



MATERIALS OCEANIA-2024
SEPTEMBER 23 - 26, 2024
Phuket, Thailand

5th International Conference on
**Materials Science
and Engineering**

September 23-26, 2024 | JW Marriott Phuket Resort & Spa, Phuket, Thailand

In Collaboration with



ERATO



INSTRUCTIONS FOR SPEAKERS

1. Invited talks: Authors will be allotted 17 minutes to present their results, followed by a 3 minutes discussion period.
2. Oral talks: Authors will be allotted 12 minutes to present their results, followed by a 3 minute discussion period.
3. Please do not exceed the allotted time slot
4. Speakers should have their presentations saved on a USB memory stick.
5. It is suggested to email a copy of the presentations to us as back up.
6. Please prepare the presentation in PPT files, PDF is not recommended.
7. Basic AV setup will be provided: laser pointer, cordless mike, desktop mike, sound system.
8. Laptops equipped with Windows 10, Office 2010 Pro English (Word, Powerpoint, Excel) and Adobe Reader are provided.
9. If your presentation files contain movies, please make sure that they are well formatted and connected to the main files. You may check your slides during the breaks.
10. Projectors are equipped with standard VGA connection ports. Mac users should bring their own adapter cord.
11. Please re-check this program prior to the conference to confirm if any changes have been made to your session.
12. Conference volunteers will move the mic during Q&A. Audience with questions may raise hand to receive the mic.

INSTRUCTIONS FOR POSTER PRESENTATION

1. Maximum poster size is A0
2. Push pins for attaching the poster to the board will be provided.
3. Poster presenters will be directed to the designated board at the start of the poster session.
4. Author must be present to provide details and answer questions during the selected poster session times.

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 y.yamauchi@materialsconferenceaustralia.com or call us +61 0416 000 202 (Direct phone and WhatsApp).

Join a Meeting

- Join a meeting by clicking on a Zoom link provided on the program
- 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.

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.

Q&A

The participants should use the "Raise Hand" function and the moderator will allow the participants to unmute themselves and ask questions.

Presentation Timings

Please note that all the timings mentioned in the program are as per the Thailand Time (GMT+7) 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.

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<https://zoom.us/j/97256286525?pwd=1lBgbEJjWUTnzlX3hYKXErcqhts72yd.1>

09:00-18:00 Registrations - Foyer

ERATO Special Session

Session Chair Tokihiko Yokoshima, JST-ERATO and Nagoya University, Japan

09:50-10:00 (PKT)

12:50-13:00 (QLD) **Opening Remark (ERATO Project Coordinator, Professor Tokihiko Yokoshima, JST-ERATO and Nagoya University, Japan)**

11:50-12:00 (JPN)

10:00-10:30 (PKT)

13:00-13:30 (QLD) **Challenges and Insight with Computational Heterogeneous Catalysis**

12:00-12:30 (JPN)

[Debra Bernhardt](#), The University of Queensland, Australia

10:30-11:00 (PKT)

13:30-14:00 (QLD) **Nonmetal Materials for Catalytic Reactions**

12:30-13:00 (JPN)

[Shaobin Wang](#), University of Adelaide, Australia

11:00-11:30 (PKT)

14:00-14:30 (QLD) **Nanoparticle Platforms for Therapeutic Applications**

13:00-13:30 (JPN)

[Frank Caruso](#), University of Melbourne, Australia

11:30-12:00 (PKT)

14:30-15:00 (QLD) **Atom Transfer Radical Coupling: Harnessing ATRP for Organic Synthesis**

13:30-14:00 (JPN)

[Michelle Coote](#), Flinders University, Australia

12:00-14:00 (PKT)

15:00-17:00 (QLD)

14:00-16:00 (JPN)

Lunch Break

ERATO Special Session

14:00-14:30 (PKT)

17:00-17:30 (QLD) **Single Molecule Nanotechnologies for Applications in Cancer and Immunotherapy**

16:00-16:30 (JPN)

[Matt Trau](#), The University of Queensland, Australia

14:30-15:00 (PKT)

17:30-18:00 (QLD) **Boron Nitride Nanotubes and Nanosheets: Synthesis, Properties and Applications**

16:30-17:00 (JPN)

[Dmitri Golberg](#), Queensland University of Technology, Australia

15:00-15:30 (PKT)

18:00-18:30 (QLD) **Materials Innovation for Green Hydrogen Production and High-performance Batteries**

17:00-17:30 (JPN)

