

The 12th Tohoku - Melbourne Joint Workshop

東北大学多元物質科学研究所

金属資源プロセス研究センターシンポジウム



Organizer



Co-organizer



Date: November 4-6, 2025

Venue: IMRAM, Tohoku University
(2-1-1 Katahira, Aoba-ku, Sendai 980-8577 Japan)

SRIS, Tohoku University
(468-1 Aramaki Aza-Aoba, Aoba-ku, Sendai 980-8572 Japan)

Organized by the **Center for Mineral Processing and Metallurgy (CMPM)**,
Institute of Multidisciplinary Research for Advanced Materials (IMRAM),
Tohoku University & International Center for Synchrotron Radiation
Innovation Smart, Tohoku University

Date: Tuesday afternoon, November 4, 2025

Place: Entrepreneur Hall, SRIS Building ([M21](#)), Aobayama Campus
<https://www.tohoku.ac.jp/map/en/?f=AY>

Workshop Program:

Chair: Prof. Itaru Homma

2:00-2:30pm	Opening Address Prof. Hiroyuki Fukuyama Director of IMRAM, Tohoku University Introduction of School of Chemical and Biomedical Engineering Prof. Amanda Ellis Head of School of Chemical and Biomedical Engineering Introduction of ARC COE Prof. George Franks The University of Melbourne
2:30-2:50pm	Science policy and strategy for critical mineral supply chain risk management Prof. Itaru Homma IMRAM, Tohoku University
2:50-3:15pm	Improving recovery of fine and coarse mineral particles in froth flotation Prof. George Franks The University of Melbourne
3:15-3:40pm	Modelling particle breakage phenomena for analyzing the ball milling process Assist.Prof. Kizuku Kushimoto IMRAM, Tohoku University
3:40-3:50pm	Break
3:50-5:00pm	Tour of Nano Terasu, Group Photo
5:20pm (approx)	Shuttle Bus - Nanoterasu ⇨ Aobayama Station
6:30-8:30pm	Welcome Dinner KAIDO AOBA

Date: Wednesday, November 5, 2025

Place: Meeting room, Multidisciplinary research laboratory II ([E03](#)) , Katahira Campus

<https://www.tohoku.ac.jp/map/en/?f=KH>

Workshop Program:

Chair: Prof. Shigeru Ueda

9:00-9:25am	Nanoscale Mechanisms of Nanoparticle Crystallization Prof. Eirini Goudeli The University of Melbourne
9:25-9:50	Electrochemical mechanism of scorodite synthesis using solid iron oxides Assist.Prof. Ken Adachi IMRAM, Tohoku University
9:50-10:15	Metal Phenolic Network Nanolayer Coatings on Anode and Cathode Active materials for Lithium Ion Battery Performance Prof. Amanda Ellis The University of Melbourne
10:15-10:30	Break

Chair: Prof. Eirini Goudeli

10:30-10:55am	Separation of cohesive particulate suspensions under stagnant conditions in horizontal pipes Assoc. Prof. Anthony Stickland The University of Melbourne
10:55-11:20am	Direct Alloying of Manganese during Ladle Refining Process Exchange Student Kakara Sripushpa IMRAM, Tohoku University
11:20-11:55am	Advanced Separation Technologies Group Prof. Kathryn Mumford The University of Melbourne
12:00-1:20pm	Lunch & Poster Session, Group Photo

Chair: Prof. Akira KIRISHIMA

1:30-1:55pm	Equilibrium Sorption of Organic Ions in Ion Exchange Membranes Dr. George Chen The University of Melbourne
1:55-2:20pm	Current status of resources and production technologies for scandium Assoc.Prof. Osamu Takeda Graduate School of Engineering, Tohoku University
2:20-2:45pm	Mechanistic Insights into Oxygen Vacancy Preservation and Proton Transport in Triple Ionic and Electronic Conductors Research Fellow Desheng Feng The University of Melbourne
2:45-3:00pm	Break

