zairyo Kenkyu Kiko Kokusai Nanoarchitectonics Kenkyu Kyoten, Japan; [2]Tokyo Rika Daigaku Rigakubu Daiichibu Daigakuin Rigaku Kenkyuka, Japan; [3]Kyoto university, Japan

IE06.07
Enhancing Room Temperature Magneto-Ionic Motion in Cobalt Oxide by Electrolyte Engineering Sofia Martins, Zheng Ma, Eva Pellicer, Enric Menéndez and Jordi Sort; Universitat Autonoma de Barcelona, Spain

IE06.08
Hydrogenated VO_2 Switches for Neuromorphic Functions Sunbin Deng, Tae Joon Park, Qi Wang, Haoming Yu and Shriram Ramanathan; Purdue University, United States

IE06.09
Nonvolatile Electrochemical Random Access Memory for Analog In-Memory Computing Laszlo Cline; University of Michigan, United States

SYMPOSIUM DT

Defects and Transport Mechanisms in Solid Electrolytes and Mixed Conductors
July 18 - July 22, 2022

Symposium Organizers
George Harrington, Kyushu University / MIT
Rotraut Merkle, Max Planck Institute for Solid State Research
Alexander Opitz, Technische Universität Wien

* Invited Paper

SESSION DT27: Poster Session III: Batteries
Thursday Afternoon, July 21, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

DT27.02
Electrical and Structural Studies on the $Li_{1.3}Al_{0.3}Ti_{1.7}(PO_4)_3$-$LiAlSiO_4$ Ceramic Li^+ Conductor Konrad Kwatek[1], Wioleta Slubowska[1], Jan Nowinski[1], Agnieszka Krawczynska[1], Isabel Sobrados[2] and Jesus Sanz[2]; [1]Warsaw University of Technology, Poland; [2]National Research Council, Spain

DT27.03
Impact of Li-Excess Sources on the Electrical Properties of $LiTa_2PO_8$ Material—A Novel Solid Lithium-Ion Conductor Konrad Kwatek[1], Wioleta Slubowska[1], Jan Nowinski[1], Cezariusz Jastrzebski[1], Agnieszka Krawczynska[1], Isabel Sobrados[2] and Jesus Sanz[2]; [1]Warsaw University of Technology, Poland; [2]National Research Council, Spain

DT27.04
Synthesis of $Li_{10}GeP_2S_{12}$-Type Structured $Li_{9+\delta}P_{3+\delta}S_{12-\delta}O_\delta$ Solid Solution Phases Subin Song, Miao Xu, Satoshi Hori, Kota Suzuki, Masaaki Hirayama and Ryoji Kanno; Tokyo Kogyo Daigaku, Japan

DT27.05
Adhesion Strength Between Solid Components of Sulfidic ASSBs—Influence of the Process Routes on Microstructural Changes Celestine Singer[1,2], Milot Aruqaj[2], Lorenz Kopp[1,2], Hans-Christoph Töpper[1,2] and Rüdiger Daub[2]; [1]TUMint. Energy Research GmbH, Germany; [2]Technische Universitat Munchen, Germany

DT27.06
Stepwise Reaction and Degradation in Solution Synthesis of Li_6PS_5Br from P_4S_{10} Raheed Bolia[1,2], Bjorn Joos[1,2,3], Alexander Tesfaye[4], Marlies Van Bael[1,2,3] and An Hardy[1,2,3]; [1]Hasselt University, Institute for Materials Research (imo-imomec), DESINe team, Belgium; [2]EnergyVille, Belgium; [3]imec, imomec, Belgium; [4]Umicore, Corporate Research & Development, Belgium

DT27.07
Enhancement of Superionic Conductivity by Halide Substitution in Strongly Stacking Faulted $Li_3HoBr_{6-x}I_x$ Phases Maximilian A. Plass[1,2], Sebastian Bette[1], Robert E. Dinnebier[1] and Bettina V. Lotsch[1,2]; [1]Max-Planck-Institute for Solid State Research, Germany; [2]Ludwig-Maximilians-University Munich, Germany

DT27.09
Effect of Nanostructure Control on Li-Garnet Electrolyte Thin Film for Li-Ion Solid-State Battery Haemin Paik and Jennifer Rupp; Massachusetts Institute of Technology, United States

