

11th East Asia
MECHANICAL AND AEROSPACE ENGINEERING WORKSHOP
(EAMAE 2025)

November 4 - 6, 2025
Hokkaido University, Sapporo, Japan



Workshop Organizer
Division of Mechanical and Aerospace Engineering,
Faculty of Engineering, Hokkaido University



11th East Asia MECHANICAL AND AEROSPACE ENGINEERING WORKSHOP

Date: November 4 - 6, 2025

Venue: Hokkaido University, Sapporo, Japan

Participating Universities:

Hokkaido University
Korea University
National Chen Kung University
The Hong Kong Polytechnic University

Organizer:

Division of Mechanical and Aerospace Engineering,
Faculty of Engineering, Hokkaido University

Local Organizing Committee:

Prof. Masahiro Todoh (Hokkaido University)
Prof. Yuichi Murai (Hokkaido University) *Division chair
Prof. Yuki Shimizu (Hokkaido University)
Prof. Toshiro Ohashi (Hokkaido University)
Prof. Yuji Tasaka (Hokkaido University)
Prof. Shinya Honda (Hokkaido University)

International Organizing Committee:

Prof. Chin-Hsiang Cheng (National Cheng Kung University)
Prof. Chang-Soo Han (Korea University)
Prof. Shau-Shiun Jan (National Cheng Kung University)
Prof. Yueh-Heng Li (National Cheng Kung University)
Prof. Zhongqing Su (The Hong Kong Polytechnic University)

Sponsor:

Faculty of Engineering, Hokkaido University
International Affairs Office of Engineering, Hokkaido University

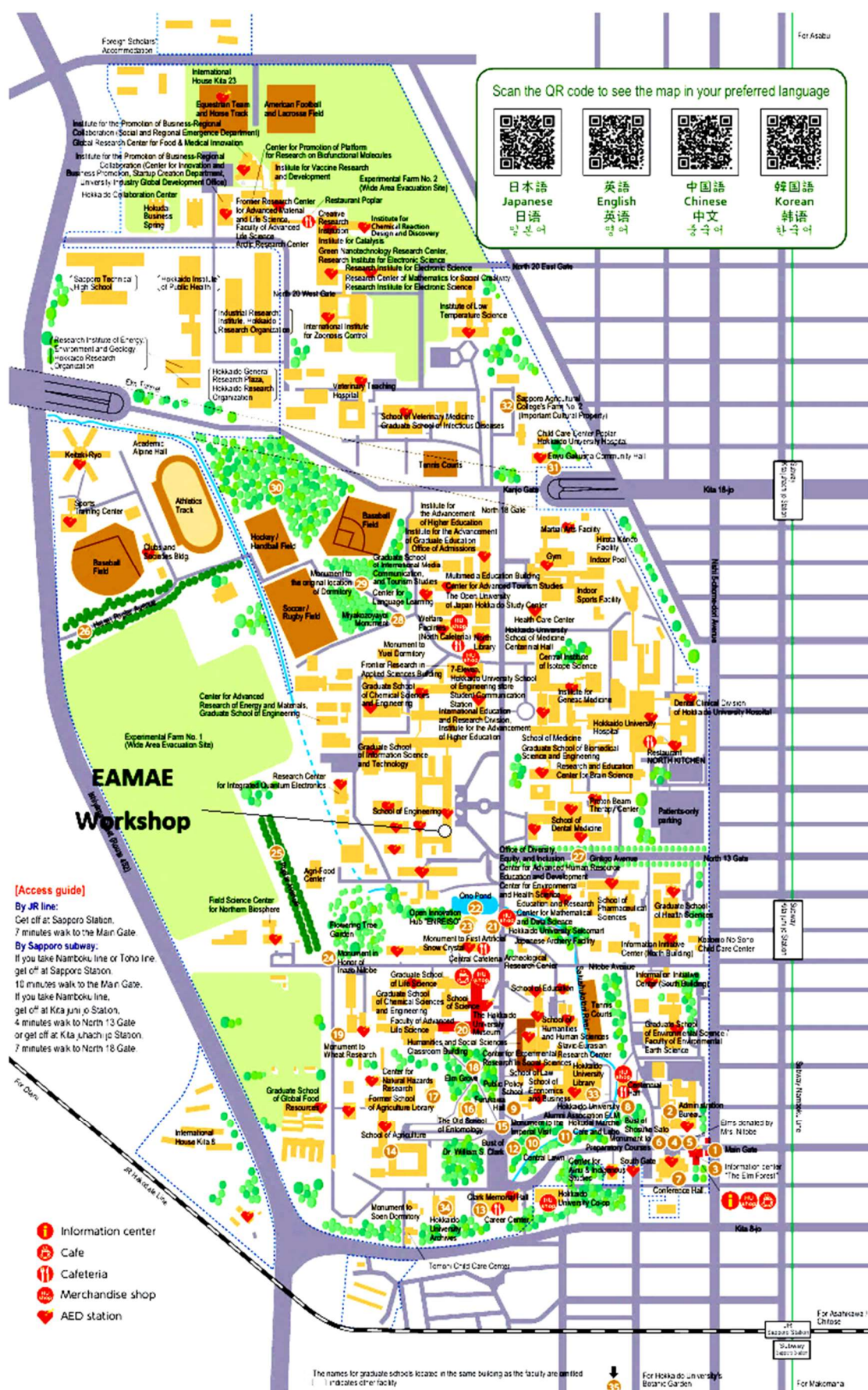
Website:

