

MATERIALS SCIENCE AND ENGINEERING 2021

International Conference on

# Materials Science and Engineering

October 11-14, 2021

**Venue:** Pullman Brisbane King George Square / Zoom Meetings

Time Zone: Brisbane, QLD

#### **Zoom Meeting Links:**

#### Parallel Session 1

https://us02web.zoom.us/j/81520874849?pwd=VnVhMGVwZTJkMEpqeWdjS1V1bklydz09

#### Parallel Session 2

https://zoom.us/i/98063719445?pwd=ZE5iTkVGN3U4aGRuOTg5cnd0Z1RIOT09

#### **Parallel Session 3**

https://us06web.zoom.us/i/81676922205?pwd=O29hUUFielNNcmRhdUhzZERVOklsdz09

#### **Our Supporters**





























# **ALS Co., Ltd**

# **Electrochemistry & Spectroelectrochemistry**

# RRDE-3A Rotating Ring Disk Electrode Apparatus Ver. 3.0



#### Features:

- Operable as RDE and RRDE systems
- > Remote and manual controlled rotation and gas purge
- Compact design & Easy operation
- > Cell lead connects to all potentiostats
- Spin coating
- Maintenance mode operation included in the software

# **For Various Applications**

**ORR Measurement/Reactive Intermediates Detection** Corrosion Study/Electro Catalysis Development/etc.

#### Model 2325 Bi-Potentiostat for RRDE-3A



website for



Reference Electrodes



# Disk Electrode & Ring Disk Electrode





# **DRE Disk Replaceable Electrode**





ALS website for **Electrodes and Accessories** full line up







Manufactured by: ALS Co., Ltd

Exclusive distributor:

BAS Inc.

1-28-12, Mukojima, Sumida-ku, Tokyo 131-0033, Japan

URL: https://www.als-japan.com

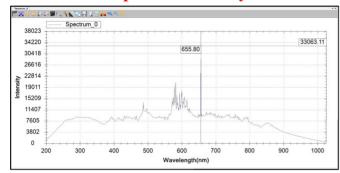




# AS ALS Co., Ltd

# **Electrochemistry & Spectroelectrochemistry**

# SEC2020 Spectrometer system



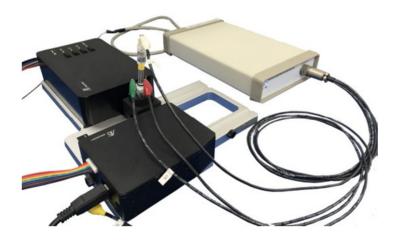
#### Features:

- ➤ Wide wavelength UV/VIS/NIR (200 1025 nm)
- > High sensitivity, resolutions and quality
- Deuterium Halogen light source
- Measuring platform and analysis software included
- > SMA 905 connection terminal
- Exclusive storage box



ALS website for

Synchronized spectroscopic and EC measurement with Model 2325



**Batch system** 



Flow system





Manufactured by: ALS Co., Ltd

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# **Day 1** October 11, 2021

# **Parallel Session 1**

Join Zoom Meeting

https://us02web.zoom.us/j/81520874849?pwd=VnVhMGVwZT-

JkMEpqeWdj\$1V1bklydz09 Meeting ID: 815 2087 4849

Time Zone Brisbane, QLD

14:30-15:00

Passcode: 910171

09:00-09:20	AV Check	
09:20-09:30	Opening Speech	

#### Plenary Lecture - Presented by the JST-ERATO Special Session

	Session Chair: Yusuke Yamauchi, The University of Queensland, Australia
09:30-10:00	Supermolecular and Biomimetic Materials Alan Rowan, The University of Queensland, Australia
10:00-10:30	Advanced Methods of in situ TEM for Nanomaterial Property Analysis  Dmitri Golberg, Queensland University of Technology, Australia
10:30-11:00	Surface Patterns During Solidification of Liquid Metal Alloys Kourosh Kalantar-Zadeh, University of New South Wales, Australia
11:00-11:30	Addressing the Stability Challenge of Perovskite Solar Cells Lianzhou Wang, The University of Queensland, Australia
11:30-12:30	Lunch Break

#### Session: Ceramics, Polymers and Composite Materials

	Session Chair: Nasim Amiralian, The University of Queensland, Australia
12:30-12:50	Invited Talk: Polymeric Templates for Structuring Porous Metal and Mixed Metal Oxides Markus Muellner, University of Sydney, Australia
12:50-13:10	Invited Talk: Wear Maps of Powder Injection Moulded 5 – 20 vol.% Silicon Carbide Particulate Reinforced Aluminium Composite Tapany Patcharawit, Suranaree University of Technology, Thailand
13:10-13:30	Invited Talk: An Investigation on The Adsorption Capacity and Flux of Cellulose Fibres- Mesoporous Silica Nanoparticle Composites As a Depth Filter in Two-Layer Membranes Simin Miri, Monash University, Australia
13:30-13:45	Oral Talk: Non-templated Fabrication of Pristine and Modified Poly (Vinylidene Difluoride) Patterned Membranes Through Direct Ink Writing Beenish Imtiaz, The University of Melbourne, Australia
13:45-14:00	Oral Talk: Upscaling and Sustainable Al-MOF Synthesis for Acetic Acid Capture Pamela Berilyn So, National Taiwan Normal University, Taiwan
14:00-14:15	Oral Talk: Properties and Microstructure of Epoxy-Based Polymers with Short Glass Fibres Peng Yu, University of Southern Queensland, Australia
14:15:14:30	Oral Talk: MOF-Based Membranes for Separation of Aqueous Mixtures Gloria Lizeth Diaz Arenas, Monash University, Australia