DT27.10
Quantitative Measurement of Li-Ion Concentration and Diffusivity in Solid-State Electrolyte Gun Park[1], Hongjun Kim[1], Jimin Oh[2], Youngwoo Choi[1], Olga Ovchinnikova[3], Seokhwan Min[1], Young-Gi Lee[2] and Seungbum Hong[1]; [1]Korea Advanced Institute of Science and Technology, Korea (the Republic of); [2]Electronics and Telecommunications Research Institute, Korea (the Republic of); [3]Oak Ridge National Laboratory, United States

DT27.12
Li^+ NASICON-$Li_{1.3}Al_{0.3}Ti_{1.7}(PO_4)_3$ Dispersed with Ionic Liquids—Electrical Transport and Applications to Electric Double Layer Supercapacitors Gurpreet Kaur, S. C. Sivasubramanian and Anshuman Dalvi; Birla Institute of Technology & Science Pilani, India

DT27.16
Li and Mg Intercalation in Hexagonal TiS_2—A DFT Study Shamik Chakrabarti and AK Thakur; Indian Institute of Technology Patna, India

DT27.18
3D Benzimidazole Based Triptycene Ionic Covalent Organic Frameworks with High Li-Ion Conductivity Yoonseob Kim; The Hong Kong University of Science and Technology, Hong Kong

DT27.20
Ionic Conductivity of Amorphous and Crystalline β-Li_3PS_4 C. Mandl, Katharina Hogrefe, Martin Wilkening and B. Gadermaier; Graz University of Technology, Austria

SYMPOSIUM EF

Energy and Fuels Conversion
July 18 - July 22, 2022

Symposium Organizers
Sean Bishop, Sandia National Laboratories
Georgios Dimitrakopoulos, Massachusetts Institute of Technology
Jong-Ho Lee, Korea Institute of Science and Technology (KIST)

* Invited Paper

SESSION EF19: Poster Session III: Energy and Fuels Conversion III
Session Chair: Georgios Dimitrakopoulos
Thursday Afternoon, July 21, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

EF19.01
Stabilization of Delta Bi2O3 Phase at Room Temperature by Thermal Nanocrystallization of Bismuth Oxide Glasses Maciej Nowagiel[1], Tomasz K. Pietrzak[1], Agata Jarocka[1], Tomasz Plocinski[1], Julien Trébosc[2], Olivier Lafon[2], Marek Wasiucionek[1] and Jerzy E. Garbarczyk[1]; [1]Politechnika Warszawska, Poland; [2]Universite de Lille, France

EF19.02
Microstructural Changes of Ni/GDC Fuel Electrodes During Operation (SOFC) Florian Wankmueller[1], Tibor Lehnert[1], Felix Kullmann[1], Yanting Liu[1], Andre Weber[1], Heike Stoermer[1], Martin Juckel[2], Norbert H. Menzler[2] and Dagmar Gerthsen[1]; [1]Karlsruher Institut fur Technologie, Germany; [2]Forschungszentrum Julich GmbH, Germany

EF19.03
Ionic Site Occupancy Management in $Mn_{1.5}Co_{1.5}O_4$ Spinel by Tetrahedral Preferred Zn Substitution Dokyum Kim, Seong-Uk Oh, Woo Seop Shin, Sumi Kim, Jung–A Lee, Young-Woo Heo and Joon-Hyung Lee; Kyungpook National University, Korea (the Republic of)

EF19.04
Material Screening for Protonic Ceramic Fuel Cell Cathode by Using Patterned Thin-Film Model Electrode Teruki Yoshioka, Katsuya Nishidate, Yuta Kimura, Takashi Nakamura, Keiji Yashiro, Tatsuya Kawada and Koji Amezawa; Tohoku Daigaku, Japan

EF19.05
A Self-Assembled Thin-Film Nanocomposite with High Stability as a Functional Layer in Solid Oxide Cell Cathodes Federico Baiutti[1,2], Lucile Bernadet[1], Francesco Chiabrera[1], Marina Machado[1], Matias Acosta[3], Judith Macmanus-Driscoll[3], Alex Morata[1], Marc Torrell[1] and Albert Tarancón[1,4]; [1]Institut de Recerca en Energia de Catalunya, Spain; [2]Kemijski institut, Slovenia; [3]University of Cambridge, United Kingdom; [4]Institucio Catalana de Recerca i Estudis Avancats, Spain

EF19.06
Characterization of La-Doped CeO_2 ($Ce_{0.6}La_{0.4}O_{1.8}$) Materials as a Buffer Layer at YSZ Electrolyte Supported SOFCs Dong X. Nguyen[1,2], Sang Won Lee[3,1], Seok Hee Lee[1], Hyung Tae Lim[2] and Tae Ho Shin[1]; [1]Korea Institute of Ceramic Engineering and Technology, Korea (the Republic of); [2]Changwon National University, Korea (the Republic of); [3]Yonsei University, Korea (the Republic of)

