

11 DECEMBER 2022, SUNDAY

18:00 - 20:00	Pre-conference Registration at NUSS Kent Ridge Guild House (9 Kent Ridge Dr, Singapore 119241)
	Welcome Reception at NUSS Kent Ridge Guild House (9 Kent Ridge Dr, Singapore 119241)

12 DECEMBER 2022, MONDAY

8:00	Registration (Utown Auditorium 1)			
8:30	PLENARY SESSION 1: R&D of Iron-based Electrode for High Energy Batteries <i>Hikari Sakaebe</i> Session Chair: Palani Balaya			
	Session 1.1: Battery 1 Venue: Auditorium 1 Session Chairs: Nae-Lih Wu, C. R Raj	Session 1.2: Battery 2 Venue: SR3-4 Session Chairs: Fu-Ming Wang, Wei-Ren Liu	Session 1.3: Basic Electrochemistry 1 Venue: SR12 Session Chairs: Joachim Maier, Sayan Bhattacharyya	Session 1.4: Capacitor 1 Venue: SR5 Session Chairs: Wataru Sugimoto, Masashi Ishikawa
09:15	Keynote: 45 Progress in Zinc-based Rechargeable Batteries for Electric Vehicle Uses: Achievements of RISING2/3 Projects in Japan <i>Masayuki Morita, Zempachi Ogumi and Takeshi Abe</i>	Keynote: 15 Failure mechanisms of high-voltage spinel LiNi_{0.5}Mn_{1.5}O₄ with different morphology: effect of lithium benzimidazole salt additive <i>Fu-Ming Wang</i>	Keynote: 65 Ions and Electrons in Battery Electrodes <i>Joachim Maier</i>	Keynote: 338 RuO₂ Nanosheets as Redox Active Conductive Binders <i>Wataru Sugimoto</i>
09:45	Invited: 337 A saline water-based battery for a smart contact lens Seok Woo Lee	Invited: 16 Plasma-modified soft carbon anode for Lithium-Ion Batteries Wei-Ren Liu	Invited: 41 The enthralling redox-active 2-4 metal combos Sayan Bhattacharyya	Invited: 247 Optimal Anode and its Utilization on Cycle Performance for LIC Masashi Ishikawa and Tomohiro Nishino
10:05	Invited: 314 Engineered Cathode Materials for Aqueous Rechargeable Zn Batteries C. R Raj	36 Application of 3DOM PI Separator to Li Metal Batteries with Ionic Liquid Based Electrolyte Yuma Shimbori, Hirokazu Munakata and Kiyoshi Kanamura	Invited: 367 Ab-initio Interfacial Stability of Electrolytes and Cathodes as a function of SoC in Solid-state Lithium Batteries Ping-Chun Tsai, Yi-Tzu Wu and Jing-Sen Yang	Invited: 292 Power capabilities in lithium-ion capacitors and dual-carbon batteries Alexey Glushenkov, Chiara Cementon, Oliver Hervir, Tamsyn Lovass, Daniel Dewar, Michael Brennan and Thrinathreddy Ramireddy
10:25	157 Comprehensive study of a redox active 2-D covalent organic framework as cathode in an aqueous mixed-ion electrolyte Zn-ion battery Akshatha V and Aninda J Bhattacharyya		221 BiOBr-based heterojunction for visible-light-driven photo-enhanced rechargeable zinc-air batteries. Amornrat Khampuanbut, Soorathep Kheawhom Kheawhom and Prasit Pattananuwat	107 Solvent-assisted fabrication of different Co-MOF nanostructures and their electrocatalyst and supercapacitor applications Radhakrishnan Sivaprakasam and Byoung-Suhk Kim
10:40	Coffee Break			
	Session 1.5: Battery 3 Venue: Auditorium 1 Session Chairs: Won-Sub Yoon, Shih-Kang Lin	Session 1.6: Battery 4 Venue: SR3-4 Session Chairs: Minoru Inaba, Prakash R	Session 1.7: Basic Electrochemistry 2 Venue: SR12 Session Chairs: Stefan Adams, Lei Wang	Session 1.8: Capacitor 2 Venue: SR5 Session Chairs: Byoung-Suhk Kim, Devaraj S
11:00	Keynote: 276 Dispelling myths about high-energy layered cathode materials for next-generation Li batteries <i>Won-Sub Yoon</i>	Keynote: 70 LiNi_{0.8}Co_{0.1}Mn_{0.1}O₂ Single-Crystal Particles Prepared in a Molten Flux <i>Minoru Inaba, Shunya Takamori and Takayuki Doi</i>	Keynote: 226 Rapid screening of high rate capability battery materials and interfaces <i>Stefan Adams</i>	Invited: 184 Green synthesis of carbon nanocomposites containing metal nanoparticles for supercapacitor applications Tatsuya Akiyama, Yazid Yakoob, Yosuke Ishii, Shinji Kawasaki and Masaki Tanemura

11:30	Invited: 306 Computational thermodynamics-assisted interfacial analysis and materials design in oxides-based all-solid-state Li batteries Shih-Kang Lin	Invited: 359 Three-dimensional Morphology Analysis on All-solid-state Batteries Yuki Orikasa, Yuya Sakka, Ayaka Watanabe and Yusuke Sakurai	Invited: 115 Development of Atomically Precise Metal Nanoclusters for Efficient CO ₂ Electroreduction Dongil Lee, Ho Eun Seong and Yongsung Jo	Invited: 106 Nanofiber Composite Electrodes for Flexible Transparent Supercapacitors Byoung-Suhk Kim
11:50	Invited: 259 Simultaneous Identification and Control for Hybrid Energy Storage System using Model Predictive Control and Active Signal Injection Ziyou Song	Invited: 348 Enhanced cycle life of LiFePO ₄ /graphite based lithium-ion cells by controlled fast-charging Protocol Prakash R	Invited: 158 Pinpointing the axial ligand effect on platinum single-atom-catalyst towards efficient alkaline hydrogen evolution reaction Lei Wang	Invited: 142 The Effect of Uniformly Dispersed Metal Oxide Nanoparticles in the Electrolyte on the Capacitance Properties Bharathidasan P and Devaraj S
12:10	202 A Parametric Study of Lithium-Ion Battery Capacity Fade Using a Cell OCV Model Jing Lin and Edwin Khoo	12 Evaluation of ionic conductivity changes in LiNi _{0.5} Co _{0.2} Mn _{0.3} O ₂ composite electrodes during charge-discharge cycles by DC polarization method Hirokazu Munakata, Shota Ozawa and Kiyoshi Kanamura	173 Regulating proton and CO ₂ transportation for efficient CO ₂ electroreduction under acidic media Zhongshuo Zhang and Ying Wang	127 Understanding the Electrolyte/Electrode Interfacial Interactions for the Development of High-performance Redox-Enhanced Electrochemical Capacitors Young Cho, Dahye Kim and Seung Joon Yoo
12:25	109 Electrode Reaction Mechanism in Highly Concentrated Fluoroacetate-Based Electrolytes for Lithium-Ion Batteries Saki Sawayama and Kenta Fujii	63 Fundamental Properties and Battery Application of Highly Concentrated Li salt/Mixed Sulfone Solvent Electrolytes Yosuke Ugata, Yichuan Chen, Kazuhide Ueno, Masayoshi Watanabe, Hiroki Mita, Jusuke Shimura, Masayuki Nagamine and Kaoru Dokko	97 Unexpected finding of de/protonation associated sustainable conversion reaction applicable to high-capacity zinc storage in mildly acidic aqueous system Hee Jae Kim, Jae Hyeon Jo, Ji Young Kim, Jiwon Jeong, Jae-Ho Park, Hun-Gi Jung, Kyung Yoon Chung, Min Gyu Kim, Naesung Lee, Kee-Sun Sohn and Seung-Taek Myung	
12:40	Lunch (not provided)			
13:20	Poster Session 1			
14:00	PLENARY SESSION 2: Fuel Cell Related Technologies <i>Yung-Eun Sung</i> Session Chair: Albertus Denny Handoko			
	Session 1.9: Battery 5 Venue: Auditorium 1 Session Chairs: Nobuyuki Imanishi, Masaharu Nakayama	Session 1.10: Battery 6 Venue: SR3-4 Session Chairs: Naoaki Yabuuchi, Masashi Kotobuki	Session 1.11: Battery 7 Venue: SR12 Session Chairs: Yuki Yamada, Chia-Chin Chen	Session 1.12: Solar Cells 1 Venue: SR5 Session Chairs: Jae-Joon Lee, Hongxia Wang
14:50	Keynote: 309 Challenges of interfacially modified battery with solid polymer electrolyte <i>Nobuyuki Imanishi, Sou Taminato and Daisuke Mori</i>	Keynote: 38 Li-excess High-capacity Electrode Materials with Cation Disordered Rocksalt Structures <i>Naoaki Yabuuchi</i>	Keynote: 19 Rational electrolyte design for lithium metal batteries <i>Yuki Yamada</i>	Keynote: 31 Evolution of Sensitization-based Photovoltaic Cells <i>Hyeong Cheol Kang, Jun Yeong Ryu and Jae-Joon Lee</i>
15:20	Invited: 77 Development of an Aqueous Zinc Secondary Battery Based on Two-Electron Transfer of Manganese Dioxide Masaharu Nakayama, Jin Kitamura, Kota Nakamura and Yu Katayama	Invited: 159 High-entropy and oxygen redox-based layered oxide cathode materials for high-energy sodium-ion batteries Han-Yi Chen, Shao-Chu Huang, Chia-Ching Lin and Jin-Wei Kang	Invited: 252 Mixed Ion-Electron Transport in Composite Electrodes Chia-Chin Chen	Invited: 266 Towards Cost-Effective and Stable Perovskite Solar Cells Hongxia Wang
15:40	187 Confinement of sulfur species into highly porous banana peduncle-derived carbon for ultra-high-rate performance lithium-sulfur battery Sony K Cherian, Katchala Nanaji, Bulusu V Sarada, Tata Narasinga Rao and Chandra S. Sharma	68 Hysteresis-Suppressed Reversible Oxygen-Redox Cathodes for Sodium-ion Batteries Natalia Voronina and Seung-Taek Myung	35 Design of Dynamic and Self-healing Binders for High-energy-density Li-ion Batteries Jaeyeon Ryu and Soojin Park	42: The intriguing assembly of metal-halide perovskites in energy devices Sayan Bhattacharyya
15:55	101 Probing the Function of Li-CO ₂ Battery Using 2D Electrocatalysts Abhishek Bharti and Aninda Jiban Bhattacharyya	288 P3/O3 type Layered Oxides as Cathode Materials for Na-ion Batteries Aniruddh Ramesh, Michel Bosman, Abhinav Tripathi, Shibo Xi and Palani Balaya	248 Sustainable recycling of graphite from spent Li-ion batteries and enhancing Li-ion storage capacity via exfoliation: e-waste to e-wealth Madhushri Bhar, Sourav Ghosh, Sathesh Krishnamurthy, Kaliprasad Yalamanchili and Surendra K. Martha	313: Super-Halogen-Substitution: An Effective Approach to Minimize Photo-induced Phase Segregation in Mixed Halide Lead Perovskites Pronoy Nandi, Hyoungmin Park, Soeun Shin and Hyunjung Shin