Coffee Break

Session: Ceramics, Polymers and Composite Materials	
	Session Chair: Nasim Amiralian, The University of Queensland, Australia
15:00-15:15	Oral Talk: Wavelength-Selective Softening of Hydrogel Networks Jessica Pelloth, Queensland University of Technology, Australia
15:15-15:30	Oral Talk: Highly Stretchable Strain Sensors Based on AgNWs/PVA Nanocomposite Hydrogels Shuying Wu, Macquarie University, Australia
15:30-15:45	Oral Talk: Characterisation of 3D Printed Re-entrant Chiral Auxetic (RCA) Geometries Tatheer Zahra, Queensland University of Technology, Australia
15:45-16:00	Oral Talk: The Influence of the Carrier Structure on the Polymeric EPD Modification of PLA-based Nonwovens Ewelina Pabjanczyk-Wlazlo, Lodz University of Technology, Poland
16:00-16:15	Oral Talk: Assay of the Clay Mineralogy and Non-Clay Mineralogy of a Selected Sri Lankan Brick Clay Variety Suresh Aluvihara, University of Peradeniya, Srilanka
16.15-17.00	Session: Poster Presentations

Session Chair: Md Shahriar A. Hossain, The University of Queensland, Australia

Sustainable Diglycidyl Ether Crosslinked Carboxymethyl Cellulose Hydrogels Craig W. Stocker, Monash University, Australia

Modulating Transparency and Colour of Cellulose Nanocrystal Composite Films by Varying Polymer Molecular Weight

Maoqi Lin, Monash University, Australia

Late Advances in Functional Derivatives of Modified Agarose Polymer and Potential Biomedical Applications

Arash Araghi, University of Sydney, Australia

Self-assembled Crystalline Ag Nanocube Monolayer for Dynamic Plasmonic Color Tuning Ayana Mizuno, Shizuoka University, Japan

Controlled Fabrication of Titanium Carbide (Ti3C2Tx) MXene decorated with Pallidum Nanoparticles for Electrochemical CO Oxidation

Belal Salah, University of the Witwatersrand, South Africa

Carbon nitride Nanosheets as Electrodes for Capacitive Seawater Desalination Ali Abdalla, Qatar University, Qatar

Fabrication of Conductive Nanopapers Based on Bacterial Cellulose and Poly(3,4-ethylenedioxythiophene) by Vapor Phase Polymerization
Goomin Kwon, Kyung Hee University, South Korea

Super-strong, Transparent, Flexible Bioplastic Film with Double-Crosslinked Cellulose Nanofibers

Kangyun Lee, Kyung Hee University, South Korea

Two-Dimensional Materials Based Photocatalysts for Light-Induced H<sub>2</sub> Production Jingrun Ran, The University of Adelaide, Australia

Silver Nanowire Micropatterned Regenerated Cellulose Substrates for Green Electronics and Bioelectronics

Guneui Park, Kyung Hee University, South Korea

Join Zoom Meeting

https://zoom.us/j/98063719445?pwd=ZE5iTkVGN3U4aGRuQT-

g5cnd0Z1RIQT09

Meeting ID: 980 6371 9445

Time Zone Brisbane, QLD Passcode: 074959

	Session: Structural Materials		
	Session Chair: Muxina Konarova, The University of Queensland, Australia		
12:30-12:50	Invited Talk: Wire Arc Additive Manufacturing of Ni-Cu Alloy Components Andrew Kostryzhev, The University of Queensland, Australia		
12:50-13:10	Invited Talk: Recent Advance in the Synthesis of Highly Porous Alumina Powders Using Amphiphilic Organic Molecules Tatsuo Kimura, AIST, Japan		
13:10-13:30	Invited Talk: Multi-Scale 3D Printing Process to Fabricate Nano-Ordered Layered Structures Ali (Rouhollah) Jalili, University of New South Wales, Australia		
13:30-13:50	Invited Talk: Rapid Structural Transformation and Click Reaction on Preparation of Superhy drophobic MOFs with Mesopore and High Surface Area Chia-Her Lin, National Taiwan Normal University, Taiwan		
13:50-14:05	Oral Talk: Behaviour of Timber-Alternative Composite Sleepers on Ballast Having Different Bending and Compression Modulus Choman Salih, University of Southern Queensland, Australia		
14:05-14:20	Oral Talk: The Origin of Non-uniform Plastic Deformation in a High Strength Al-Mn-Sc Based Alloy Produced by Laser Powder Bed Fusion Dina Bayoumy, Monash University, Australia		
14:20-14:35	Oral Talk: Buckling Optimisation of Hollow Box Pultruded FRP Profiles using Mixed Integer Constrained Genetic Algorithm Mohammad Alhawamdeh, University of Southern Queensland, Australia		
14:35-15:00	Coffee Break		
	Session: JST-ERATO Special Session		
	Session Chairs: Yoshiyuki Sugahara, Waseda University, Japan Takuya Nakanishi, Waseda University, Japan		
15:00-15:20	Invited Talk: Overview of the JST-ERATO Yamauchi Materials Space-Tectonics Project Yusuke Yamauchi, The University of Queensland, Australia		
15:20-15:40	Invited Talk: Hierarchical Structural Control of Mesostructured Films for Optical Applications Hirokatsu Miyata, Waseda University, Japan		
15:40-16:00	Invited Talk: Exploration of 2D Nanosheets and Their Heterostructures for Energy-related Applications Renzhi Ma, NIMS, Japan		
16:00-16:20	Invited Talk: Formation of Nanostructured Zinc Germanium Oxynitrides Yusuke Asakura, Waseda University, Japan		
16:20-16:40	Invited Talk: How Electron Distribution of Molecules Changes under The Influence of Layered Aluminosilicates and Improves Their Physicochemical Properties Miharu Eguchi, NIMS, Japan		
16:40-16:55	Oral Talk: Phenyl-Modified Carbon Nitride Quantum Nanoflakes for Ultra-Highly Selective Sensing of Formic Acid: A Combined Experimental by QCM and Density Functional Theory Nagy Torad, NIMS, Japan		