<https://mech-ise.eng.hokudai.ac.jp/conference/eamae2025.html>

Program Overview

Day	Time		Place			
	Start	End	Academic Lounge 1	Academic Lounge 2	Academic Lounge 3	
[Day 1] November 4 Tuesday	12:00	13:00	Registration			
	13:00	13:15	Opening			
	Chair		Yuichi Murai (HU)			
	13:15	14:00	Invited Lecture 1: Yusuke Takahashi (HU)			
	14:00	14:45	Invited Lecture 2: Seok Chung (KU)			
	14:45	15:00	Break			
	Chair		Toshiro Ohashi (HU)	Yuki Shimizu (HU)		
	15:00	15:15	Toshiro Ohashi	Gunwoo Noh		
	15:15	15:30	Xiao Zhang	Yu-Jui Liang		
	15:30	15:45	Chih-Che Chueh	Zong-Xuan He		
	15:45	16:00	Song Cheng	Keh-Chin Chang		
	16:00	16:15	Ting-Jui Chang	Baoping Zhang		
	16:15	16:30	Woei-Leong Chan	Yiyuan Zhang		
	16:30	16:45		Dongwook Shin		
	16:45	17:00	Group Photo			
	17:00	18:00	Moving to Dinner Place			
	18:00	20:30	Welcome Dinner (Hotel Mystays Sapporo Aspen)			
[Day 2] November 5 Wednesday	Chair		Shinya Honda (HU)	Yuji Tasaka (HU)		
	9:15	9:30	Shinya Honda	Tzong-Shyng Leu		
	9:30	9:45	Hui Tang	Joon Hyung Shim		
	9:45	10:00	Wonjoon Choi	Zhongqing Su		
	10:00	10:15	Huifen Du	Yuji Tasaka		
	10:15	10:30	Break			
	Chair		Masahiro Todoh (HU)			
	10:30	11:15	Invited Lecture 3: Chih-Yung Wu (NCKU)			
	11:15	12:00	Invited Lecture 4: Randolph Leung (PolyU)			
	12:00	13:00	Lunch Box			
	Chair		Joon Hyung Shim (KU)	Hui Tang (PolyU)	Yu-Jui Liang (NCKU)	
	13:00	13:06	Yuying Xie	Shion Omura	Chuang Zhang	
	13:06	13:12	Yongheng Xing	Yao Zhu	Wei Wang	
	13:12	13:18	Yu-An Tsai	Hoyoung Jang	Xiaoyu Huo	
	13:18	13:24	Yu-Shng Lin	Yuran Bai	Ting-Ju Shen	
	13:24	13:30	Jingjie Dong	Sun Beom Kim	Gu Gong	
	13:30	13:36	Sanjaya Rai	Jie Wu	Yuta Akao	
	13:36	13:42	Kyung Ha Kim	Xin Wei	Zhiheng Qiu	
	13:42	14:00	Break			
	Chair		Gunwoo Noh (KU)	Xiao Zhang (PolyU)	Ting-Jui Chang (NCKU)	
	14:00	14:06	Yiwen Su	Xin Wang	Po-Hung Lin	
	14:06	14:12	Yi-Chen Tseng	Jiming Tang	Cheng-Han Lin	
	14:12	14:18	Takaya Yoriki	Tianyu Wang	Ang Li	
	14:18	14:24	Xia Qing	Ukyo Takata	Shu-Wei Tsai	
	14:24	14:30	Ciao-Jhong Shi	Li-Jie Cheng	Junyan Shen	
	14:30	14:36	Xinrui Ren	Zheng Qu	Daigo Nishizuka	
	14:36	14:42	Huai-An Wang	Hoyoung Kim	Shuchang Zhang	
	14:42	15:00	Break			
	Chair		Wonjoon Choi (KU)	Song Cheng (PolyU)	Yiyuan Zhang (PolyU)	
	15:00	15:06	Xinzhong Wang	Sihui Li	Byengkyyu Kang	
	15:06	15:12	Shin Hamamura	Shuangmei Wu	Jiayi Li	
	15:12	15:18	Pin-Yun Li	Yu-Yeong Kim	Szu-I Yeh	
	15:18	15:24	Yi-Ting Sung	Wenzhe Li	Ruoyue Tang	
	15:24	15:30	Seong Bin Han	Ya-Xun Yang	Weisong Li	
	15:30	15:36	Dien Hu	Tongzhen Zhang	Chun-Fu Huang	
	15:36	15:42	Chien Kai An	Chun-Lin Chia	Yu-Da Chen	
	15:42	16:00	Break			
	Chair		Masahiro Todoh (HU)	Yuichi Murai (HU)		
	16:00	16:15	Masahiro Todoh	Chien-Cheng Chang		
	16:15	16:30	Chieh-Li Chen	Sungsoo Na		
	16:30	16:45	Jiun-Jih Miao	Liqu Wang		
	16:45	17:00	Bang-Shiuh Chen	Yuichi Murai		
	17:00	18:00	Moving to Banquet Place			
	18:00	20:30	Banquet (Sapporo Beer Gardena)			
[Day 3] November 6 Thursday	9:00	9:15	Get together at Entrance Lobby			
	9:15	10:00	Bus departure To Ishikari Off-Shore Wind Farm			
	10:10	10:45	Bus to Otaru City Center			
	10:45	12:00	Strolling arround Otaru City Center			
	12:00	12:30	Bus to Otaru Old Aoyama Villia			
	12:30	14:00	Lunch at Otaru Old Aoyama Villa			
	14:00	15:00	Bus back to Hokkaido University			
	15:00	15:15	Closing			
	15:30	17:00	Laboratory tour (for pre-invited persons only)			