16:10

Coffee Break

Session 1.13: Battery 8

Venue: Auditorium 1

Session Chairs: Kohei Miyazaki, Yong Min Lee

Session 1.14: Battery 9

Venue: SR3-4

Session Chairs: Sang-Young Lee, Priya Johari

Session 1.15: Fuel Cells 1

Venue: SR12

Session Chairs: Kang Taek Lee, Hyunwoong Park

Session 1.16: Solar Cells 2

Venue: SR5

Session Chairs: Nam-Gyu Park, Tae-Hyuk Kwon

16:30

Keynote: 329 Cathode-Electrolyte-Interphase Film Formation on a LiNiO₂ Surface in Conventional Aqueous Electrolytes
Kohei Miyazaki

Keynote: 43 Enabling scalable high-mass-loading cathodes via coupled ion/electron transport
Sang-Young Lee

Invited: 34 Development of High-Performance Protonic Ceramic Electrochemical Cells
Kang Taek Lee

Keynote: 254 Perovskite solar cells: A Game Changer in Photovoltaics
Nam-Gyu Park

17:00

Invited: 207 Digital Twin-Driven 3D Structural and Electrochemical Modeling for All-Solid-State Electrodes and Batteries
Yong Min Lee

Invited: 232 Promising Anode Materials for the Li-ion Batteries: Exploration and Identification from In-silico Studies
Priya Johari

16:50
Invited: 274 Solar Desalination with Concurrent Production of Value-Added Chemicals
Hyunwoong Park

Invited: 179 Dye-Sensitized Solar Cells and Their Applications
Tae-Hyuk Kwon

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346 Redox Targeting-Based Aqueous Flow Battery
Wang Xun and Qing Wang

341 Polycaprolactone as affordable polymer electrolyte in solid state batteries
Y.-H. Chen, F. Kempe, Kun-Ling Liu, Martin Winter, Gunther Brunklaus

17:10
Invited: 20 Activity-Stability Relationship in Oxygen Electrocatalysis
Dong Young Chung

230: Understanding and Improving the Photocatalytic CO Oxidation Kinetics of NaOCl treated Pt/TiO₂ at the Gas Phase
Ahyeon Ma, Joon Yong Park, Dongho Seo and Ki Min Nam

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74 Zn-Mn aqueous redox-flow battery operatable at 2.4 V of discharging potential in a cell with 3-electrolyte chambers
Byeongkyu Kim, Yong Seok Kim, Jae Wook Lee, Dulyawat Doonyapisut and Chan-Hwa Chung

96 Natural TOCN-based All-Solid-State Polymer Electrolyte for Lithium Metal Batteries
Pei-Jin Lin, Cheng-Hung Liao, Shih-Chieh Yeh, Ru-Jong Jeng, Nae-Lih Wu and Chu-Chen Chueh

26: Lifetime Prediction of the Anode-Supported Solid Oxide Fuel Cell by Acceleration Test Method
Rak-Hyun Song, Muhammad Zubair Khan, Seung-Bok Lee, Tak-Hyung Lim and Dong Woo Joh

235: Direct immobilization of Ni Single Atom Catalyst on 3-dimensionally Fabricated Carbon Electrode for Electrochemical CO₂ Reduction Reaction
Dongho Seo, Ahyeon Ma, Joon Yong Park and Ki Min Nam

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379 Paper Zinc Iodine battery enhanced by intercalated layered structures
Jiawen Wu, Jin-Lin Yang and Hong Jin Fan

123 Application of Artificial Interphase on Ni-Rich Cathode Materials via Hybrid Ceramic-Polymer Electrolyte in All Solid State Batteries
Cheng-Hung Liao, Chia-Chin Chen, Ru-Jong Jeng and Nae-Lih Wu

60: Suppressing peroxide formation during oxygen reduction reaction using mixed metal oxide
Sekhar Kumar Biswal and Chinmoy Ranjan

8: Photoelectrochemical oxygen evolution reaction using upconversion nanoparticles on photoanode
Uk Sim