[Guoxiu Wang](#), University of Technology Sydney, Australia

18:00 - 21:00

Welcome Reception - M Beach Club

Join Zoom Meeting

<https://zoom.us/j/97256286525?pwd=1lBgbepjWUTnzIX3hYKXEqrhts72yd.1>

08:50 - 09:20 Registrations

09:20 - 09:30 Opening Ceremony by Conference Chairs

ERATO Special Session

Session Chairs

Yusuke Yamauchi, The University of Queensland, Australia
Md. Shahriar A. Hossain, The University of Queensland, Australia09:30-09:55 (Invited) ERATO Overview: Toward the 2nd Generation of Porous Materials

Yusuke Yamauchi, The University of Queensland, Australia

09:55-10:20 (Invited) Flexible Mesopores in Nanoscrolls: Extraordinarily Large Alteration of Pore Size and their Reversibility (Online)

Yusuke Asakura, Nagoya University, Japan

10:20-11:00 Coffee Break

11:00-11:25 (Invited) Giant Piezoresponse in Nanoporous (Ba,Ca)(Ti,Zr)O₃ Thin Film

Md. Shahriar A. Hossain, The University of Queensland, Australia

11:25-11:50 (Invited) In-Situ Self-Assembled Nanomolecular Systems for Selective Sensing Applications

Jonathan P. Hill, National Institute for Materials Science, Japan

11:50-12:15 (Invited) Enabling more Deterministic SERS Sensing of Environmental Contaminants using Hierarchical Porous Metals (Online)

Joel Henzie, National Institute for Materials Science (NIMS), Japan

12:15-12:40 (Invited) Significant Impact of Interfacial Controls in Nanomaterials

Miharu Eguchi, Waseda University, Japan

12:40-13:30 Lunch Break

13:30-13:15 (Invited) Synthesis of Chiral Au Nanostructures on Mesoporous Au Substrates for Enhanced Chiral Sensing Applications (Online)

Kenta Nakagawa, Waseda University, Japan

Session: Ceramics, Polymers and Composite Materials

Session Chairs

Shiyang Tang, The University of New South Wales, Australia
Akiyasu Yamamoto, Tokyo University of Agriculture and Technology, Japan

13:55-14:15 (Invited) Liquid Metal-Polymer Composites: A Soft-Soft Combination with Exciting Properties

Shiyang Tang, The University of New South Wales, Australia

14:15-14:35 (Invited) Crack Healing for Robust Environmental Barrier Coating

Ayahisa Okawa, Tohoku University, Japan

14:35-14:55 (Invited) Development of Iron-based Superconducting Magnet Through Researcher- & Data-driven Process Design and Microstructural Deep Learning

Akiyasu Yamamoto, Tokyo University of Agriculture and Technology, Japan

14:55-15:30 Coffee Break

15:30-15:45 Robust Structures from Natural Plants

Binodhya Wijerathne, Queensland University of Technology, Australia

15:45-16:00 Enhanced Thermoelectricity in Mg₂Si incorporated with Carbon Microfiber and Bismuth (Online)

Md Rezoanur Rahman, University of Wollongong, Australia

Join Zoom Meeting

<https://us05web.zoom.us/j/89959978210?pwd=9YM9awoS7T0ZupgiY7M9IExXR7qNtq.1>

08:50 - 09:20 Registrations

09:20 - 09:30 Opening Ceremony by Conference Chairs

Session: Energy and Environmental Materials

Session Chairs Ziqi Sun, Queensland University of Technology, Australia
Jinwoo Lee, Korea Advanced Institute of Science and Technology, Republic of Korea

09:30-09:50 (Invited) Generating Green Hydrogen from 2D Materials

Ziqi Sun, Queensland University of Technology, Australia

09:50-10:10 (Invited) Next-Generation Sulfur Cathode: Electrocatalyst to Accelerate Sulfur Conversion Reaction

Jinwoo Lee, Korea Advanced Institute of Science and Technology, Republic of Korea

10:10-10:30 (Invited) Advanced Atomic Catalysts Design for Energy Systems

Bolong Huang, The Hong Kong Polytechnic University, Hong Kong

10:30-11:00 Coffee Break

11:00-11:20 (Invited) Semiconductor Catalyst-Based Composite Systems for Environmental Betterments: A Case of Photo-Hydrogenation of CO₂ to Methanol

Toyoko Imae, National Taiwan University of Science and Technology, Taiwan

11:20-11:40 (Invited) Scanning Probe Microscopy Imaging of Line Defect on Rutile TiO₂(110)-(1×2) (Online)

Daiki Katsube, RIKEN, Japan

11:40-12:00 (Invited) Promotion Effect of W⁶⁺ and Ga³⁺ Cations on the Photocatalytic Activity of Zn²⁺Al³⁺ Layered Double Hydroxides (HDLs) and ZnAl Mixed Oxides Obtained from their Zn²⁺Al³⁺ LDHs in the Photodegradation of Contaminants Diclofenac and 4-Chlorophenol in Aqueous Medium.