Campus Map



Day 1: November 4, Tuesday

Invited Lecture 1 Chair: Yuichi Murai (HU) 13:15-14:00

- Aerodynamics of flexible aeroshells for atmospheric entry
Yusuke Takahashi (HU)

Invited Lecture 2 Chair: Yuichi Murai (HU) 14:00-14:45

- Emergent multi-cellular engineered micro physiological systems
Seok Chung (KU)

Technical Session D1-AL1 Chair: Toshiro Ohashi (HU) 15:00-16:45

- Development of platform for application of vibration stimuli to cells using magnetic tweezer system
Toshiro Ohashi (HU)
- Air to fuel: electrochemical strategies for sustainable chemical production
Xiao Zhang (PolyU)
- Thermal-hydraulic performance of printed circuit heat exchangers with supercritical methane and multistage Tesla valves incorporating flow baffles
Chih-Che Chueh (NCKU)
- Reconstructing real-fluid thermophysical properties and redefining high-pressure combustion Modeling
Song Cheng (PolyU)
- Regret analysis of distributed online control for LTI systems with adversarial disturbances
Ting-Jui Chang (NCKU)
- Towards the identification of stability derivatives in flapping-wing micro air vehicles
Woei-Leong Chan (NCKU)

Technical Session D1-AL2 Chair: Yuki Shimizu (HU) 15:00-16:45

- Learned Gaussian quadrature for a continuum mechanics based beam finite element
Gunwoo Noh (KU)
- Designing metamaterial structures with mid- to low- frequency resonant bandgaps using Bayesian optimization
Yu-Jui Liang (NCKU)
- Influence of front wall geometry on shear layer and recirculation in supersonic cavities
Zong-Xuan He (NCKU)
- On non-smooth conditions at the sharp edges of bluff body in use of spectral discretization method for flow simulation
Keh-Chin Chang (NCKU)

- Nature-inspired cyclic swing motion for water and energy harvesting
Baoping Zhang (PolyU)
- Taming fluids: 3D precision manipulation enabled by smart bamboo baskets
Yiyuan Zhang (PolyU)
- Fabrication, calibration and utilization of micropattern structures for precision metrology
Dongwook Shin (HU)

Group Photo

16:45-17:00

Welcome Dinner (Hotel Mystays Sapporo Aspen)

18:00-20:30



Day 2: November 5, Wednesday

Technical Session D2-AL1(1) Chair: Shinya Honda (HU)

9:15-10:15

- Design of variable stiffness composites fabricated by tailored fiber placement machine and electrodeposition resin molding method
Shinya Honda (HU)
- Propulsion of a force-driven self-propelling flapping foil
Hui Tang (PolyU)
- Multiscale architected structures with tailored thermal, mechanical, and electromagnetic functions via additive manufacturing
Wonjoon Choi (KU)
- Sensitive biomolecule detection for environment and biosafety: viral RNA enrichment and Chiral metasurface approaches
Huifen Du (PolyU)

Technical Session D2-AL2(1) Chair: Yuji Tasaka (HU)**9:15-10:15**