Poster Session 1

Abstract #	Authors	Title
28	Seonhwa Park, Hyeon Lee and Haesik Yang	Escherichia coli Detection Using Rapid and Specific Proteolytic Cleavage by Its Outer Membrane OmpT
29	Gyeongho Kim, Nakyeong Yoon and Haesik Yang	Wash-Free, Sandwich-Type Protein Detection Using Direct Electron Transfer of Multiple Redox Labels
72	Joon Yong Park, Ahyeon Ma, Dongho Seo and Ki Min Nam	A Comprehensive Study on the Phase Transformation and Electrocatalytic Properties of Cobalt Hydroxide
76	Jun Choi	Development of Highly Bright Perovskite Quantum Dots for Excellent Optoelectronic Properties
185	Sanghyeon Moon, Wonjoo Lee and Kiyong Lee	Electrochemical Detection of 2,4,6-trinitrotoluene in Aqueous Solution by using Anodic TiO ₂ Nanotube Arrays
243	Dinesh Dhanabal, Sridhar Sethuram Markandaraj and Sangaraju Shanmugam	Nickel Embedded Nitrogen-Doped Carbon Nanorods as highly efficient Electrocatalyst for Selective Reduction of Nitric Oxide to Ammonia
256	Kai Hung Cheng, Lung Sheng Lee, Jin Sheng Wang and Tzu Chien Wei	An autocatalytic Silver Immersion Gold (ASIG) Process for Advanced Copper Surface Finish
296	Sushmita Dwivedi, Sudharshan Vasudevan and Palani Balaya	Enhanced ionic conductivity and electrochemical performance of NASICON-based ceramic electrolyte via dual doping
358	Yi-Cang Wu and Tzu-Chien Wei	Synthesis of self-adsorbing nano-palladium catalysts for electroless plating applications.
71	Ruben Foeng, Fu-Ming Wang and Alagar Ramar	Effect of Polysiloxane-Based Conducting Polymer as An Additive for NMC 811 Cathode Li-Ion Battery
100	Subhankar Mandal and Aninda Jiban Bhattacharyya	A Comprehensive Analysis of Transition Metal Phthalocyanines as the Redox Mediator in Metal-Air Battery
105	Cheng Zhen, Naoki Hiratsuka, Masanobu Chiku, Eiji Higuchi and Hiroshi Inoue	Zinc Deposition Behavior in Highly Concentrated Potassium Hydroxide Aqueous Solutions
134	Moonsu Song, Gwangeon Oh, Jimin Park, Yeseul Jeong, Jang-Yeon Hwang and Jaekook Kim	MnS@N/S-C Anode Electrode with High Lithium Storage Property by Simple Polyol Refluxing Method
138	Jaeryeol Baek, Yunjae Oh, Yeongmin Kim, Hyuk Kang, Jang-Yeon Hwang and Jaekook Kim	Carbon Coated Na ₃ V _{1.96} Fe _{0.04} (PO ₄) ₃ /Fe ₂ P Nanoclusters with Stable Charge-transfer Interface for High-performance Sodium Ion Batteries
139	Yeongmin Kim, Seunggyeong Lee, Seohee Jeong, Yunjae Oh, Jang-Yeong Hwang and Jaekook Kim	Cr ³⁺ Doping into NASICON-structured Na ₃ V ₂ (PO ₄) ₃ Cathode for Sodium Ion Batteries
143	Ojeong Lee, Hyokyeong Kang, Gwangeon Oh, Jun Lee, Jang-Yeon Hwang and Jaekook Kim	First Principles Calculation of α -MnO ₂ as a Potential Cathode for the Application of Aluminum Ion Batteries
144	Jun Lee, Gwangeon Oh, Hyokyeong Kang, Yeseul Jeong, Jang-Yeon Hwang and Jaekook Kim	Hyper oxidized V ₆ O ₁₃ +x·nH ₂ O layered cathode for aqueous rechargeable Zn battery

146	Seohee Jeong, Hyuk Kang, Hyerim Kim, Jaekook Kim and Jang-Yeon Hwang	O3-type NaCrO ₂ cathode for high-energy sodium-ion batteries : Cationic and transition metal co-substitution strategy
148	Hyerim Kim, Hyeona Park, Hyokyeong Kang, Jimin Park, Jaekook Kim and Jangyeon Hwang	Highly Stable Potassium Metal Anode Confining Dendrite Growth with Conductive Interphase
156	Yunjae Oh, Moonsu Song, Hyeona Park, Jaryeol Baek, Jaekook Kim and Jang-Yeon Hwang	Development of K _{0.3} Mn _{0.9} Cu _{0.1} O ₂ Using New Material Development Platform that Combine Machine Learning and DFT Calculation
193	Po-Yi Lin, Hao-Wen Liu and Nae-Lih Wu	Solid-State Electrolyte and Lithium Anode Interface Improvement with Thin Buffer Layer
212	Hyeonggyu Jo and Yongsug Tak	Structural stability of aluminum as an anode of lithium ion battery
216	Seunggyeong Lee, Jun Lee, Jaeryerol Baek, Seohee Jeong, Jang-Yeon Hwang and Jaekook Kim	Na _{1.1} V ₃ O _{7.9} Nanorod Cathode Coated with Conductive Polypyrrole for High Power Zinc Ion Batteries
233	Le-Yen Lin and Chia-Chin Chen	Simulation of Mixed Ion-Electron Transport in Composite Electrodes
297	Sudharshan Vasudevan, Sushmita Dwivedi and Palani Balaya	Discerning the Influence of Salts on the Performance of Polymer Electrolytes for Solid State Sodium-ion Batteries
363	Nur Chamidah, Shu Tsuchida, Chengchao Zhong and Yuki Oriksa	Light-assisted Lithium Alloying Reaction of Silicon Anodes in Lithium-ion Batteries
136	Xutao Gao and Edmund Tse	Theoretical insights into screening single-atom catalysts on defective MXenes for efficient nitrate reduction to ammonia
331	Aika Takezawa, Yoichiro Tsuji, Takahiko Asaoka, Maria Ohki, Oki Sekizawa, Kiyofumi Nitta, Chengchao Zhong and Yuki Oriksa	Analysis of Radical Quencher Transfer Phenomenon in PEFC Using X-ray Fluorescence Spectroscopy
352	Hyung Chul Yoon	ELECTROCHEMICAL SYNTHESIS OF AMMONIA FROM WATER AND NITROGEN
3	Mihye Wu, Junbeom Cho, Jungdon Suk and Hee-Tae Jung	Three-dimensional porous carbon spheres with conical pores as a lithium host for dendrite-free Li-metal batteries
6	Dung Tien Tuan Vu, Sehyun Kwak, Yen Hai Thi Tran, Kihun An and Seung-Wan Song	Flame-retarding and Functional Electrolyte for Improved Rate Performance of Safe Lithium-ion Batteries
7	Guntae Lim, Seong Jun Park, Kihun An, Young Joo Lee, Do Youb Kim and Seung-Wan Song	Understanding the Effect of Interfacial Reaction Behavior on Thickness Change of Silicon Anode
14	Kwangjin Park and Hyukhee Cho	Mitigating the kinetic hindrance of the Poly/Single crystalline Ni-rich cathode-based electrode via formation of the superior electronic/ionic pathway
25	Seokbum Kang, Chang-eui Yang and Hochun Lee	Sulfone-based Crystalline Organic Electrolytes for Safe, Room-Temperature Operable Li, Na, and K Batteries

27	Nguk Neng Tham, Guang Yang, Srinivasan Madhavi and Zhaolin Liu	Influence of anode materials and binders on the cyclability of lithium-ion batteries
40	Rio Akbar Yuwono, Fu-Ming Wang, Yan-Cheng Chen, Hsi Chen and Nae-Lih Wu	Surface Stability Enhancement of Ni-Rich Cathode Through Elevated Oxygen Pressure Synthesis
52	Yogendra Kumar, Tae Hyeong Kim, Iyan Subiyanto, Kanghoon Yim, Winda Devina, Jung Joon Yoo and Hyunuk Kim	Electrochemical behavior of thianthrene based redox-active conductive metal-organic framework for lithium ion battery
59	Yuya Sakka, Hisao Yamashige, Chengchao Zhong and Yuki Orikasa	Expansion/contraction behavior of silicon anode in all-solid-state battery analyzed by operando X-ray computed tomography
62	Cheng-En Yu and Wei-Ren Liu	Li _{1.3} Al _{0.3} Ti _{1.7} (PO ₄) ₃ solid electrolytes synthesized by microwave-assisted hydrothermal reaction for Li ion batteries
69	Juyeon Im, Jinhyeok Ahn, Jinsol Im and Kuk Young Cho	Fabrication and electrochemical characterization of ceramic-coated-separators varying inorganic particles
73	Jung Hui Kim, Ju Myung Kim and Sang Young Lee	Redox-homogeneous, gel electrolyte-embedded high-mass-loading cathodes for high-energy lithium metal batteries
78	Zhi-Ting Liu, Tzu-Hsien Hsieh and Wei-Ren Liu	Sintering temperature effects on biomass carbon derived from sawdust as an anode material for Na ion batteries
79	Suji Kim, MinJae Lee, Sekwon Oh and Won-Hee Ryu	3-D Interconnected Porous Cu Current Collector for Anode-Free Lithium-Metal Batteries
82	Kazuma Murata, Minoru Inaba and Takayuki Doi	Effect of Electrode Thickness on Rate-capability of LiNi _{0.8} Co _{0.1} Mn _{0.1} O ₂ in Highly Concentrated Electrolytes
85	Yongjin Jang and Jaehun Kim	Synthesis and electrochemical properties of Zn-doped V ₂ O ₅ composite as lithium storage materials
102	Wei-Chu Hsu and Wei-Ren Liu	Phenolic resin modified by high efficiency oxygen plasma for lithium ion batteries with superior performance
108	Yu-hsuan Li and Wei-Ren Liu	Silicon/carbon composite anode derived from nano silicon/phenolic resin/pitch as anode materials for lithium-ion batteries
114	June Wei Yang and Wei Ren Liu	Synthesis and characterization of single-walled carbon nanotubes-modified SiO _x /soft carbon/C composite as anode materials for Lithium-ion batteries
116	Nag-Young Kim and Sang-Young Lee	Amphiphilic bottlebrush polymeric binders for high-mass-loading cathodes in Lithium-ion batteries
117	Seo-Young Jun, Jun-Seo Lee, Suji Kim and Won-Hee Ryu	Lithium Surface Leveler Additives for Stabilizing Lithium-Metal Batteries
118	Boran Kim, Hyun-Soo Kim, Jun-Seo Lee and Won-Hee Ryu	Unraveling Reaction Discrepancy and Electrolyte Stabilizing Effects of Auto-oxygenated Porphyrin Catalysts in Lithium-Oxygen and-Air Cells