Join Zoom Meeting

https://us02web.zoom.us/j/81520874849?pwd=VnVhMGVwZT-

JkMEpqeWdjS1V1bklydz09 Meeting ID: 815 2087 4849

Time Zone Passcode: 910171

Brisbane, QLD

14:30-15:00

09:30-10:00	AV Check		
	Plenary Lecture - Presented by the JST-ERATO Special Session		
	Session Chair: Yusuke Yamauchi, The University of Queensland, Australia		
10:00-10:30	Semiconductor Nanostructures for Optoelectronics Applications Chennupati Jagadish, Australian National University, Australia		
10:30-11:00	Photodynamic Soft Matter Materials Enabled by Wavelength Selective Photochemistry Christopher Barner-Kowollik, Queensland University of Technology, Australia		
11:00-11:30	Improving Supercapacitors using Computational Insight Debra Bernhardt, The University of Queensland, Australia		
11:30-12:30	Lunch Break		
	Session: Electronics and Optical Materials		
	Session Chair: Carlos Salomon Gallo, The University of Queensland, Australia		
12:30-12:50	Invited Talk: Superlattice Frequencies of MgB <sub>2</sub> Superconductors Probed by THz Synchrotron Radiation Jose A. Alarco, Queensland University of Technology, Australia		
12:50-13:10	Invited Talk: Electric-field Control of Physical Properties in PMN-PT-Based Multiferroics Ming Zheng, China University of Mining and Technology, China		
13:10-13:30	Invited Talk: Enabling Diamond Nanoelectronics by Solid-State Surface Transfer Doping Dongchen Qi, Queensland University of Technology, Australia		
13:30-13:50	Invited Talk: Strain and Defect Engineering for the (110)-Oriented Si pMOSFETs Keisuke Arimoto, University of Yamanashi, Japan		
13:50-14:10	Invited Talk: Epoxy-Based Solder Pastes for Fine-Pitch Electrical Joining Gwang Mun Choi, ETRI, Republic of Korea		
14:10-14:30	Invited Talk: Broadband THz Anti-Reflection Moth-Eye Structures Formed by Femtosecond Laser Processing Junji Yumoto, The University of Tokyo, Japan		

Coffee Break

<sup>\*</sup> Prof. Gordon Wallace's presentation will be rescheduled and will be updated in the program soon.

## **Session: Electronics and Optical Materials**

	Session Chair: Eka Cahya Prima, Institut Teknologi Bandung, Indonesia
15:00-15:20	Invited Talk: Room-Temperature Chiral Light-Emitting Diode Based on Strained Monolayer of Transition Metal Dichalcogenides Taishi Takenobu, Nagoya University, Japan
15:20-15:40	Invited Talk: Topological-insulator-based Gap-surface-plasmon Metasurfaces Haoran Ren, Macquarie University, Australia
15:40-16:00	Invited Talk: Laser Induced Fabrication of Metal-Mesh Transparent Electrode Using Precursor Polyimide Atsushi Ono, Shizuoka University, Japan
16:00-16:20	Invited Talk: G-doping based Schottky Junction Avto Tavkhelidze, Ilia State University, Georgia
16:20-16:40	Invited Talk: Electron microscopic investigation of nanostructured WO3 Rajeev Kumar Rai, Indian Institute of Science, India

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g5cnd0Z1RlQT09

Meeting ID: 980 6371 9445

Time Zone Brisbane, QLD Passcode: 074959

	Session: Advanced Characterizations	
	Session Chair: Dmitri Golberg, Queensland University of Technology, Australia	
12:30-12:50	Invited Talk: STEM-XEDS Study of Atom Locations of Dopant Elements in Intermetallic Compounds Syo Matsumura, Kyushu University, Japan	
12:50-13:10	Invited Talk: Flexible Thermoelectric Generator Xing Wu, East China Normal University, China	
13:10-13:30	Invited talk: Recent Observation Techniques of Scanning Electron Microscope for Nano Particles Shunsuke Asahina, JEOL Ltd., Japan	
13:30-13:50	Invited Talk: Operando Electronic Structure Analysis of Energy Materials/Devices using Synchrotron Radiation Masaharu Oshima, The University of Tokyo, Japan	
13:50-14:05	Oral Talk: Microstructural Analysis and 3D Reconstruction of Lignin based Cellular Polymeric Foams Using X-ray Computed Micro-tomography Hima Haridevan, The University of Queensland, Australia	
14:05-14:25	Invited Talk: Convolutional Neural Network-Assisted Recognition of Nanoscale L12 Ordered Structures in Face-Centred Cubic Alloys Yue Li, Max-Planck Institut für Eisenforschung GmbH, Germany	
14:25-15:00	Coffee Break	
	Session: JST-ERATO Special Session	
	Session Chair: Hirokatsu Miyata, Waseda University, Japan	
15:00-15:20	Invited Talk: Nanocomposites of Boron Nitride Nanotubes/Nanosheets for Energy Applications Yoshio Bando, NIMS, Japan	
15:20-15:40	Invited Talk: Supramolecular Magic on Liquid: Mechanical Manipulation of Molecular Machines and Stem Cells Katsuhiko Ariga, NIMS, Japan	
15:40-16:00	Invited Talk: Modification of a Solid Surface using Self-assembled Monolayers for Biosensors and Chiral Sensors Takuya Nakanishi, Waseda University, Japan	
16:00-16:20	Invited Talk: Nano-engineered Magnesium Diboride Superconductors for Energy and Biomedical Applications Md Shahriar A. Hossain, The University of Queensland, Australia	
16:20-16:40	Invited Talk: Coupling Hybrid Plasmonic-photonic Resonances with Mechanical Vibrations in Long-Range Self-assembled Nanoparticle Arrays Joel Henzie, NIMS, Japan	
16:40-16:55	Oral Talk: Thermal Treatment of Phase-Separable Polymers as a Possible Route to Functional Porous Heterostructures Jan Labuta, NIMS, Japan	

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JkMEpqeWdj\$1V1bklydz09 Meeting ID: 815 2087 4849