EF19.07 WITHDRAWN
Characterization of SOFC and Symmetrical Cells Using the Fiaxell Open Flange Set-Up Fatima-Ezzahra El Bassiri[1,2], Aurélie Rolle[2,1], Edouard Capoen[3,1], Raphael Ihringer[4] and Rose-Noëlle Vannier[2,1]; [1]Unite de Catalyse et Chimie du Solide, France; [2]Centrale Lille Institut, France; [3]Universite de Lille, France; [4]FIAXELL, Switzerland

EF19.08
Achieving High Performance in Solid Oxide Electrolysis Cell Using LSGM Electrolyte Support for Hydrogen Production Suji Kim[1], Sang Won Lee[1,2], Seok Hee Lee[1] and Tae Ho Shin[1]; [1]Korea Institute of Ceramic Engineering and Technology, Korea (the Republic of); [2]Yonsei University, Korea (the Republic of)

EF19.09
Theoretical Analysis of the Crack Formation and Propagation in a Solid Oxide Electrolysis Cell Yudong Wang[1,1], Anil Virkar[1,2] and Xiao-Dong Zhou[1,1]; [1]University of Louisiana at Lafayette, United States; [2]University of Utah, United States

EF19.10
Synthesis of MnO_2 Carbon Nanotubes Catalyst with Enhanced Oxygen Reduction Reaction Abid Ullah[1,2]; [1]University of Science and Technology South Korea, Korea (the Republic of); [2]Korea Advanced Institute of Science and Technology, Korea (the Republic of)

EF19.11
Electrical and Thermal Properties of PMMA Based Nano-Dispersed Polymer Gel Electrolytes Rajiv Kumar; G.G.D.S.D. College Hariana, India

EF19.12
Optimal Atomic Layer Deposition Prepared Al-Doped ZnO Buffer Layers for Charge Transport Enhancement in Cu_2O Photocathodes Hak Hyeon Lee, Ji Hoon Choi and Hyung Koun Cho; Sungkyunkwan University College of Engineering, Korea (the Republic of)

EF19.13
Understanding the Chemical Transformations and Photoelectrocatalytic Water Oxidation Mechanisms in Ferric Pseudobrookite Photoanodes Devi Prasad Adiyeri Saseendran[1], Carlos Triana[1], Sergey Peredkov[2], Serena DeBeer[3] and Greta Ricarda Patzke[1]; [1]Universitat Zurich, Switzerland; [2]Helmholtz Zentrum Berlin, Germany; [3]Max Planck Institute for Chemical Energy Conversion, Germany

EF19.14
Enzymatic Fuel Cell—Hydrolytic Stability and Conductivity Investigations of the Ionomer Membrane Separator in Typical Working Conditions Luca Pasquini[1], Philippe Knauth[1], Maria Luisa Di Vona[2], Emanuela Sgreccia[2] and Riccardo Narducci[2]; [1]Aix-Marseille Universite, France; [2]Universita degli Studi di Roma Tor Vergata, Italy

EF19.15 WITHDRAWN
Synthesis And Electron-Beam Evaporation of Gadolinium-Doped Ceria Thin Films Fariza Kalyk, Tomas Tamulevičius, Sigitas Tamulevičius and Brigita Abakevičiene; Kauno technologijos universitetas, Lithuania

EF19.16
Exsolution of the Metallic or Intermetallic Nanoparticles as a Trendy Way of Enhancing Catalytic Activity of Strontium Titanate-Based Anodes Beata M. Bochentyn, Agata Ducka, Patryk Blaszczak and Jakub Karczewski; Politechnika Gdanska Wydzial Fizyki Technicznej i Matematyki Stosowanej, Poland

EF19.17
Novel Ni/YSZ Electrode for SOCs Prepared Using the NaCl/CTAB-Assisted Route Patryk Blaszczak[1], Agata Ducka[1], Sea-Fue Wang[2], Grzegorz Machowski[3], Marta Przesniak-Welenc[1], Beata M. Bochentyn[1] and Piotr Jasinski[4]; [1]Politechnika Gdanska, Poland; [2]National Taipei University of Technology, Taiwan; [3]AGH University of Science and Technology, Poland; [4]Gdansk University of Technology, Poland

EF19.18
Pr_6O_{11} Modified Ceramic Cathode for CO_2 Electrocatalytic Reduction in Solid Oxide Electrolysis Cell Wanhua Wang, Haixia Li, Ka-Young Park, Taehee Lee and Fanglin (Frank) Chen; University of South Carolina, United States