119	Yeo-Jin Rho, Boran Kim, Kihyun Shin, Graeme Henkelman and Won-Hee Ryu	Atomically Miniaturized Bi-Phase IrO _x /Ir Catalysts Loaded on N-doped Carbon Nanotubes for High-Performance Li-CO ₂ Batteries
120	Yeji Lim, Fuxi Peng, Boran Kim, Hyun-Soo Kim, Zhenyu Wang, Zuowan Zhou, Jinyang Li and Won-Hee Ryu	Blooming Growth of Durable Carbon Nanotube Bundles from Graphite Interlayer Seeds for Free-Standing Lithium-Oxygen Battery Electrodes
194	Hyun-Gyu Han, So Yeon Yoon, Byung-Man Kim, Hyun-Kon Song and Tae-Hyuk Kwon	Influence of Lithium-ion Concentration in Electrolyte on The Performance of Dye-sensitized Photo-Rechargeable Batteries
209	Jun-Hyeok Park and Tae-Hyuk Kwon	Highly Efficient and Stable Dye-sensitized Photoelectrochemical Cell for Water Splitting

13 DECEMBER 2022, TUESDAY

PLENARY SESSION 3: Interfaces Modification with Functional Polymers for Enhanced Performance and Safety of Li-ion Batteries				
Nae-Lih Nick Wu Session Chair: Andy Ng Man Fai				
8:30				
	Session 2.1: Battery 10 Venue: Auditorium 1 Session Chairs: Kiyoshi Kanamura, Yu-Ting Weng	Session 2.2: Battery 11 Venue: SR3-4 Session Chairs: Aninda J Bhattacharyya, Hochun Lee	Session 2.3: Basic Electrochemistry 3 Venue: SR12 Session Chairs: Kyung-Wan Nam, Chung-Wei Kung	Session 2.4: Solar Cells 3 Venue: SR5 Session Chairs: Hyun Suk Jung, Donghoe Kim
9:15	Keynote: 11 Evaluation of Full Cell with NMC cathode, Li Metal Anode and 3DOM Polyimide Separator for High Energy Density Rechargeable Battery <i>Kiyoshi Kanamura, Yuma Shimbori, Risa Miyagawa, Yuko Yagi and Hirokazu Munakata</i>	Keynote: 92 Aqueous Rechargeable Batteries: Prospects and Challenges <i>Aninda J Bhattacharyya</i>	Keynote: 54 Improving the Performance of Poly & Single Crystal High-Nickel Cathode Materials by d0 doping Strategy <i>Yong-Jeong Choi, Bogyong Lee, Seongwon Park, Daseul Han and Kyung-Wan Nam</i>	Keynote: 335 Tailoring Materials and Process for Commercially Viable Perovskite Solar Cells <i>Hyun Suk Jung</i>
9:45	Invited: 340 Fast-charging Lithium-ions Batteries via Easy Interfacial Modification Yu-Ting Weng and Nae-Lih Wu	Invited: 24 Designing electrolyte additives to suppress hydrogen evolution reaction in aqueous Li-ion batteries Sukhyung Lee, Junsik Kang and Hochun Lee	Invited: 18 Chemically Stable Metal–Organic Frameworks toward the Use in Electrochemical Energy Storage Cheng-Hui Shen and Chung-Wei Kung	Invited: 298 Highly Efficient and Stable Perovskite Photovoltaics: Control of Crystallization Kinetics in a-FAPbI ₃ and Protecting Inorganic Interlayers by ALD Hyunjung Shin
10:05	Invited: 5 Advanced Liquid Electrolyte and SEI Stabilization; a Solution toward Safe and Long-cycled Rechargeable Lithium Batteries Seung-Wan Song	Invited: 324 Secondary Zn-air batteries: from Aqueous to Neutral Electrolyte Afriyanti Sumboja	Invited: 23 Holistic Characterization of Li Adsorption in Inverse Vulcanized Copolymeric Cathodes for Li-S Cells Lisa Djuandhi and Neeraj Sharma	Invited: 37 Stable Lewis base additive for copper complex-mediated dye-sensitized solar cells Vinh Son Nguyen, Kala Kannankutty, Tzu-Sen Su and Tzu-Chien Wei
10:25	Invited: 49 Electrochemistry of all-solid-state cells using reduced lithium titanate as reference electrodes Goro Fukunishi, Atsunori Ikezawa, Takeyoshi Okajima and Hajime Arai	Invited: 91 Auto-Oxygenated Porphyrin-derived Redox Mediators for Lithium Air-Breathing Batteries Won-Hee Ryu	Invited: 311 Boosting CO ₂ conversion to C ₂₊ with amino acid functionalisation Albertus Denny Handoko, Carina Yi Jing Lim, Meltem Yilmaz, Juan Arce, Jia Zhang and Yee Fun Lim	Invited: 294 Interface Study on the Perovskite Solar Cells for Tandem Solar Cell Applications Donghoe Kim
10:45	Coffee Break			
	Session 2.5: Battery 12 Venue: Auditorium 1 Session Chairs: Chun-Chen Yang, Kyu Tae Lee	Session 2.6: Battery 13 Venue: SR3-4 Session Chairs: Hsisheng Teng, Hiroyuki Fujimoto	Session 2.7: Basic Electrochemistry 4 Venue: SR12 Session Chairs: Bing Joe Hwang, Zhiqun Lin	Session 2.8: Solar Cells 4 Venue: SR5 Session Chairs: Satishchandra Ogale, Jin Young Kim
11:05	Keynote: 261 Hybrid Solid Electrolyte with Electrospun Interconnected Al-LLZO Nanofibers for All-Solid-State Lithium-Metal Batteries <i>Chun-Chen Yang and Tadesu Hailu Mengesha</i>	Keynote: 272 Gel Polymer Electrolyte for Lithium Metal Batteries with an Untreated Cu Substrate <i>Yu-Hsing Lin and Hsisheng Teng</i>	Keynote: 323 Exploring irreversible phenomena in anode-free lithium metal batteries <i>Bing Joe Hwang</i>	Keynote: 369 2D materials and their heterostructures for photo- and electro-catalytic water splitting and reduction of CO₂ and N₂ <i>Satishchandra Ogale</i>
11:35	Invited: 211 Thermal Stability of Thiophosphate Solid Electrolytes for All-Solid-State Batteries Taehun Kim, Kanghyeon Kim and Kyu Tae Lee	Invited: 112 Nature of Zinc-Derived Dendrite and Its Suppression in Mildly Acidic Aqueous Zinc-Ion Battery Hee Jae Kim, Sun Kim, Kwang Heo, Jae Hong Lim and Seung Taek Myung	Invited: 47 Reversible electrochemical lithiation as a way to facilitate the machining of ceramics: a computational study Anastassia Sorkin, Yunfa Guo, Manabu Ihara, Sergei Manzhos and Hao Wang	Invited: 270 High-Voltage Tandem Solar Cells for Efficient PV-EC Systems Jin Young Kim
11:55	Invited: 39 Fluorophosphate-Based Nonflammable Concentrated Electrolytes with a Controlled Lithium-ion Ordered Structure Kenta Fujii and Saki Sawayama	Invited: 22 Synchronized Operando Analysis of Graphite negative electrode of Li-ion Battery Hiroyuki Fujimoto, Miwa Murakami, Toshiro Yamanaka, Keiji Shimoda, Hisao Kiuchi, Zempachi Ogumi and Takeshi Abe	Invited: 66 Operando unraveling photothermal-promoted dynamic active-sites generation in spinel oxide for markedly enhanced oxygen evolution Zhiqun Lin	343: Cross-linked Perovskite/Polymer with Sodium Borate Composites for Efficient and Stable Perovskite solar cells Bonghyun Jo, Hyun Suk Jung, Gon Namkoong, Gill Sang Han and Tae Kyu Ahn