Time Zone Brisbane, QLD

09:00-09:30	AV Check
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	Session: Energy and Environmental Materials	
	Session Chair: Shude Liu, NIMS, Japan	
09:30-09:50	Invited Talk: 2D Functional Materials for Lithium-Sulfur Batteries Bin Luo, The University of Queensland, Australia	
09:50-10:10	Invited Talk: Coordination Polymers for Detection and Decomposition of Organophosphates Yusuke Yamada, Osaka City University, Japan	
10:10-10:30	Invited Talk: Optimization of Structural Expansion and Contraction for TiS <sub>2</sub> By Controlling Electrochemical Window Of Intercalation/delithiation Yinsheng Xu, China University of Geosciences, China	
10:30-10:50	Invited Talk: Development of Flexible Solid Electrolytes Using Organic Ionic Plastic Crystals Masahiro Yoshizawa-Fujita, Sophia University, Japan	
10:50-11:10	Invited Talk: Rate Capabilities and Power Densities in Lithium-ion Capacitors and Dual- Carbon Batteries Alexey M. Glushenkov, The Australian National University, Australia	
11:10-11:30	Invited Talk: Development of Waterborne Heavy-duty Anticorrosive Coatings with Modified Nano-titania X.J. Wang, Shantou University, China	
11:30-12:30	Lunch Break	

#### Session: Energy and Environmental Materials

#### Session Chair: Shude Liu, NIMS, Japan

12:30-12:50	Invited Talk: Rational Design of Photocatalysts for Sustainable Technologies  Cameron J. Shearer, The University of Adelaide, Australia
12:50-13:10	Invited Talk: Interfacing Organic-Inorganic Heterojunctions for Efficient Polymer and Perovskite Solar Cells Chang-Zhi Li, Zhejiang University, China
13:10-13:30	Invited Talk: Explosion Welding of W/Cu and Mo/Cu Clads and Related Shock Wave Damages Kazuhiro Ito, Osaka University, Japan
13:30-13:50	Invited Talk: Porous Metallic Electrocatalysts Liang Wang, Zhejiang University of Technology, China
13:50-14:10	Invited Talk: Development of Plasmon-Enhanced Photovoltaic Cells and Photocatalysts Go Kawamura, Toyohashi University of Technology, Japan
14:10-14:30	Invited Talk: Synthesis of Ni-MOF Microflowers for Supercapacitor Application Fei-Bao Zhang, Hangzhou Normal University, China
14:30-15:00	Coffee Break

#### Session: Energy and Environmental Materials

	Session Chair: Fei-Bao Zhang, Hangzhou Normal University, China
15:00-15:20	Invited Talk: Behind Efficiencies: The Multi-pronged Approach to Improved Solar Photovoltaics Hieu Nguyen, The Australian National University, Australia
15:20-15:40	Invited Talk: Novel Process of Smelting Metal by Microwave Irradiation Satoshi Fujii, Toyohashi University of Technology, Japan
15:40-16:00	Invited Talk: Polybenzimidazole-based Membranes for use in Water Electrolysis and Flow Batteries Dirk Henkensmeier, Korea Institute of Science and Technology, Korea
16:00-16:20	Invited Talk: Synthesis of Zeolites by Combination of Mechanochemical and Hydrothermal Reaction Catalyzing Oxidative Coupling of Methane Atsushi Muramatsu, Tohoku University, Japan
16:20-16:40	Invited Talk: Hierarchically Zeolites Comprising Orthogonally Stacked MFI Nanosheets for Adsorption and Catalytic Applications Chia-Min Yang, National Tsing Hua University, Taiwan
16:40-17:00	Invited Talk: Microstructural Evaluation of Phase Instability in Large Bandgap Halide Perovskites Jae Sung Yun, University of New South Wales, Australia
17:00-17:20	Invited Talk: Cathodic Activation of Titania Fly Ash Cenospheres for Efficient Electrochemical Hydrogen Production: A Proposed Solution to Treat Fly-ash Waste Mohamed Abdulhamid Ismail Amin, Taif University, Saudi Arabia
17:20-17:40	Invited Talk: Materials Innovation for Future Energy Storage Nasir Mahmood, RMIT University, Australia

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g5cnd0Z1RIQT09

Meeting ID: 980 6371 9445

Passcode: 074959

Time Zone Brisbane, QLD

14:30-15:00

09:00-09:30 AV Check

	Session: Nanotechnology and Nanoscience
	Session Chair: Hiroki Nara, Waseda University, Japan
09:30-09:50	Invited Talk: Adventures and Discoveries in Two-dimensional Ferroelectrics Sokrates T. Pantelides, Vanderbilt University, USA
09:50-10:10	Invited Talk: Nanoarchitectured Devices for Early Disease Detection  Mostafa Kamal Masud, Shahjalal University of Science and Technology, Bangladesh
10:10-10:30	Invited Talk: Toward Designing High-Mechanical Performance Carbon Nanotube Structure by Machine Learning Assisted Molecular Dynamics Simulations Go Yamamoto, Tohoku University, Japan
10:30-10:50	Invited Talk: Synthesis of Stage-1 C60-Intercalated Graphene Films Xianjue Chen, University of Newcastle, Australia
10:50-11:10	Invited Talk: Nano-Mechanical Motions of Small Particles Achieved by Synergetic Use of Photochemical Reactions and Photon Pressure Syoji Ito, Osaka University, Japan
11:10-11:30	Invited Talk: Dirac Fermion Metagratings in Graphene Ruihuang Zhao, East China Normal University, China
11:30-12:30	Lunch Break