Arturo Barrera, University of Guadalajara, CUCIENEGA, México

12:00-12:20 (Invited) Heterogeneous Transition Metal-Based Electrocatalysts for Water Splitting and CO₂ Reduction

Jasmin Shamshoddin Shaikh, Chulalongkorn University, Thailand

12:20-12:35 Single-Atom Catalysts for Energy Storage and Conversion

Hao Tian, University of Technology Sydney, Australia

12:35-13:30 Lunch Break

Session Chairs Esmail Doust Khah Heragh, Istinye University, Turkey
Ravichandar Babarao, RMIT University, Australia

13:30-13:50 (Invited) Metal-Support Interaction in Catalysis

Esmail Doust Khah Heragh, Istinye University, Turkey

13:50-14:10 (Invited) Enhancement of Electrocatalytic Activity of Metal-Organic Frameworks for Water Splitting at Elevating Temperatures (Online)

Muhammad Faisal Iqbal, Emerson University Multan, Pakistan

14:10-14:30	(Invited) Accelerating Materials Discovery Through High Throughput Simulations and Machine Learning Approach for Energy and Environmental Applications Ravichandar Babarao, RMIT University, Australia
14:30-14:50	(Invited) High-Performance Semitransparent Organic Solar Cells and Modules Chang Zhi Li, Zhejiang University, China
14:50-15:05	Dynamically Engineering Nanostructured Electrodes for Advanced Electrochemical Devices Cheng Yang, Tsinghua University, China
15:05-15:30	Coffee Break
15:30-15:45	Towards Bio-Inspired Hydrophobic Modifiers for the Treatment of Clay Minerals Samadhi Fernando, Monash University, Australia
15:45-16:00	Multilayered Graphene Membrane for Flexible Ammonium-ion Storage Device Syam G. Krishnan, The University of Melbourne, Australia
16:00-17:00	Poster Presentations and Gathering
MO1	The Study on Corrosion Effect of Aluminum – Zinc Coated on Steel Surface by the Hot Dipped Atchaporn Bailee, King Mongkut's University of Technology Thonburi, Thailand
MO2	Unveiling the Design Logic of Artificial Polymer Layer on Cu Current Collector for Practical Anode Free Lithium Metal Batteries Ju Hyun Lee, Korea Advanced Institute of Science and Technology, Republic of Korea
MO3	Enhancing Selectivity of Peroxidase Mimicking Nanozyme via Ligands Regulation of Ruthenium Single Atom Seonhye Park, Korea Advanced Institute of Science and Technology, Republic of Korea
MO4	Achieving Durable Ammonia Oxidation by Stabilizing *NH Intermediates on Pt-Skins at Ordered Intermetallic Pt-Zn Cores Hakyung Min, Korea Advanced Institute of Science and Technology, Republic of Korea
MO5	Enhancing the Long-term Durability of Multiredox-reaction Electrodes in Sodium-ion Hybrid Capacitors Jung Tae Lee, Kyung Hee University, Republic of Korea
MO6	Fabrication of Transparent Conducting Film for Organic Photovoltaic Cells by Carbonization of Polyethylene Thin Film Dalsu Choi, Myongji University, Republic of Korea
MO7	CO₂-Derived Edge-Boron-Doped Hierarchical Porous Carbon Catalysts for Highly Effective Electrochemical H₂O₂ Production Jong Min Kim, Korea Institute of Science and Technology, Republic of Korea
MO8	A Study on Formability of Rear Floor Applied with Lightweight Vibration Damping Steel Plate Material Sungmoon Yang, Daegu University, Republic of Korea
MO9	Computational Modelling of the Electronic and Structural Properties of Doped Porous Germanium for Acetone Sensing Miguel Cruz-Irissou, Instituto Politecnico Nacional, Mexico
Closing of Day 2	

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Session: Biomaterials, Bioengineering and Bio-related Applications

Session Chairs

Roger Narayan, North Carolina State University, USA
Matthew J. Griffith, University of South Australia, Australia