12:15	83 Synthesis and Electrochemical Characteristics of Si-Zn ₂ SiO ₄ Composite as Li-ion Battery Anode Hyungeun Seo, Dahye Park and Jae-Hun Kim	86 Porous Sn ₂ Nb ₂ O ₇ -graphene oxide composite anode materials for Li- and Na-ion batteries Yunjung Kim and Jae-Hun Kim	64 The effect of benzimidazole salt additive on the surface and the transition metal of spinel cathode - high voltage lithium-ion battery application (5 V) Chusnul Khotimah and Fu Ming Wang	
13:15 12:30	Lunch (not provided)			
13:15	Poster Session 2			
	Session 2.9: Battery 14 Venue: Auditorium 1 Session Chairs: Kyung Yoon Chung, Jongsoon Kim	Session 2.10: Capacitor 3 Venue: SR3-4 Session Chairs: Daniel Chua, Hyun-Kyung Kim	Session 2.11: Basic Electrochemistry 5 Venue: SR12 Session Chairs: Wei-Nien Su, Man Fai Ng	Session 2.12: Fuel Cells 2 Venue: SR5 Session Chairs: Jinwoo Lee, R. Balaji
14:00	Keynote: 110 Research Trends and Challenges of All-Solid-State Batteries <i>Kyung Yoon Chung</i>	Keynote: 326 Designing Application Specific Electrochemically Active Materials <i>Daniel Chua</i>	Keynote: 342 Electrolyte design for anode-free lithium metal batteries <i>Chia-Hsin Wang, Wan-Yu Liao and Wei-Nien Su</i>	Keynote: 154 Atomically Dispersed Electrocatalysts for Low Temperature Fuel Cells and Water Electrolysis <i>Seongbeen Kim, Jinkyu Park, Seung Yeop Yi and Jinwoo Lee</i>
14:30	Invited: 129 Rational Design of Cathodes with Halide Solid Electrolytes for All-Solid-State Batteries Jong Seok Kim, Jun Pyo Son, Hiram Kwak, Juhyoum Park and Yoon Seok Jung	Invited: 93 Direct electrochemical synthesis of nanocarbon materials for supercapacitor applications Hyun-Kyung Kim	Invited: 126 Use of first-principles modelling in materials design for electrochemistry applications Man Fai Ng	Invited: 370 A glimpse of PEM fuel cell Activities at Advanced Research Centre International (ARCI) R. Balaji, V. Raman, K. Ramya and R. Gopalan
14:50	Invited: 30 Selective Anionic Redox and Suppressed Structural Disorder in High-energy Li-rich Layered Oxide Cathode Jongsoon Kim	Invited: 375 Design, Fabrication and Demonstration of Indigenous 1200F Supercapacitor for Electric Vehicles Application Srinivasan Anandan, K. Nanaji, R. Vijay, Ravi Nathuram Bathe, M. Pramanik, K. Narayan, B. Ravi and Tata N. Rao	Invited: 277 Fictitious phase separation in Li layered oxides driven by electro-autocatalysis: Diffusion vs. Interface reaction Jungjin Park	Invited: 58 Pt Catalyst Supported on Mesoporous Carbon and Its Cell Performance Hideo Daimon, Sorataka Yoshikawa, Taise Miyata, Seiji Ichikawa, Shoma Nishikawa, Takayuki Doi, Hideo Inoue and Minoru Inaba
15:10	215 Study on High Conductivity Ionic Solid Polyelectrolyte Used in Lithium-Ion Batteries Chun-Chuan Hsu	Invited: 327 Utilization of pseudocapacitance in hierarchically designed pore structured- carbon nanofibers for high capacitance supercapacitors Chaeun Lee, Jinyeon Hwang and Hyung-Seok Kim	180 Mo-doped NaTi ₂ (PO ₄) ₃ as Anode Materials for High-Power Aqueous Sodium-Ion Batteries Cheng-Yen Wu, Shao-Chu Huang and Han-Yi Chen	55: Density functional theory-based design of a Pt-skinned PtNi catalyst for the oxygen reduction reaction in fuel cells Dong Yun Shin, Yeon-Jeong Shin, Min-Su Kim, Jeong An Kwon and Dong-Hee Lim
15:25	178 Asymmetrically and bi-continuously porous PVDF membrane with enhanced ion transport properties for lithium metal battery Wei-Fan Kuan, Yan-Sheng Xu, Hsiang-Chih Chuang, Jia-Haur Chen and Min Lo	387 Machine Learning Assisted Asymmetric Supercapacitor via Prussian Blue (3D) nanostructured Embellish Porous Carbon Ganapathi Rao Kandregula, Janraj Naik Ramavath and Kothandaraman Ramanujam	111 A microgrid-patterned silicon electrode as an electroactive lithium host Myeong-Hwa Ryou and Sang-Young Lee	61: Operando studies on high temperature CO ₂ electroreduction to fuel using mixed metal cathodes Vipin Kamboj and Chinmoy Ranjan
19:00 15:50	Coffee Break			
	Social Tour (Gardens by the Bay) - one way transport to the venue will be provided			
	Conference Dinner (Ticketed Event) at NUSS Kent Ridge Guild House (9 Kent Ridge Dr, Singapore 119241)			

Poster Session 2

Abstract #	Authors	Title
122	Amol Bhairuba Ikhe, Jung Yong Seo, Suyeon Han, Woon Bae Park, Kee-Sun Sohn and Myoung-ho Pyo	Carbon cloth with a stern solid electrolyte interface enabled an anode-free lithium-ion battery with unprecedented cyclability
124	Jung Yong Seo and Woon Bae Park	A remarkable Na ⁺ conductive solid-state-electrolyte (SSE) for a new composition in Na ₃ PS ₄ Family via multi-variable Bayesian optimization
125	Yoo Jung Choi and Won Hee Ryu	One-Pot Solution Calcination Synthesis of Cathode Materials for Li-ion Batteries
128	Seung Ah Yu, Jong Min Yun, Jae Kwon Seo and Young-Jun Kim	Bi-Functional Surface Coatings on Ni-Rich Layered Cathode Materials for Lithium-Ion Batteries
130	Eunjin Park, Yong-Tae Kim and Jinsub Choi	Electrochemically exfoliation of graphene-glass fiber integrated with electrode anode for lithium-ion batteries
131	Hangyoul Kim, Yong-Tae Kim and Jinsub Choi	Preparation of porous SiO _x /TiO ₂ anode with PDMS using plasma electrolytic oxidation
132	Woojin Kwak, Yong-Tae Kim and Jinsub Choi	Useful resource recovery from waste NCM cathode in lithium-ion batteries via electrochemical method
133	Seokju Maeng, Yong-Tae Kim and Jinsub Choi	Electrochemical exfoliation in used anode of lithium-ion battery for conversion from spent graphite to high value-added graphene
135	Jiyeon Jeong, Yongtae Kim and Jinsub Choi	Electrolyte decomposition products on SiO _x /C anode of lithium-ion batteries in terms of electrolyte additives
150	Jeongmin Kim, Jaekwon Seo, Jinkyoo Koo, Seongjung Heo and Young-Jun Kim	Zr-doped single crystalline NCMA cathode materials for high energy density lithium-ion batteries
151	Jungmin Kang, Wonseok Ko, Sangyeop Lee, Hobin Ahn, Myeongeun Choi and Jongsoo Kim	Exceptionally high power and energy density in Ti-substituted Na ₂ TiFeF ₇ as a fluoride-based novel cathode material for Na-Ion batteries
153	Shiki Thi, Hao-Wen Liu and Nae-Lih Wu	Synthesis Strategies for High-Voltage-Stable Fluorinated Halide Solid-State Electrolytes
160	Hyobin Lee, Tai-Jong Jung, Jihun Song, Dongyoon Kang, Chil-Hoon Doh, Seong-Wook Eom, Ji-Hyun Yu, Yong Min Lee and Yoon-Cheol Ha	Unraveling Electrochemical Properties of Large-Format Shelf-Aged Lithium-Ion Batteries: Mechanism Analysis and Computational Modeling on the Capacity Revitalization Phenomenon
161	Suyeon Han, Jung Yong Seo and Woon Bae Park	Vacancy-controlled quaternary sulfide Na _{3-x} Zn _{1-x} Ga _{1+x} S ₄ for high ionic conductivity and ambient stability
165	Wei-Hsiang Chen and Nae-Lih Wu	Synthesis and Characterization of Multiple Ion Modification of Li(Ni _{0.8} Co _{0.1} Mn _{0.1})O ₂ Cathode Material
167	Jeong-In Choi, Bo Keun Park, Hyun-seung Kim and Ki Jae Kim	A versatile electrolyte additive for stable interfaces in lithium metal battery
168	Sung Joon Park, Sang Jae Park, Dae-Woong Nam and Ki Jae Kim	Multi-functional separator for improving performance of lithium sulfur batteries