Chair: Assoc.Prof. Osamu Takeda

3:00-3:25pm	Crystallization-Induced Photoluminescence Modulation in Phosphine-Protected AuCu₁₄ Clusters Assist. Prof. Megumi SUYAMA IMRAM, Tohoku University
3:25-3:50pm	Evaluating the effect of key parameters on cake solids concentration and throughput in High Pressure Dewatering Rolls Mark-II Research Fellow Sajid Hassan The University of Melbourne
3:50-4:15pm	Data-Driven Exploration of Critical Factors for Single-Phase High-Entropy Oxide Assist. Prof. Moriyuki Kanno IMRAM, Tohoku University
4:15-4:30pm	Break

Chair: Assoc. Prof. Anthony Stickland

4:30-4:55pm	Improved Suspension Dewaterability by Pelletizing Flocculation Research Fellow Yuxuan Luo The University of Melbourne
4:55-5:20pm	Functional Chelating Resins for Rapid and Selective Separation of Heavy Metals and Rare Earth Elements Assist.Prof. Yuki Yokota IMRAM, Tohoku University
5:20-5:45pm	Ammonia from Air: Electrochemical synthesis from water and nitrogen Prof. Colin Scholes The University of Melbourne
5:45-5:50pm	Closing Remarks Prof. Junya KANO IMRAM, Tohoku University

6:00pm 20min Walk to Banquet venue Ohana

6:30-8:30pm	Banquet <u>OHANA</u>
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Date: Thursday November 6, 2025

Place: IMRAM, Katahira Campus

Workshop Program:

Lab Tour (A Group) Guide Assist.Prof. Moriyuki KANNO

9:45am	IMRAM South Building 1 Entrance (F01) https://www.tohoku.ac.jp/map/en/?f=KH
10:00-10:30am	Ueda Lab IMRAM South Building 2(4F)
10:30-11:00am	Shibata (H) Lab IMRAM South Building 2 (2F-201)
11:00-11:30am	Shibata (E) Lab IMRAM South Building 1 (2F-202)

1. Prof. George Franks
2. Prof. Amanda Ellis
3. Prof. Eirin Goudeli
4. Assoc. Prof. Anthony Stickland
5. Prof. Colin Scholes
6. Dr. George Chen
7. Dr. Michelle de Silva
8. Prof. Kathryn Mumford
9. Desheng Feng, Research Fellow of Prof. Aaron Li

Lab Tour (B Group) Guide Assist.Prof. Ken ADACHI

9:45am	IMRAM South Building 1 Entrance (F01) https://www.tohoku.ac.jp/map/en/?f=KH
10:00-10:30am	Shibata (E) Lab IMRAM South Building 1 (2F-202)
10:30-11:00am	Ueda Lab IMRAM South Building 2(4F)
11:00-11:30am	Shibata (H) Lab IMRAM South Building 2 (2F-201)

10. Sajid Hassan, Research Fellow of Prof. Anthony Stickland
11. Yuxuan Luo, Research Fellow of Prof. Anthony Stickland
12. Luke Holt, PhD student of GVF(Prof. George Franks)
13. Danni Luo, PhD student of GVF(Prof. George Franks)
14. Tareq Al Shami, PhD student of Prof. Eirini Goudeli
15. Daniel Dodoo, PhD student of Assoc. Prof. Anthony Stickland
16. Minh Phuoc Ngo, PhD student of Prof. Colin Scholes
17. Susithra Sureshkumar, PhD student of Prof. Amanda Ellis
18. Bao K. Doan, PhD student of Prof. George Franks & Prof. Colin Scholes

Afternoon Excursion to Matsushima

12:00-1:30pm	Bus to Shiogama (Lunch served on the bus)
1:30pm-2:20pm	Boat ride from Shiogama to Matsushima
3:00pm-	Go for a walk in Matsushima, Group Photo
4:00pm-5:00pm	Bus back to the Kokusai Hotel and Katahira Campus