- A novel approach for fast conceptual aerodynamic design tool
Tzong-Shyng Leu (NCKU)
- Fuel cells for future mobility and transportation
Joon Hyung Shim (KU)
- Augmenting ultrasound for continuous glucose monitoring via a wearable acoustically readable microneedle patch
Zhongqing Su (PolyU)
- What does flow Birefringence Show us?
Yuji Tasaka (HU)

Invited Lecture 3**Chair: Masahiro Todoh (HU)****10:30-11:15**

- Ashes of failure, seeds of innovations: stories of using carbon soot as a valuable material for aerospace applications
Chih-Yung Wu (NCKU)

Invited Lecture 4**Chair: Masahiro Todoh (HU)****11:15-12:00**

- Exploitation of flow-induced surface vibration for suppression of cavity noise
Randolph Leung (PolyU)

Lunch Break**12:00-13:00**

Lunch box served in the lecture room

Note: Confirmation of excursion and optional laboratory tour on Day 3

Short Presentation D2-AL1(2) Chair: Joon Hyung Shim (KU)**13:00-13:42**

- Real-time estimation of cloud optical properties from satellite imagery based on radiative transfer modelling and deep learning
Yuying Xie (PolyU)
- Advanced in UAVs with generalized parallel mechanisms: improved performance and applications
Yongheng Xing (PolyU)
- Research on spinel Cobalt Zinc Ferrite for promoting the thermal decomposition of ammonium perchlorate
Yu-An Tsai (NCKU)
- Development of a micro-integrated solenoid valve and nozzle for compact CubeSat cold gas propulsion systems
Yu-Shng Lin (NCKU)
- Machine learning enabled fast determination of vibroacoustic response using patch-based approach
Jingjie Dong (PolyU)

- A comparative study of beamforming algorithms for direction-of-arrival estimation of environmental noise sources
Sanjaya Rai (PolyU)
- Characterization of delamination wear under combined impact-sliding motion
Kyung Ha Kim (KU)

Short Presentation D2-AL2(2) **Chair: Hui Tang (PolyU)** **13:00-13:42**

- Clarifying flow field mechanism for improving power output and water drainage performance in non-humidified high temperature PEFC
Shion Omura (HU)
- Green hydrogen production via methanol electrolysis
Yao Zhu (PolyU)
- Microwave-driven thermal reconstruction of Trimetallic oxide nanoneedles on carbon frameworks for enhanced bifunctional oxygen catalysis in Zinc-Air batteries
Hoyoung Jang (KU)
- A novel Graphite felt electrode for flow batteries
Yuran Bai (PolyU)
- Protective coating strategies using atomic layer deposition for durable Ammonia-fueled solid oxide fuel cells
Sun Beom Kim (KU)
- Ultrathin hexagonal CO nanosheets decorated with Pt single atoms for high-performance Alkaline hydrogen fuel cells
Jie Wu (PolyU)
- The effects of wind on solar-driven contactless interfacial evaporation
Xin Wei (PolyU)