175	Yun Jeong Choi, Yeon Kyeong Jeong and Ki Jae Kim	Tributyl-borate modified separator to improve high nickel cathode for Lithium metal batteries
176	Ye Ji Ha, Jin Hyuk Yang, Jeong Hyeon You and Ki Jae Kim	Degradation of Polyethylene Separators in Lithium-ion Batteries
177	Yin-Chen Hsu and Wei-Ren Liu	Synthesis and Characterization of Li ₆ PS ₅ Br Solid Electrolyte for Li Solid Batteries
181	Wonseok Ko, Jungmin Kang and Jongsoon Kim	Exceptional Increase of Reversible Capacity of O ₃ -NaCrO ₂ by Preventing Irreversible Phase Transition for High-energy Na-ion Batteries
186	Gyeong Rae Gim and Ji Heon Ryu	Improved Cycle Performance by Appropriate Balancing SiO and Graphite Negative Electrode in Bi-layer Structure
188	Lester Tiong and Fu Ming Wang	Investigation on Recovering Failed NCA Cathodes through Hydrothermal + Short Annealing with LiOH
190	Yong Min Kim, Hyunchul Kang, Yoon Bo Sim, Hami Lee, Ki Jae Kim and Junyoung Mun	Novel electrode design as the master key for lateral axial failure in lithium ion batteries; Dual layer electrode
191	Seungyeop Choi, Nayeon Kim, Dahee Jin, Youngjoon Roh and Yong Min Lee	Correlation between electrode misalignment and electrochemical characteristics in pouch-type lithium-ion batteries
195	Jaejin Lim, Jihun Song, Hyobin Lee, Suhwan Kim, Kyung-Geun Kim and Yong Min Lee	3D Microstructural Analysis on Li-ion Battery Electrodes during Calendaring using Digital Twin Technology
197	Hyang Sun Jeon and Ji Heon Ryu	Enhanced Cycle Performance of High-capacity SiO _x Negative Electrode through Use of Carbon Nanotube Conducting Agent
198	Jinho Ahn, Bonyoung Ku, Junseong Kim and Jongsoon Kim	Suppressed Transition Metal Migration and Reversible Oxygen Redox in Li-rich Layered-oxide Cathode
199	Jeong Min Kang and Ji Heon Ryu	Electrochemical Degradation Analysis of High Loading NCM Positive Electrode in Lithium-ion Batteries
200	Shintaro Tachibana, Takashi Saito, Takashi Kamiyama, Chengchao Zhong and Yuki Orikasa	Fluorosulfide La _{2+x} Sr _{1-x} F _{4+x} S ₂ solid electrolytes for All-Solid-State Fluoride-Ion batteries
205	Ching-Wei Huang and Fu-Ming Wang	State of charge estimation for Lithium Battery using Kalman Filter Algorithm
208	Lijun Liu, Jacob Wee, Ming Han and Qing Wang	Flow Battery Stack Development
210	Jungho Lee, Hansol Koo, Yuwon Park and Kyu Tae Lee	Ion liquid-based membranes with negligible vanadium permeability for vanadium redox flow batteries
214	Youngmin Ko, Hong-I Kim, Sang-Young Lee and Kisuk Kang	Liquid-Based Janus Electrolyte for Sustainable Redox Mediation in Lithium–Oxygen Batteries
218	Yi-Shan Liu, Wen-Ya Lee, Nae-Lih Wu, Ru-Jong Jeng and Jen-Yu Lee	New Polymer Binder with Multilayer Coating Electrodes for Lithium-ion Batteries
219	Keiji Shimoda, Yoshiyuki Morita, Kousuke Noi and Takeshi Abe	Reversible CuF ₂ Positive Electrode for All-Solid-State Fluoride Ion Battery

220	Myeong Ju Lee, Ju Young Kim, Jimin Oh, Seok Hun Kang, Kwang Man Kim, Young-Gi Lee and Dong Ok Shin	Poly(vinylidene fluoride) (PVDF)-based Hybrid Solid Electrolytes Incorporating Resistive Barrier Free $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ for Solid State Batteries
222	Taehee Kim, Jae Yup Jung, Woosuk Cho and Min-Sik Park	High-Efficiency All-Solid-State Batteries Designed with Lithium Excess Cathode
223	Sungmin Park, Sungmin Park and Minsik Park	Growth Mechanism of ZIF8 on Graphite Surface for Improved Electrochemical Performance in Lithium-Ion Batteries
224	Hyo Bin Lee, Yun Seong Byeon, Joo Hyeong Suh and Min-Sik Park	Surface stabilization with piezoelectric LiTaO_3 on single crystalline Ni-rich Layered Cathode Materials for Lithium-Ion Batteries
225	Junhwa Kwon, Ki-Yeop Cho and Kwangsup Eom	Improved electrochemical properties of hydrogenated molybdenum trioxide in lithium ion battery systems
234	Kaiwei Yang and Youngkwan Lee	Hierarchically Porous and High-Loading Cathode for Potassium–Sulfur Batteries
236	Ki-Yeop Cho, Sungjun Cho, Gun Young Jung and Kwangsup Eom	Selective deposition of lithium on the lithiophobic copper by means of the adjacent high-resistivity metal films as deposition inhibitors
246	Nishant Nishant, Jiaqian Qin and Prasit Pattananuwat	Ni-substituted MnCo_2O_4 spinels as a cathode material for zinc-ion batteries to enhance the electrochemical performances.
251	Bing-Hsuan Hsu and Wei-Ren Liu	Synthesis and Characterizations of $\text{Na}_4\text{MnCr}(\text{PO}_4)_3$ -rGO as novel NASICON-type cathode materials for Sodium-ion batteries
267	San Moon	Ex-situ raman spectroscopic studies of sulfur nanowires
268	Jun-Ho Park, Chang-min Cho, Youngjun Huh, Jun-Woo Park, Byung Gon Kim, You-Jin Lee, Won-Jae Lee, Sang-Min Lee and Yoon-Cheol Ha	The solution-based synthesis of $\text{Li}_6\text{PS}_5\text{Cl}$ solid electrolyte for facile lithium ion conduction in the cathode electrode of all-solid-state batteries
281	Yi-De Tsai and Chun-Chen Yang	Improving performance of 5V $\text{LiNi}_0.5\text{Mn}_1.5\text{O}_4$ cathode for high-performance lithium-ion batteries via graphene oxide and SWCNT additives
293	Seok Hun Kang, Ju Young Kim, Dong Ok Shin, Myeong Ju Lee and Young-Gi Lee	2D sulfide solid electrolyte using reduced graphene oxide template for enhanced Li transport in all-solid-state batteries
295	Yusuke Sakurai, Yuya Sakka, Hisao Yamashige, Chengchao Zhong and Yuki Oriyasa	Three-dimensional analysis of dendrite growth mechanism in Glass Solid Electrolytes using X-ray Computed Tomography
300	Mariya Yamagishi, Chengchao Zhong and Yuki Oriyasa	Anion-doping Effect of Chloride Electrolyte Li_3YCl_6 in All-solid-state Lithium-ion Batteries
302	Ayaka Watanabe, Yuya Sakka, Yu Shintomi, Chengchao Zhong and Yuki Oriyasa	Pressure Dependence of Three-Dimensional Structure between Chloride, Sulfide and Oxide Based Solid Electrolytes by X-ray CT Analysis
355	Ryo Muraoka, Yuki Omote, Misaki Katayama, Chengchao Zhong and Yuki Oriyasa	Analysis of Irreversible Charge-discharge Capacity of LiFePO_4 - $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Full-cell