#### Session: Nanotechnology and Nanoscience

Session Chairs: Jeonghun Kim, Yonsei University, South Korea Tokihiko Yokoshima, Waseda University, Japan 12:30-12:50 Invited Talk: Rolling vs. Sliding of a Liquid Marble-based Microreactor Chin Hong Ooi, Griffith University, Australia 12:50-13:10 **Invited Talk: Self-assembled Nanostructure Surface** Hidehito Asaoka, Japan Atomic Energy Agency, Japan 13:10-13:30 Invited Talk: Advancing Electrochemical Engineering of Functional 2D Nanomaterials Yu Lin Zhong, Griffith University, Australia 13:30-13:50 Invited Talk: Protonic Transistor with Dual Functions of Switch and Memory Teruo Kanki, Osaka University, Japan 13:50-14:10 Invited Talk: Synthesis of Nanoarchitectured Plasmonic Metals for Surface-enhanced Raman **Spectroscopy Substrates** Jeonghun Kim, Yonsei University, South Korea 14:10-14:30 Invited Talk: Synthesis of Ordered Carbonaceous Frameworks from Metal Porphyrins Koki Chida, Tohoku University, Japan

Coffee Break

#### **Session: JST-ERATO Special Session**

#### Session Chair: Yusuke Asakura, Waseda University, Japan 15:00-15:20 Invited Talk: Electrochemical Impedance Spectroscopy for Catalytic Reaction in Porous Structure in Polymer Electrolyte Fuel Cells Hiroki Nara, Waseda University, Japan 15:20-15:40 Invited Talk: Development of Square-current Electrochemical Impedance Spectroscopy and its Application to Energy Storage Devices Tokihiko Yokoshima, Waseda University, Japan 15:40-16:00 **Invited Talk: Inorganic-Chromophore Nanohybrids** Jonathan Hill, NIMS, Japan 16:00-16:20 Invited Talk: Controlled Release of H2S and NO from Layered Double Hydroxides Shinsuke Ishihara, NIMS, Japan 16:20-16:40 Invited Talk: Designed Synthesis of Nanoporous Materials by a Data-Driven Approach Watchgrop Chaikittisilp, NIMS, Japan 16.40-16.55 Oral Talk: Universal Electrochemical Synthesis of Mesoporous Chalcogenide Semiconductors Thin Films for Optoelectronic Applications Tomota Nagaura, The University of Queensland, Australia

Join Zoom Meeting

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NcmRhdUhzZERVQklsdz09 Meeting ID: 816 7692 2205

Time Zone Passcode: 961171

Brisbane, QLD

09:00-09:30	AV Check
	Session: Nanotechnology and Nanoscience
Session Chair	Tomota Nagauta, JX Nippon Mining & Metals Corporation; The University of Queensland, Australia
09:30-09:50	Invited Talk: The Nonlinearity of Rare-earth Element Doped Nanoparticles for Biophotonics Applications Fan Wang, University of Technology Sydney, Australia
09:50-10:10	Invited Talk: Rational Synthesis and Stability Improvement of Zeolites Kenta Iyoki, The University of Tokyo, Japan
10:10-10:30	Invited Talk: Probing Phase Transition and Pattern Formation on Liquid Alloy Surfaces Jianbo Tang, University of New South Wales, Australia
10:30-10:50	Invited Talk: Synthesis of Nano-Phosphors using Novel Water-assisted Solid-state Reaction Method Kenji Toda, Niigata University, Japan
10:50-11:10	Invited Talk: Multi-Responsive Liquid Crystalline Supramolecular Materials Yoshimitsu Itoh, The University of Tokyo, Japan
11:10-11:30	Invited Talk: Topotactic Pillaring of Layered Metal Phosphonates and Phosphates to Zeolitic Frameworks Kazuyuki Maeda, Tokyo University of Agriculture and Technology, Japan
11:30-12:30	Lunch Break
	Session: Nanotechnology and Nanoscience
	Session Chair: Brian Yuliarto, Institut Teknologi Bandung, Indonesia
12:30-12:45	Oral Talk: Silica Nanoparticle-based Transparent Liquid Marble Microreactor for Non-de Structive and in Situ Reaction Monitoring Nhat-Khuong Nguyen, Griffith University, Australia
12:45-13:00	Oral Talk: Enhanced Effective Surface Tension Measurement Using Levitation-free Oscillating Liquid Marbles Pradip Singha, Griffith University, Australia
13:00-13:15	Oral Talk: High-Resolution and Scalable Printing of Highly Conductive PEDOT:PSS for Printable Electronics Alexander Corletto, The University of Queensland, Australia
13:15-13:30	Oral Talk: Self-Assembly of Nanospheres and Cellulose Nanorods in Hybrids Vikram Singh Raghuwanshi, Monash University, Australia
13:30-13:45	Oral Talk: A Simple Polymeric Nanoparticle Synthesis Approach for the Facile Surface Conjugation of Functional Molecules Laura Haidar, The University of Sydney, Australia
13:45-14:00	Oral Talk: Synthesis Large Porous of Mesoporous Au Nanoparticles

Asep Nugraha, The University of Queensland, Australia

14:00-14:15 Oral Talk: Self-Assembly of Two-dimensional Bimetallic Nickel-cobalt Phosphate Mono-dis persed Nanoplate into One-dimensional Porous Chain Like Architecture for Efficient Oxygen Evolution Reaction
Ni Luh Wulan Septiani, Institut Teknologi Bandung, Indonesia

	Ni Lun Wulan Sepilani, insiliul Teknologi Banaung, Indonesia
	Sponsored Session: ALS Co., Ltd / BAS Inc.
14:15-14:40	Sponsored Talk: Company Introduction ALS Co., Ltd / BAS Inc. Takeshi Inamori, BAS Inc., Japan
14:40-15:00	Coffee Break
	Session: Computational Materials
	Session Chair: Yunpeng Zhang, The University of Queensland, Australia Asep Nugraha, The University of Queensland, Australia
15:00-15:20	Invited Talk: Introduction of Artificial Intelligence Techniques in Sheet Forming Simulation Yunpeng Zhang, The University of Queensland, Australia
15:20-15:40	Invited Talk: Computational Investigation of Amorphous Materials via Machine Learning Potentials Yasunobu Ando, AIST, Japan
15:40-16:00	Invited Talk: Towards a Molecular Understanding of the Interfacial Li-ion Dynamics in Composite Solid-State Electrolytes: the Case of polyethylene oxide: Li7La3Zr2O12 Composites Mauricio Rincón Bonilla, Basque Center for Applied Mathematics, Spain
16:00-16:20	Invited Talk: Predicting the Gas Sensing Performance of 2D Materials Udo Schwingenschlögl, King Abdullah University of Science and Technology, Saudi Arabia
16:20-16:40	Invited Talk: Multiscale Simulation of Mixed Matrix Membranes Suresh K. Bhatia, The University of Queensland, Australia
16:40-17:00	Invited Talk: Overcoming Failing Size Convergence for Surface Calculations of Materials Exhibiting Spontaneous Polarization Su-Hyun Yoo, Max-Planck-Insitut für Eisenforschung GmbH, Germany