Poster List

M-1	Luke Holt , PhD student of Prof. Franks Coarse Composite Chalcopyrite-Quartz Particle Flotation using Novel Emulsions: Effect of Droplet Size
M-2	Danni Luo , PhD student of Prof. Franks Improving flotation of fine valuable lithium minerals through the formation of small hydrophobic aggregates
M-3	Tareq Al Shami , PhD student of Prof. Goudeli Validation of Bubble-Particle Attachment Model Using Three-Phase CFD (VOF)-DEM Simulation
M-4	Daniel Dodoo , PhD student of Asso. Prof. Strickland Quantifying the platy morphology of gangue minerals with X-ray diffraction: A talc case study
M-5	Minh Phuoc Ngo , PhD student of Prof. Scholes Eliminating Hydrogen Back-Diffusion in Electrochemical Hydrogen Transport
M-6	Susithra Sureshkumar , PhD student of Prof. Ellis Aminosilane-Grafted Cellulose Nanofiber Membranes: Effects on Ion Conductivity in Solid-State Lithium- and Sodium-Ion Batteries
M-7	Bao K. Doan , PhD student of Prof. Franks & Scholes Enhance Water/Dimethyl Ether Separation by Magnetic Nanocomposite Polyether Block Amide (PEBAX) 1657 Membrane

TU-1	Shoei Moriyama , Graduate Student of Prof. Akira Kirishima Research on Phase Relations of U-Zr-Fe-O System Oxides
TU-2	Iori Nishizawa , Graduate Student of Prof. Junya Kano Analysis of Crack Occurrence Mechanisms in Powder Compaction
TU-3	Kako Washizu , Graduate Student of Prof. Takahisa Omata New Na extraction route for Na-free Si clathrate using solid/liquid-state chlorine source

TU-4	Takuya Kojima , Graduate Student of Prof. Junya Kano Study on flattening and coagulation of metal particles during flattening process
TU-5	Huang Zheng , Graduate Student of Prof. Itaru Homma Oxygen-mediated structural modulation and ion transport in oxyhalide glassy electrolytes
TU-6	Norika Nakazawa , Graduate Student of Prof. Takahisa Omata Energy Barrier for Proton Transport in Ge Cross-Linked Phosphate Glasses
TU-7	Riku Tsuneda , Graduate Student of Prof. Shigeru Ueda Condensation Behavior of Vanadium in Specific Mineral Phase of Steelmaking Slag
TU-8	Keita Saito , Graduate Student of Prof. Shigeru Ueda Preparation of Manganese Carbide for Industrial Production of Medium Manganese Steel
TU-9	Shotaro Nikaido , Graduate Student of Prof. Etsuro Shibata Effect of the types of alkali metal oxide species on the thermal diffusivity of alkali silicate glasses
TU-10	Juson Kokubo , Graduate Student of Prof. Hiroyuki Shibata Effect of adding alumina on the viscosity of copper converter slag
TU-11	Taiki Yoshinari , Graduate Student of Prof. Etsuro Shibata The effect of Er-Er distance on the optical properties of $\text{SiO}_2\text{-Al}_2\text{O}_3\text{-Er}_2\text{O}_3$ glasses
TU-12	Sun Jinyang , Graduate Student of Prof. Hiroyuki Shibata Measurement of Thermophysical Properties of Electric Smelting Furnace Slag for Low C Ironmaking Process
TU-13	Hikaru Tanamkawa , Graduate Student of Prof. Junya Kano Development of a Temperature Estimation Method for Planetary Ball Mills Considering the Effects of Powder Filling
TU-14	Masahiro Ambiru , Graduate Student of Prof. Hiroshi Nogami Molten oxysulfide electrolysis for tramp elements removal from liquid iron
TU-15	Ikuma Nagakusa , Graduate Student of Prof. Hiroyuki Fukuyama Effect of Levitation Conditions on Thermophysical Property Measurements of High-temperature Melts using Aerodynamic Levitation Method