14 DECEMBER 2022, WEDNESDAY

8:30	PLENARY SESSION 4: The Electrode/Electrolyte Interfacial Issues in Solid State Batteries <i>Yong Yang</i> Session Chair: Yang Hui Ying			
	Session 3.1: Battery 15 Venue: Auditorium 1 Session Chairs: Chi-Chang Hu, Masashi Kotobuki	Session 3.2: Battery 16 Venue: SR3-4 Session Chairs: Sangaraju Shanmugam, Wei Kong Pang	Session 3.3: Battery 17 Venue: SR12 Session Chairs: Kaiyang Zeng, Seung-Ho Yu	Session 3.4: Fuel Cells 3 Venue: SR5 Session Chairs: Katsuyoshi Kakinuma, Mahasin Alam Sk
9:20	Keynote: 263 Designs of Electrospun Polyimide-based Separators for Supercapacitors and Lithium-ion Batteries <i>Chi-Chang Hu, Hao-Yu Ku and Yui-Ju Pai</i>	Keynote: 239 Advanced Materials for Sustainable and Green Electrochemical Energy Storage Devices <i>Sangaraju Shanmugam and Dabin Han</i>	Keynote: 275 Characterizing the Localized Electrochemical Phenomena in Rechargeable Li-ion Batteries by using Advanced Scanning Probe Microscopy based Techniques <i>Kaiyang Zeng</i>	Invited: 104 Pt Catalyst Supported on Conducting Ceramic Support for Polymer Electrolyte Fuel Cells toward Application of Heavy Duty Vehicles <i>Katsuyoshi Kakinuma</i>
9:50	Invited: 137 Ceramic electrolyte for all-solid-state battery <i>Masashi Kotobuki</i>	Invited: 51 Site-selective doping strategy for high-voltage spinel cathode for lithium-ion batteries <i>Wei Kong Pang</i>	Invited: 217 Visualization of Morphological Evolution of Electrode Materials in Post-Lithium-Ion Batteries <i>Seung-Ho Yu</i>	Invited: 183 Advances in electrochemical reduction of CO₂ in fuel cells <i>Mahasin Alam Sk, Hongwei Xi and Kok Hwa Lim</i>
10:10	Invited: 87 Composite Polymer Electrolyte for Room Temperature Operable All Solid State Battery <i>Hoang Long Nguyen and Wook Ahn</i>	Invited: 372 Developing Safe, Cost Effective and High Energy Density Solid State Battery <i>Abhik Banerjee</i>	Invited: 231 Active Chemical Species in the Sulfone Based Electrolyte for Rechargeable Aluminum Batteries <i>Masanobu Chiku, Takumi Miyake, Eiji Higuchi and Inoue Hiroshi</i>	Invited: 166 Modification of Pt nanoparticles with N-containing heterocyclic compounds enhances the ORR activity and durability of Pt catalysts <i>Shin-ichi Yamazaki, Masafumi Asahi and Tsutomu Ioroi</i>
10:30	152 Solution Synthesis Process of Solid Halide Electrolyte and Its Applications <i>Hao-Wen Liu, Shiki Thi, Chu-Chun Lin, Po-Ya Chang, Shu-Chih Haw, Hwo-Shuenn Sheu, Jin-Ming Chen, Chia-Chin Chen, Ru-Jong Jeng and Nae-Lih Wu</i>	98 Fiber glass incorporated zwitterionic composite hydrogel electrolyte enabling dual ion operating aqueous batteries <i>Orynbay Zhanadilov, Zhumabay Bakenov and Seung-Taek Myung</i>	94 Single-ion conducting soft electrolytes for semi-solid lithium metal batteries enabling cell fabrication and operation under ambient conditions <i>Kyeong-Seok Oh and Sang-Young Lee</i>	75: The novel design of carbon-neutralized direct methanol fuel cell using bi-functional (methanol oxidation/CO₂ reduction) electrodes <i>Yong Seok Kim, Jae Wook Lee and Chan-Hwa Chung</i>
10:45	Coffee Break			
	Session 3.5: Battery 18 Venue: Auditorium 1 Session Chairs: Kwan Woo Nam, Chen-Hao Wang	Session 3.6: Battery 19 Venue: SR3-4 Session Chairs: Chau Yuen, Vikram Singh	Session 3.7: Battery 20 Venue: SR12 Session Chairs: Tzu-Ho Wu, Jian Liang Cheong	Session 3.8: Battery 21 Venue: SR5 Session Chairs: Hong Jin Fan, Wanwan Wang
11:05	Invited: 265 Emerging Materials for Aqueous Rechargeable Zinc Batteries <i>Kwan Woo Nam</i>	Invited: 290 Transfer Learning for Health Prognosis for Lithium-ion batteries <i>Yan Qin and Chau Yuen</i>	Invited: 57 Electrochemical Activation of Spinel ZnV₂O₄ for Enhanced Energy Storage in Aqueous Zinc-Ion Batteries <i>Kung-Yi Ni, Bo-Tau Liu, Shih-Han Wang and Tzu-Ho Wu</i>	Invited: 376 Zn-Mn batteries: Materials and Mechanisms <i>Hong Jin Fan</i>
11:25	Invited: 283 Electrode modification by Electrocatalysts for Enhancing the Performance of Vanadium Redox Flow Battery <i>Chen-Hao Wang</i>	Invited: 287 Design of Naphthalene Diimide as Stable Negolyte in Neutral Aqueous Organic Redox Flow Batteries <i>Hye Ryung Byon, Vikram Singh and Seongmo Ahn</i>	Invited: 264 3D carbonaceous nanostructured transition metal nitride, carbonitride and carbide as polysulfide regulators for lithium-sulfur batteries <i>Jian Liang Cheong, Chen Hu, Wenwen Liu, Man Fai Ng, Michael B. Sullivan and Jackie Y. Ying</i>	Invited: 84 Fundamental understanding and materials design for metal-air batteries <i>Wanwan Wang</i>
11:45	17 Complementary Operando Electrochemical Quartz Crystal Microbalance and Ultraviolet-visible Spectroscopic Studies: Mechanistic Transition of Zinc-Manganese Batteries <i>Zi-Fan He, Tzu-Chien Wei and Chi-Chang Hu</i>	357 The full-cell optimization based on prelithiated Si-C as an anode and Ni-rich NMC as a cathode in the direction of commercialization <i>Manoj Gautam, Govind Kumar Mishra, K Bhawana, Mohammad Furquan and Sagar Mitra</i>	289 Novel Organic Molecule Enabling a Highly-stable and Reversible Sodium Metal anode for Room-temperature Sodium-Sulfur Batteries <i>Chhail Bihari Soni, Saheb Bera, Sungjemmenla Sungjemmenla, Vineeth S.K., Hemant Kumar and Vipin Kumar</i>	164 Boron-Based Composite Coating on Ni-rich Cathode Material for Long-Life and High-Safety Lithium Ion Batteries <i>Hsi Chen, Chao-Peng Chang, Yan-Cheng Chen, Jyh-Fu Lee, Rui-Kun Xie, Jin-Ming Chen, Shu-Chih Haw, Hwo-Shuenn Sheu, Po-Ya Chang, Chih-Wen Pao, Jeng-Lung Chen, Liang-Ching Hsu, Yu-Chung Chang and Nae-Lih Wu</i>