Invited Talk: Theoretical Understanding of The Mechanical Properties of 2D Materials

Yun Wang, Griffith University, Australia

17:00-17:20

Join Zoom Meeting

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Time Zone Passcode: 910171
Brisbane, QLD

09:00-09:30 AV Check

11:30-12:30

Lunch Break

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Session:	Energy	ana	Environment	aı	Materials

Session Chairs: Kenichi Shimizu, Hokkaido University, Japan Toru Wakihara, The University of Tokyo, Japan 09:30-09:50 Invited Talk: Alkali Metal Solid-State Batteries: Complex Interplay of Assembly/Stack Pressure and Interfacial Chemomechanical Issues Dipan Kundu, The University of New South Wales, Australia Invited Talk: Mechanism of NH3-SCR by Cu-CHA Studied by Operando IR/UV-vis/XANES 09:50-10:10 Kenichi Shimizu, Hokkaido University, Japan 10:10-10:30 Invited Talk: The Impact of K-ion Storage Performance by Materials, Binders and Electrolytes Jinliang Li, Jinan University, China 10:30-10:50 Invited Talk: Extremely Stable Zeolites Developed via Liquid-mediated Self-defect-healing Toru Wakihara, The University of Tokyo, Japan 10:50-11:10 Invited Talk: Energy Storage Applications of Microporous 3D Graphene-like Carbon Materials: Supercapacitor, Battery, and Their Hybrid System Hongjun Park, Institute for Basic Science, Republic of Korea 11:10-11:30 Invited Talk: Semiconductor Heterostructures for Photocatalysis Applications Yung-Jung Hsu, National Chigo Tung University, Taiwan

#### Session: Energy and Environmental Materials

Session Chairs: Minjun Kim, The University of Queensland, Australia Muhammad Faisal Iqbal, Shenzhen University, China

12:30-12:50 Invited Talk: Alloying Anode Materials: A Route to Enhance the Energy Density of Dual-ion Batteries
 Thrinathreddy Ramireddy, The Australian National University, Australia

 12:50-13:10 Invited Talk: Electrochemical Applications of Conductive Diamond Powder/Nanoparticles
 Takeshi Kondo, Tokyo University of Science, Japan

13:10-13:30 Invited Talk: Fabrication of Molecular Crystals Showing Solid-State Magnesium Ion Conductivity

Makoto Moriya, Shizuoka University, Japan

13:30-13:50 Invited Talk: Application of Metal-Organic Framework and Metal Oxide Composite on Catalytic Reaction and CO<sub>2</sub> Adsorption

Cheng-Yu Wang, National Yang Ming Chiao Tung University, Taiwan

13:50-14:05 Oral Talk: Photocatalytic Degradation of Organic Compounds in Water using a ZnO/CNF Catalytic Sun-flow System

Mostafa Dehghani, Monash University, Australia

14:05-14:25	Oral Talk: The Adsorption Properties of Na on Phosphorus-doped Graphene Nanoribbons Containing Oxygen Functional Groups as Anode Materials for Sodium-ion Batteries Nenni, Institut Teknologi Bandung, Indonesia
14:25-15:00	Coffee Break
15:00-15:15	Oral Talk: A Hybrid Plasma Electrocatalytic Process for Sustainable Ammonia Production Jing Sun, The University of New South Wales, Australia
15:15-15:30	Oral Talk: Electrochemical Behavior of Graphene oxide Based ZnS Nanowebs for Energy Storage Applications Muhammad Faisal Iqbal, Shenzhen University, China
15:30-15:45	Oral Talk: Tailored Nanoarchitecturing of Microporous ZIF-8 to Hierarchically Porous Double-Shell Carbons and Their Intrinsic Electrochemical Property Minjun Kim, The University of Queensland, Australia
	Session: Nano-magnetism, Magnetic and Superconducting Materials
	Session: Nano-magnetism, Magnetic and Superconducting Materials  Session Chair: Md Shahriar A. Hossain, The University of Queensland, Australia
15:45-16:05	
	Session Chair: Md Shahriar A. Hossain, The University of Queensland, Australia Invited Talk: Heteroepitaxial Growth of K-doped BaFe2As2 on BaFe2As2
15:45-16:05	Session Chair: Md Shahriar A. Hossain, The University of Queensland, Australia Invited Talk: Heteroepitaxial Growth of K-doped BaFe2As2 on BaFe2As2 Kazumasa lida, Nagoya University, Japan Invited Talk: High Spin Mixing Conductance and Spin Interface Transparency at the Interface of a Co2Fe0.4Mn0.6Si Heusler Alloy and Pt