Short Presentation D2-AL3(2) **Chair: Yu-Jui Liang (NCKU)** **13:00-13:42**

- Multi-field coupling characteristics and performance optimization of catalytic combustion heating methanol reforming hydrogen production reactor
Chuang Zhang (PolyU)
- AI-accelerate numerical solver: time-marching deepONet-FE coupling
Wei Wang (PolyU)
- Development of a Vanadium-Chromium Redox flow battery for future large-scale energy storage
Xiaoyu Huo (PolyU)
- Incremental nonlinear dynamic Inversion-based fault-tolerant control for a small fixed-wing UAV using control effectiveness matrix reconfiguration
Ting-Ju Shen (NCKU)

- Polar Events: enabling static event cameras scene reconstruction through polarizers-enhanced structure
Gu Gong (PolyU)
- Effect of in-vitro Glycation duration on compressive properties of Dentin
Yuta Akao (HU)
- Passive floating photovoltaic system with enhanced contactless evaporation and condensation
Zhiheng Qiu (PolyU)

Short Presentation D2-AL1(3) **Chair: Gunwoo Noh (KU)** **14:00-14:42**

- Misfit-Strain-Guided phase separation for programmable patterned catalysts with spatiotemporal adaptability
Yiwen Su (PolyU)
- Angular velocity-driven smearing image restoration algorithm for star trackers
Yi-Chen Tseng (NCKU)
- Microfluidics generation of magnetic-bead droplets for controlling intercellular forces
Takaya Yoriki (HU)
- Making Nitrate form air using a radical based electrochemical strategy
Xia Qing (PolyU)
- Thermoelastic analysis for anisotropic Magneto-Electro-Elastic plates with elliptical elastic inclusions
Ciao-Jhong Shi (NCKU)
- Streamlined assessment and optimization of sustainable aviation fuels via few-shot learning and tailored genetic algorithm
Xinrui Ren (PolyU)
- Development of a three-Stage B-type cryogenic Stirling cooler
Huai-An Wang (NCKU)

Short Presentation D2-AL2(3) **Chair: Xiao Zhang (PolyU)** **14:00-14:42**

- Multi-objective optimization for continuous fiber orientation composite laminate
Xin Wang (HU)
- Schatz-based omnidirectional mobile mechanism with Oloid-like paddlewheels
Jiming Tang (PolyU)
- Cross flow-assisted bubble removal boosts performance of tri-electrode Zinc-Air flow batteries
Tianyu Wang (PolyU)
- Straightness measurement with laser beam and deep learning
Ukyo Takata (HU)
- Low-cogging slot-spaced linear alternator
Li-Jie Cheng (NCKU)

- Design of Fe-based high-entropy alloys for high-temperature applications
Zheng Qu (PolyU)
- EEG-based assessment of motion sickness in real-driving environment
Hoyoung Kim (KU)

Short Presentation D2-AL3(3) Chair: Ting-Jui Chang (NCKU) 14:00-14:42

- Soot formation mechanisms in Ethylene/N₂O inverse diffusion flames: insights from dual-wavelength LII and SEM analysis
Po-Hung Lin (NCKU)
- Image analysis of a Platinum-stainless-steel segmented microreactor
Cheng-Han Lin (NCKU)
- Kinesin-mimetic ion director enables highly oriented Zn deposition in aqueous batteries
Ang Li (PolyU)
- Development of latching and solenoid valves for compact liquid propulsion applications
Shu-Wei Tsai (NCKU)
- An integrated experimental and computational platform for assessing microclimate of sports footwear
Junyan Shen (PolyU)
- An idea of a facile rheometry for evaluating shear-thinning viscosity of fluid foods
Daigo Nishizuka (HU)
- Ultrafast optoacoustic characterization of ultrathin nanocrystalline membranes
Shuchang Zhang (PolyU)