EF19.19
Improved Sulfur Tolerance with A Site Substituted $Sr_2Fe_{1.4}Ni_{0.1}Mo_{0.5}O_{6-d}$ Anodes for SOFCs Haixia Li, Wanhua Wang, Ka-Young Park, Taehee Lee and Fanglin (Frank) Chen; University of South Carolina, United States

EF19.20
Solid Oxide Electrolyzer with Novel Electrode containing *In Situ* Exsolved Nanoparticles for Direct CO_2 to CO Conversion Ka-Young Park, Taehee Lee, Wanhua Wang, Haixia Li and Fanglin (Frank) Chen; University of South Carolina, United States

SYMPOSIUM ES

Energy Storage
July 18 - July 22, 2022

Symposium Organizers
Ainara Aguadero, Imperial College London and Instituto de Ciencia de Materiales de Madrid
Yifei Mo, University of Maryland
Daniel Rettenwander, Norwegian University of Science and Technology (NTNU)

* Invited Paper

SESSION ES10: Poster Session III: Energy Storage III
Thursday Afternoon, July 21, 2022
6:00 PM - 8:00 PM
Mezzanine Level, Second Floor, Stadler

ES10.01
Ultrafast Sintering and Application as a Solid-State Electrolyte of LAGP Glass-Ceramic Antonino Curcio[1], Antonio Gianfranco Sabato[2], Albert Tarancón[2] and Francesco Ciucci[1]; [1]The Hong Kong University of Science and Technology, Hong Kong; [2]Institut de Recerca en Energia de Catalunya, Spain

ES10.02
Structurally Reinforced Silicon/Reduced Graphene Oxide Microspherical Composite for Lithium-Ion Battery Anodes—Carbon Anchor as a Conductive Structural Support Kwang Kim[1], Byung Hoon Park[1] and Yong Gil Choi[2]; [1]Yonsei University, Korea (the Republic of); [2]SVOLT Energy Technology Company LLC, Korea (the Republic of)

ES10.03
Effects of Li Vapor Overpressure on the Microstructure, Composition and Ion Conductivity of Perovskite $Li_{3x}La_{1/3-x}TaO_3$ Ion Conductors Ian A. Brummel[1], Harlan J. Brown-Shaklee[2], William Lanford[3], Kevin Wynne[3] and Jon Ihlefeld[1]; [1]University of Virginia, United States; [2]Sandia National Laboratories, United States; [3]SUNY The State University of New York, United States

ES10.05
Li-Conduction in Gallium and Scandium Doped NASICON Compound
Dharmesh H. Kothari; The Maharaja Sayajirao University of Baroda, India

ES10.06
Structure Changes of Li_4SnS_4 Electrolytes in Humidified Atmosphere
Takuya Kimura, Takumi Nakano, Kota Motohashi, Atsushi Sakuda, Masahiro Tatsumisago and Akitoshi Hayashi; Osaka Prefecture University, Osaka Furitsu Daigaku, Sakai, Osaka, JP, academic, Japan

ES10.07
Elemental Inhomogeneity, the Cause of Ga-Doped LLZO Failure?
Nomaan Nabi; Imperial College London, United Kingdom

ES10.09
Studies on Spinel-Layer Composite Cathode for Lithium-Ion Battery
Nischal Oli; Universidad de Puerto Rico Recinto de Rio Piedras, Puerto Rico

ES10.11
Influence of Li_2MnO_3 Content on Structure and Electrochemical Properties of xLi_2MnO_3-$(1-x)LiNi_{1/3}Mn_{1/3}Co_{1/3}O_2$ for Li-Ion Batteries
Kuan-Zong Fung, Shu-Yi Tsai and Wei-Zhi Lin; National Cheng Kung University, Taiwan

ES10.12
Theoretical Understanding of the Deposition and Growth of Lithium in a Solid State Lithium-Ion Conducting Electrolyte
Yudong Wang, Xingwen Yu and Xiao-Dong Zhou; University of Louisiana at Lafayette, United States

ES10.13
Binder-free High Temperature Stable Polymer-Inorganic Hybrid Separator for Improved Safety, Thermal, Mechanical and Electrochemical Performance of Li-Ion Battery
Sagar A. Joshi[1], P. Sivaraj[1], Josef Breu[2] and Seema Agarwal[1]; [1]University of Bayreuth, Germany; [2]Universitat Bayreuth, Germany