# Day 4 October 14, 2021

# Parallel Session 2

Join Zoom Meeting

https://zoom.us/j/98063719445?pwd=ZE5iTkVGN3U4aGRuQT-

g5cnd0Z1RlQT09

Meeting ID: 980 6371 9445

Time Zone Passcode: 074959 Brisbane, QLD

09:00-09:30 AV Check

09:00-09:30	AV Check
	Session: Biomaterials, Bioengineering and Bio-related Applications
	Session Chairs: Tzu-En Lin, National Chiao Tung University, Taiwan Jiashing Yu, National Taiwan University, Taiwan
09:30-09:50	Invited Talk: Engineering Programmable Nanoscale Tools to Manipulate Cells Nicolas Voelcker, Monash University, Australia
09:50-10:10	Invited Talk: Functionalisation of Polyester-based Biomaterials: Strengths and Limitations Lisbeth Grondahl, The University of Queensland, Australia
10:10-10:30	Invited Talk: Guiding Cells with Conductive Polymer Based Bioelectronics Jiashing Yu, National Taiwan University, Taiwan
10:30-10:50	Invited Talk: Microbial Cell Factories for Assembly of Advanced Materials Bernd Rehm, Griffith University, Australia
10:50-11:10	Invited Talk: Electrochemical Detection and Cleaning of the Contaminated Contact Lens by Using Scanning Electrochemical Microscopy with Soft Microelectrode Tzu-En Lin, National Chiao Tung University, Taiwan
11:10-11:30	Invited Talk: Stimuli-Responsive Assemblies of Gold Nanoparticles and those Applications Kuniharu Ijiro, Hokkaido University, Japan
11:30-12:30	Lunch Break
	Session: Biomaterials, Bioengineering and Bio-related Applications
	Session Chairs: Olga Guselnikova, Tomsk Polytechnic University, Russian Federation Tzu-En Lin, National Chiao Tung University, Taiwan
12:30-12:50	Invited Talk: Detection of Pathologic Heart Murmurs Using a Piezoelectric Sensor Kiichi Takahashi, Akita University Graduate School of Medicine, Japan
12:50-13:10	Invited Talk: Mesoporous Au Films Coated by Agnps for Thiophenol Sers Sensing in Human Cells with Multiple On-demand Recycling Olga Guselnikova, Tomsk Polytechnic University, Russian Federation
13:10-13:30	Invited Talk: Ceramic Stereolithography Printing for Diverse Applications Mohammad Mirkhalaf, The University of Sydney, Australia
13:30-13:50	Invited Talk: Self-assembled triply periodic hyperbolic surface structures Lu Han, Tongji University, China
13:50-14:05	Oral Talk: Diethyl Sinapate-decorated Cellulose Nanocrystals as Biosourced UV-filters for Cosmetic Formulations David Joram Mendoza, Monash University, Australia
14:05-14:20	Oral Talk: Chemical Synthesis and Characterization of PHBV-b-PHBV Block Copolymers Jingjing Mai, The University of Queensland, Australia

14:20-14:35	Oral Talk: Hydrolytic Degradation of Porous Poly(hydroxybutyrate-co-hydroxyvalerate) Scaffolds Manufactured Using Selective Laser Sintering Rushabh Patel, The University of Queensland, Australia
14:35-15:00	Coffee Break
15:00-15:15	Oral Talk: Role of Surface Nanotopography on Cell Migration Panthihage Ruvini L Dabare, University of South Australia, Australia
15:15-15:30	Oral Talk: Nanocellulose Hydrogel for Measuring Glucose in Blood Laila Hossain, Monash University, Australia
15:30-15:45	Oral Talk: Graphene-based Airflow Sensor for Respiration Monitoring Sajad Abolpour Moshizi, Macquarie University, Australia
15:45-16:00	Short Break
	Plenary Lecture - Presented by the JST-ERATO Special Session
	Session Chairs: Yusuke Yamauchi, The University of Queensland, Australia
16:00-16:30	Plenary Talk: Graphene - A New Addition to Our Biomedical Materials Inventory Gordon Wallace, University of Wollongong, Australia
16:30-16:40	Closing Ceremony

Join Zoom Meeting

https://us06web.zoom.us/j/81676922205?pwd=Q29hUUFjelN-

NcmRhdUhzZERVQklsdz09 Meeting ID: 816 7692 2205

Time Zone Passcode: 961171

Brisbane, QLD

09:00-09:30 AV Check

09:00-09:30	AV Check		
Session: ITB-UQ Special Session			
Session Chair: Muhammad Iqbal, Institut Teknologi Bandung, Indonesia			
09:30-09:50	Invited Talk: Preparation on Highly Sensitive Biosensors Based on Metal Organic Frameworks Brian Yuliarto, Institut Teknologi Bandung, Indonesia		
09:50-10:10	Invited Talk: Self-Assembly of Metal Phosphate Nanotubes into One and Two-Dimensional Architectures for Electrocatalytic Applications Valentino Kaneti, The University of Queensland, Australia		
10:10-10:25	Oral Talk: Rapid Preparation of Black TiO <sub>2</sub> using Hydrogen Plasma Ilham Ladia, Institut Teknologi Bandung, Indonesia		
10:25-10:40	Oral Talk: Nanoporous Carbon Nitride with a High Content of Inbuilt N Site for CO <sub>2</sub> Adsorption  Md Abdul Wahab, The University of Queensland, Australia		
10:40-10:55	Oral Talk: Comparison of 2D/3D Metal-Organic Framework and Its Application in Electrochemical Detection of Uric Acid Syauqi Abdurrahman Abrori, Institut Teknologi Bandung, Indonesia		
10:55-11:10	Oral Talk: Plasma Induced Domain Engineering: An Approach to Enhance Crystallinity in Mesoporous Semiconductor Thin-films Aditya Ashok, The University of Queensland, Australia		
11:10-11:25	Oral Talk: Synthesis and Electrochemical Evaluation of Amorphous Nickel Phosphate for Pseudocapacitive Electrode Raissa, Institut Teknologi Bandung, Indonesia		
11:25-12:30	Lunch Break		
	Session: ITB-UQ Special Session		
	Session Chair: Jongbeom Na, The University of Queensland, Australia		
12:30-12:50	Invited Talk: Nanocellulose-Based Sustainable Products Nasim Amiralian, The University of Queensland, Australia		
12:50-13:10	Invited Talk: Convex vs Concave Metallic Nanostructures for Electrocatalytic Applications Muhammad Iqbal, Institut Teknologi Bandung, Indonesia		
13:10-13:25	Oral Talk: The Effect of Solvent on the Synthesis of Tungsten Trioxide Sensor for Carbon Monoxide Sensing Estananto, Institut Teknologi Bandung, Indonesia		
13:25-13:40	Oral Talk: A General Approach to Shaped MOF-Containing Aerogels toward Practical Water Treatment Application Ping Cheng, The University of Queensland, Australia		
13:40-13:55	Oral Talk: Synthesis of Bimetallic MOF Derived from Nickel-Cobalt Glycerate using Different Solvents Muhammad Zimamul Adli, Institut Teknologi Bandung, Indonesia		