12:00	282 Modification of Electrode by Metal Organic Framework Derived Materials for Vanadium Redox Flow Battery Yun-Ting Ou, Daniel Manaye Kabtamu and Chen-Hao Wang	169 (In)Coherent-bond-network in Ni-rich layered oxide for durable lithium-ion batteries Sangho Yoon, Sojung Koo and Duho Kim	67 Covalently confined sulfur with carbonized bacterial cellulose as a high-performance cathode for next-generation potassium-sulfur batteries Vikram Kishore Bharti, Anil Daliprasad Pathak, Apurva Anjan, Chandra Shekhar Sharma and Mudrika Khandelwal	250 Understanding the Ion storage Behavior of Lithium-ion Capacitor assembled with Boron-doped Graphene Nanosheet Anode and Microporous Activated Carbon Cathode Udita Bhattacharjee, Subhajit Bhowmik, Sourav Ghosh, Naresh Vangapally and Surendra K. Martha
12:15	50 Quantitative analysis of CO ₂ in an alkaline electrolyte solution by differential electrochemical mass spectroscopy Atsunori Ikezawa, Juri Kida and Hajime Arai	356 Development of High Energy Density Lithium-Ion Battery with High Voltage Spinel Coated Layered Oxide Cathode Govind Kumar Mishra, Manoj Gautam, K Bhawana, Mohammad Furqan and Sagar Mitra	163 Thermodynamic factor for facilitating homogeneous dendrite growth in alkali metal batteries Gwanghyeon Choi, Youngoh Kim, Joonmyung Choi and Duho Kim	255 A Na ₂ Mn ₃ -xCo _{0.7} layered cathode with the improved electrochemical performance for sodium-ion battery Aishuak Konarow, Lunara Rakhymbay, Alibi Namazbay and Maksat Karlykan
12:30	Lunch (not provided)			
13:15	Poster Session 3			
	Session 3.9: Battery 22 Venue: Auditorium 1 Session Chairs: Hyacinthe Randriamahazaka, Stefan Adams	Session 3.10: Battery 23 Venue: SR3-4 Session Chairs: Pieremanuele Canepa, Edwin Khoo	Session 3.11: Battery 24 Venue: SR12 Session Chairs: Hui Ying Yang, Fan Hongjin	Session 3.12: Basic Electrochemistry 6 Venue: SR5 Session Chairs: Man Fai Ng, Albertus Denny Handoko
14:00	Invited - 320 Electrochemical Impedance Spectroscopy Investigation of Water Oxidation and Oxygen Reduction Reactions Hyacinthe Randriamahazaka	Invited: 260 Millisecond ion-transport in polyanion electrodes and electrolytes Pieremanuele Canepa	Invited: 278 New Strategies Towards High Performance and Stable Zinc Ion Batteries Hui Ying Yang	Invited: 21 Development of high-performance catalysts for electrochemical conversion of CO ₂ to formate Ying Fan Tay, Surani Bin Dolmanan and Yanwei Lum
14:20	385 Current Status of Spent EV Battery Recycling and Their Prospects Jeongsoo Sohn, Hongin Kim, Sookyung Kim and Donghyo Yang	213 Understanding anion redox activity in Li-rich Ti-based cathodes Dohyeong Kwon and Duho Kim	289 Novel Organic Molecule Enabling a Highly-stable and Reversible Sodium Metal anode for Room-temperature Sodium-Sulfur Batteries Chhail Bihari Soni, Saheb Bera, Sungjemmenla Sungjemmenla, Vineeth S.K., Hemant Kumar and Vipin Kumar	249 Built in Photo Curable Fluoroelastomer electrospun nanofibers for Composite Elastomer Electrolyte of Lithium ion Batteries Cheng-Chieh Lin
14:40	360 Electrometallurgical Recycling of Spent LIB Cathode Materials Mengqi Gao and Qing Wang	145 The effect of the crystallographic form of MnO ₂ on the kinetics of oxygen reduction reaction and oxygen evolution reaction Thiruvengatam Subramaniam and S. Devaraj	206 Beyond 3 V class all-solid-state Na batteries employing cost-effective halide solid electrolytes Jun Pyo Son, Juhyoun Park, Hiram Kwak, Jong Seok Kim, Yeji Choi, Mu Chang Lee and Yoon Seok Jung	330 Bismuth based catalysts for the electrochemical reduction of CO ₂ to formate Natalie McLeod and Albertus Denny Handoko
14:55	237 Vertically Aligned Conductive Metal-Organic Frameworks for Li Metal Anode by Using Its In-Situ Electrical Conductivity Change during Cycling In-Hwan Lee, Yongsheng Jin, Taejun Gu, Su-Ho Jung, Byung-Sung Kim and Dongmok Whang	322 Azo-integrated Covalent Organic Frameworks as Electrodes for Lithium-ion Batteries Vikram Singh, Jaewook Kim, Bora Kang, Sojung Kim, Joonhee Moon, Woo Youn Kim and Hye Ryung Byon	325 Nano-structuring of electrode materials for high-performance next-generation battery systems Changshin Jo	189 Maleimide Based Additive in using monolayer CEI formation on Ni-rich Cathode Material Laurien Merinda, Chusnul Khotimah, Rio Akbar Yuwono, Fu-Ming Wang and Nae-Lih Wu
15:10	149 Optimization of the Electrochemical Stability of Li ₇ P ₃ S ₁₁ Solid-State Inorganic Electrolyte for All-Solid-State Li-ion Batteries through a Combined Interface Strategy Rasu Muruganantham, Cheng-Yi Lin, Hsin-Wei Wu and Wei-Ren Liu	204 Fabrication of Sandwich Structure Si/SiO _x Anode for Lithium-Ion Battery Jinsol Im, Jinhyeok Ahn, Juyeon Im and Kuk Young Cho	171 Slurry-fabrication strategy to tailor PVdF-HFP binder with sulfide electrolytes for practical all-solid-state batteries Kyu Tae Kim, Tae Young Kwon, Yong Bae Song and Yoon Seok Jung	240 A Stable Core-shell Electrocatalyst Enabling Energy Efficient Nitric Oxide Reduction to Ammonia Sridhar Sethuram Markandaraj and Sangaraju Shanmugam
15:25	Coffee Break			
15:45	Award Ceremony and Closing (Utown Auditorium 1)			

Poster Session 3

Abstract #	Authors	Title
303	Neeraj Pal and Aninda Jiban Bhattacharyya	Probing an unusual phenomenon of phase transformation of sulfur in it's mixture with ultra-high surface area porous carbon
310	Tailei Xu, Chengchao Zhong, Shintaro Tachibana and Yuki Oriksa	La ₂ Sr _{1-x} Pb _x F ₄ S ₂ solid electrolyte for all-solid-state fluoride ion battery
316	Zhihao Chen, Chengchao Zhong and Yuki Oriksa	Electrochemical lithium insertion of Li ₂ FeSbO ₅ as new anode materials
317	Shu Tsuchida, Nur Chamidah, Chengchao Zhong and Yuki Oriksa	Photo-assist Electrochemical Lithiation Reaction of Germanium Electrode
318	Yu Shintomi, Tomoki Tsukamoto, Chengchao Zhong and Yuki Oriksa	Synthesis of Fluoride-ion Solid Electrolytes La _{1-x} Ba _x F _{3-x} by Coprecipitation Method
328	Hyeonseok Moon and Kyu Tae Lee	Investigation of the Reaction Mechanism of Mild-Acid Zn-MnO ₂ Batteries
332	Hsiang-Chih Chuang, Ruey-Chi Hsu and Wei-Fan Kuan	Enhancing Surface Coating on Lithium Iron Phosphate Cathode through Supercritical Fluid Process for Lithium-Ion Batteries
333	Kazuki Fujimura, Chengchao Zhong and Yuki Oriksa	Correlation between Electrode Composition and Charge/discharge Characteristics in All-Solid-State Lithium-Ion Batteries
347	Sora Kang, Hyun-seung Kim, KyungSu Kim, Kern-Ho Park, Ji-Sang Yu, Young-Jun Kim and Woosuk Cho	The beneficial effects of residual lithium compounds on NCM cathode active material surface for all-solid-state batteries
349	Seungmin Lee, Hyung-Seok Kim and Kwangsup Eom	Electrochemical evaluation and surface treatment of cathode to stabilize the degradation of high-energy-density batteries
351	Yonghwan Kim, Yuanzhe Piao and Jeongyeon Lee	Expired waste tylenol as organic anodes for lithium-ion batteries
362	Seong-Ju Sim, Bong-Soo Jin and Hyun-Soo Kim	Electrochemical performance of Sb-modified Ni-rich NCM cathode materials for Lithium-ion batteries
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