- 09:30-09:50** (Invited) **Innovative Approaches for Processing Drug-Containing Coatings and Drug Delivery Devices**
Roger Narayan, North Carolina State University, USA
- 09:50-10:10** (Invited) **Semiconducting Polymer Nanoparticles: Soft Materials to Overcome Hard Challenges in Neuroengineering**
Matthew J. Griffith, University of South Australia, Australia
- 10:10-10:30** (Invited) **Fabrication and Characterization of Biaxially Expanded Polymeric Tubes for Coronary Stent Application**
Pooja Bhati, Indira Gandhi Delhi Technical University for Women, India
- 10:30-11:00** Coffee Break
- 11:00-11:20** **Mesoporous Gold-Based SERS Assay for Detecting Ovarian Cancer-Derived Extracellular Vesicles (Online)**
Javeria Bashir, University of Queensland, Australia
- 11:20-11:35** **Formulation and Characterization of a Novel Quercetin Conjugated MgO Nanoparticle for Cancellous Alveolar Bone Tissue Regeneration**
Samapti Padhiary, National Institute of Technology Rourkela, India
- 11:35-11:50** **Advanced 3D Bioprinting of Iron (III) Crosslinked Carboxymethyl Cellulose Bioinks for Enhanced Soft Tissue Regeneration**
Hien Phuong Le, The University of Adelaide, Australia

Session: Porous Materials

Session Chairs

Brian Yulianto, Institut Teknologi Bandung, Indonesia
Jongbeom Na, Korea Institute of Science and Technology, Republic of Korea

- 11:50-12:10** (Invited) **Water-based Synthesis of Metal-Organic Frameworks (MOFs) for Carbon Neutral Society**
Kevin C.-W. Wu, National Taiwan University, Taiwan
- 12:10-12:30** (Invited) **Development of Metal-Organic Frameworks as a Biosensor Matrix for Detecting Infectious Diseases Caused by Viruses**
Brian Yulianto, Institut Teknologi Bandung, Indonesia
- 12:30-13:30** Lunch Break
- 13:30-13:50** (Invited) **Molecular and Nanoarchitecturing Strategies of Functional Porous Materials for Catalytic Applications**
Jongbeom Na, Korea Institute of Science and Technology, Republic of Korea
- 13:50-14:10** (Invited) **Nanoarchitecturing of Metal-Organic Frameworks (Online)**
Fei Bao Zhang, Hangzhou Normal University, China

Session: Advanced Characterizations

Session Chairs Jack Evans, The University of Adelaide, Australia
Rami Haj Ali, Tel-Aviv University, Israel
Zhimei Sun, Beihang University, China

14:10-14:30 (Invited) Crystal Structure and Chemical Bonding Studies Using Convergent-Beam Electron Diffraction

[Bikas Aryal](#), Monash University, Australia

14:30-14:50 (Invited) The Computational PHFGMC Micromechanical Nonlinear Analysis for Aerospace Composites, Biomaterials, and Engineered Tissues

[Rami Haj Ali](#), Tel-Aviv University, Israel

14:50-15:10 (Invited) Predicting the Dynamic Properties of Materials

[Jack Evans](#), The University of Adelaide, Australia

15:10-15:30 Coffee Break

15:30-15:50 (Invited) Accelerating the Discovery and Design of Novel Materials by ALKEMIE

[Zhimei Sun](#), Beihang University, China

15:50-16:05 Mesoscale Modeling for Predicting Mechanical Properties of Hemp Fiber Composites Considering Yarn Variability

[Gittima Prathumthong](#), King Mongkut's University of Technology Thonburi, Thailand

16:05-16:25 (Invited) Liquid Metal Derived Functional Nanointerfaces (Online)

[Ali Zavabeti](#), University of Melbourne, Australia

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<https://us05web.zoom.us/j/89959978210?pwd=9YM9awoS7T0ZupgiY7M9IEExXR7qNtq.1>

Session: Electronics and Optical Materials

Session Chairs	Sudha Mokkalapati, Monash University, Australia Long Ren, Shanghai University, China Karu P. Esselle, University of Technology Sydney, Australia
09:30-09:50	(Invited) Intramolecular Triplet-Triplet Fusion in Benzimidazole-decorated Bisanthracene and Its Application for Blue Organic Light-emitting Diode Jiun Haw Lee, National Taiwan University, Taiwan
09:50-10:10	(Invited) Metasurfaces for Microwave Beam Steering Karu P. Esselle, University of Technology Sydney, Australia
10:10-10:30	(Invited) Preparation and Application of Liquid Metal-Based Heterocomposites Long Ren, Shanghai University, China
10:30-11:00	Coffee Break
11:00-11:20	(Invited) A Novel Quantum Computing Platform: Superconducting Bosonic Quantum System Jaw Shen Tsai, Tokyo University of Science, Japan
11:20-11:40	(Invited) Layered Semiconductors for Electronic Sensing and Optoelectronic Applications Sudha Mokkalapati, Monash University, Australia
11:40-11:55	Flexible Silicon Carbide (SiC) Electrodes for Implantable Devices Thanh An Truong, University of New South Wales, Australia