13:55-14:10	Oral Talk: Modified HKUST-1 with Addition of Triethanolamine to Perform as Label-free Electrochemical Immunosensor in NS1 Antigen Dengue Virus Detection Kariana Kusuma Dewi, Institut Teknologi Bandung, Indonesia
14:10-14:25	Oral Talk: Citric Acid Modulator-Induced Fe-BDC Metal-Organic Framework for Electrochemical Biosensing Application Muhammad Taufik Ulhakim, Institut Teknologi Bandung, Indonesia
14:25-15:00	Coffee Break
	Session: ITB-UQ Special Session
	Session Chair: Valentino Kaneti, The University of Queensland, Australia
15:00-15:20	Invited Talk: Performance of Non-Vacuum Fabricated Cu2ZnSn9S, Se)/TiO <sub>2</sub> Solar Cell Utilizing Local Materials Eka Cahya Prima, Institut Teknologi Bandung, Indonesia
15:20-15:40	Invited Talk: Nanoarchitecture & Nanospace Engineering of Functional Materials for Emerging Applications Jongbeom Na, The University of Queensland, Australia
15:40-15:55	Oral Talk: Preliminary Studies of Iron Doped Zeolitic Imidazolate Framework-8 (ZIF-8) for Electrochemical Detection of Asparmine Nurul Hanifah, Institut Teknologi Bandung, Indonesia
15:55-16:10	Oral Talk: Atmospheric Pressure Synthesis and Morphological Study of Bicontinuous Concentric Lamellar Silica Nadiatus Silmi, Institut Teknologi Bandung, Indonesia
16:10-16:25	Oral Talk: Nanoarchitectured Superparamagnetic Iron Oxide-Doped Mesoporous Carbon Nanozymes for Biosensing Application S M Azad Hossain, The University of Queensland, Australia
16:25-16:40	Oral Talk: 3D Nanostructured γ-Al <sub>2</sub> O <sub>3</sub> Synthesis through the Self-Assembly of γ-AlOOH within Reverse Micelle Template Didi Prasetyo Benu, Institut Teknologi Bandung, Indonesia
16:40-16:55	Oral Talk: The Utilization of Methane Gas for the Synthesis of Reduced Graphene Oxide using Microwave Surfatron Plasma Reactor at Atmospheric Pressure Muhammad Fadhil Rizki Martha, Institut Teknologi Bandung, Indonesia
16:55-17:05	Closing Ceremony

#### **Our Media Partners**









# **Conference Secretariat**

Prism Scientific Services Pty Ltd Level 14, 380 St Kilda Road, Melbourne VIC 3004, Australia, Tel: +61 383 913 150

#### SPEAKER ZOOM GUIDELINES

#### How to Participate in a Zoom Meeting?

If you have trouble logging in to Zoom or any technical issues, please write to us at writeus@scientificprism.com or call us +61 0416 000 202 (Direct phone and WhatsApp).

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- · Follow the prompts to download and run Zoom application
- · Enter the meeting ID if prompted
- · Click to join the audio.
- \* When you are in the meeting, click on the Start Video button to start your video.

If you already have Zoom software installed: Open the Zoom platform, click 'join' and enter the meeting ID and password.

**Note:** We have separate meeting links for each parallel session. Ensure that you follow the meeting details from the program. If you are not able to do so or have any confusion, do reach out to us via zoom chatbox or email/text.

#### Mute/Unmute & Audio Settings

You can mute and unmute your microphone. The host also can mute you. We recommend using a headset and/or microphone as it will lead to better sound quality than using your computer audio. Turn off all sound notifications on your device.

Note: During the presentation we will unmute everyone except the speaker and the chairs.

#### Screen Share

You will be allowed to share your screen during your presentation. Your computer screen will become visible to all the participants once you start sharing your screen. Please close all other applications on your computer so that notifications do not appear during your presentation. Keep the PowerPoint slide open on your system before you click the 'Share Screen' button. You are recommended to share the specific PowerPoint slide and not your desktop.

#### **Presentation/Clothing**

Darker color shirts/blouses appear better on camera. Try to avoid busy plaid or patterned outfits.

#### Q&A - Chat function

The delegate participants will drop their questions in the chat panel and the moderator/chair of the program will pick the questions to be asked after the presentation.

#### **Presentation Timings**

Please note that all the timings mentioned in the program are per the Brisbane time zone. Do ensure that you check the time difference well in advance and join the meeting at least 30 minutes prior to your scheduled presentation time. If you need us to tell the specific time slot for your presentation (in local time zone), do let us know.

Below is the break down for each presentation type:

Plenary (Australian Laureate Fellowship Recipients): 25 mins talk + 5 mins Q&A

Invited Speaker: 17 mins talk + 3 mins Q&A
Oral Presentation: 12 mins talk + 3 mins Q&A
Poster Presentation: 4 minutes talk + 3 mins Q&A

#### **Poster Specification:**

Dimensions: Maximum of 48" wide x 36" tall landscape format

File format: .pdf file Size: Maximum of 10MB

Note: Posters should be submitted on or before 09 Oct. All the posters will be displayed on the website.

#### **Presentation Type**

We recommend you to deliver your presentation in Powerpoint slideshow mode. Ensure that all your animations and videos are working fine. We also suggest you to send us a copy of your presentation so we can share it on your behalf during the talk in case of any technical glitch.

**Note:** We would be deleting all the presentation slides after the meeting and they would not be shared with anyone without your approval.