Short Presentation D2-AL1(4) Chair: Wonjoon Choi (KU) 15:00-15:42

- Reaction and reactor designs for sustainable electrochemical CO₂ capture in aerospace systems
Xinzhong Wang (PolyU)
- Drag characteristics evaluation of various parachute shapes
Shinnosuke Hamamura (HU)
- Research progress and future challenges of Nitro starch-enhanced gel propellants
Pin-Yun Li (NCKU)
- Performance evaluation of dual-frequency ground-based augmentation system under the May 2024 solar storm
Yi-Ting Sung (NCKU)
- Observation of internal short of cylindrical cells under varying impact energy and state of charge
Seong Bin Han (KU)
- Localized strengthening of triply periodic minimal surface lattice structures via tuning the internal material distribution at the grain level
Dien Hu (PolyU)

- Combustion behavior and flame stability of hydrogen-enriched gases in ironmaking
Fang-Hsien Wu (NCKU)

Short Presentation D2-AL2(4) **Chair: Song Cheng (PolyU)** **15:00-15:42**

- Slow waves in ducts with external SBH insertion with perforated boundaries
Sihui Li (PolyU)
- Capillary-driven 3D open fluidic networks for versatile continuous flow manipulation
Shuangmei Wu (PolyU)
- Deep learned Gaussian quadrature for method of finite spheres
Yu-Yeong Kim (KU)
- Development of ultra strong-yet-ductile Titanium alloys for lightweight engineering applications
Wenzhe Li (PolyU)
- Performance comparison of conventional and Kalman filter tracking loops for LEO-based opportunistic navigation
Ya-Xun Yang (NCKU)
- Design of high-strength and ductile intermetallic alloys through additive manufacturing
Tongzhen Zhang (PolyU)
- Numerical study on catalytic strategies for Ammonia combustion in microchannels
Guan Bang Chen (NCKU)

Short Presentation D2-AL3(4) **Chair: Yiyuan Zhang (PolyU)** **15:00-15:42**

- Versatile compartmentalization of hydrogel-medium interfaces using weir
Byengkyu Kang (KU)
- Effects of operating temperature on the performance of Zinc bromine flow batteries
Jiayi Li (PolyU)
- Microfluidic approaches to transesterification and purification of biodiesel with AI-assisted optimization
Szu-I Yeh (NCKU)
- The NO and NO₂ interconversion experiments on synchrotron based platform
Ruoyue Tang (PolyU)
- Electrochemical CO₂ pumps for separation and pressurization
Weisong Li (PolyU)
- Enhancing combustor performance through numerical simulation of spray combustion
Chun-Fu Huang (NCKU)
- High-temperature wind tunnel simulation and flame holder mechanism in supersonic combustor flow fields for hypersonic propulsion systems
Yu-Ta Chen (NCKU)

Technical Session D2-AL1(5) **Chair: Masahiro Todoh (HU)** **16:00-17:00**

- Biomechanical study on biomimetically mineralized collagen matrix for bone scaffold
Masahiro Todoh (HU)
- Performance analysis and design of a spiral heat exchanger
Chieh-Li Chen (NCKU)
- An investigation into the aerodynamic roughness of sea surface with data from an offshore meteorological tower
Jiun-Jih Miao (NCKU)
- Numerical analysis of a nanosecond repetitively pulsed plasma-assisted counterflow diffusion flame
Bang-Shiuh Chen (NCKU)

Technical Session D2-AL2(5) **Chair: Yuichi Murai (HU)** **16:00-17:00**

- Distinct routes to flow control from the perspective of force element theory
Chien-Cheng Chang (NCKU)
- Multiscale QM-MD-ENM analysis of EUV-Induced mechanical response in silk-nased photoresists
Sungsoo Na (KU)
- Microfluidic intelligent soft manufacturing for next-generation micro and nano structures
Liqu Wang (PolyU)
- Aerodynamics study on Turbo-sail airfoils tested in PIV-assisted wind tunnel
Yuichi Murai (HU)

Banquet (Sapporo Bear Garden) **18:00-20:30**

Day 3: November 6, Thursday

Excursion 9:00-15:00

Please come to Entrance Lobby, Faculty of Engineering at 9:00 AM.

Note: 1,000 JPY payment in cash is necessary for lunch at Otaru Old Aoyama Villa

Closing 15:00-15:15

Optional Laboratory Tour (pre-invited persons only: 15:30-17:00)