Session: Nanotechnology and Nanoscience

Session Chairs	Jun Fukushima, Tohoku University, Japan Md. Shahriar A. Hossain, The University of Queensland, Australia
11:55-12:15	(Invited) Nanotechnology-Driven Personalised Medicine: Nano-Sensing Systems for Early Disease Detection and Trace Biomarker Profiling Alain Wuethrich, University of Queensland, Australia
12:15-12:35	(Invited) Vertical Graphenes: Synthesis, Functionalization and Applications Mineo Hiramatsu, Meijo University, Japan
12:35-13:30	Lunch Break
13:30-13:50	(Invited) Design and Performance Study of Sb-based Anode Materials for Sodium-ion Batteries Jing Tang, East China Normal University, China
13:50-14:10	(Invited) Carbon Recycling by Microwave Ceramics Synthesis Jun Fukushima, Tohoku University, Japan
14:10-14:25	Revising Magnetic Features in a New 2D vdW Ferromagnet: Fe₃GaTe₂ Mengyun You, University of Wollongong, Australia

14:25-14:45	(Invited) Silica Confinement for Stable Co–Cu Alloy Nanoparticles in Nitrogen-Doped Carbon for Enhanced Hydrogen Evolution (Online) Chao Wan , Anhui University of Technology, China
14:45-15:00	Investigation of the Solid Electrolyte Interphase and Interfaces in FSI-based Ionic Liquids with Various Cations for Na-ion Batteries (Online) Mahin Maleki , Deakin University, Australia
15:00-15:30	Coffee Break
15:30-15:50	(Invited) Functional Nanocoatings in the Modern Age (Online) Md Julker Nine , The University of Adelaide, Australia
15:50-16:10	(Invited) Printed Gas/VOC Chemiresistive Sensors (Online) Kamrul Hassan , The University of Adelaide, Australia
16:10-16:30	(Invited) Adsorption Energies and Thermodynamics on Semiconductors Surfaces Based on Machine Learning (Online) Akira Kusaba , Kyushu University, Japan
17:00 Hrs Onwards	Cocktails Party

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Session: Materials Science and Engineering

Session Chairs Muhammad Iqbal, Institute of Technology Bandung, Indonesia
Minsu Han, University of Queensland, Australia

- 09:30-09:50** (Invited) **Waterborne Polymer Nanocomposites: Design and Application**
[Vipul Agarwal](#), The University of New South Wales, Australia
- 09:50-10:10** (Invited) **Nanostructured Bi₂Se₃ Film and Its Glucose Sensing Properties (Online)**
[Minsu Han](#), University of Queensland, Australia
- 10:10-10:30** (Invited) **Nickel MOF-74@N-Doped Carbon-Embedded Polymorph Nickel Selenide as A Potential Candidate for Electrode in Asymmetric Supercapacitors**
[Muhammad Iqbal](#), Institute of Technology Bandung, Indonesia

10:30-11:00 Coffee Break

ERATO Session (ERATO members only)

Session Chairs [Yunqing Kang](#), Nagoya University, Japan

- 11:00-11:20** **Mesoporous Amorphous Substrate for Atomic Dispersion of Pt-Group Atoms**
[Yunqing Kang](#), Nagoya University, Japan
- 11:20-11:40** **Entropy Stabilized Multi-Metallic Mesoporous Nanospheres**
[Ravi Nandan](#), National Institute for Materials Science, Japan
- 11:40-12:00** **Synthesis of Hybrid Carbon Catalysts Consisting of Metal Single-Atom Sites and Nanoparticles and Their Applications**
[Xiaoqian Wei](#), Nagoya University, Japan
- 12:00-12:20** **Nanoengineering Mesoporous Hierarchical Structures Based on Metal-Organic Frameworks**
[Yingji Zhao](#), Nagoya University, Japan
- 12:20-12:40** **Mesoporous Nanomaterials for Advancing Disease Diagnosis**
[Mostafa Kamal Masud](#), The University of Queensland, Australia
- 12:40-13:00** **Synthesis of Nanoporous Organic Polymers by Using Water-Soluble Perovskite Fluorides as Templates**
[Steven Adiwijaya](#), Nagoya University, Japan
- 13:00-13:20** **Synthesis of End-to-End Open Mesoporous Carbon Supports for Enhanced Mass Transfer in Electrochemical Applications**
[Minjun Kim](#), University of Queensland, Australia
- 13:20-13:40** **Functional Covalent Organic Frameworks for Electrochemical Applications**
[Dong Jiang](#), Nagoya University, Japan

Closing

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