

MISW 2023 Program and Contents

3rd August (Thursday)

9:00 - 9:10	Opening Remarks by Prof. Jun-ichi Imura, Executive Vice President for Education, Tokyo Institute of Technology
9:10 - 9:15	Photo Session
9:15 - 10:00	Short Presentations Introduction of AOTULE Universities (5 min for each) <ol style="list-style-type: none">1. Korea Advanced Institute of Science and Technology2. National Taiwan University3. Chulalongkorn University4. Hanoi University of Science and Technology5. University of Malaya6. Hong Kong University of Science and Technology7. Bandung Institute of Technology8. University of Moratuwa9. Nanyang Technological University
10:00 - 11:00	Poster Session Media Hall

P-1 Optimal Sizing of Off-Grid Microgrid Components Using Genetic Algorithm: A Case Study for Lao Rural Areas

A. Norasing¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

P-2 Study and Evaluation of School Desks and their Effect on the Daily Life of Students

C. Sagredo Carrasco¹ and A. L. Acitores Suz²

¹School of Engineering and Industrial Design, Technical University of Madrid (UPM)

²Department of Mechanical, Chemical and Industrial Design Engineering, School of Engineering and Industrial Design, Technical University of Madrid (UPM)

P-3 Design, Simulation, Construction, and Characterization of a Vibrant Magnetic Structure for its Use in Magnetostrictive Energy Harvesters

D. Sotelo¹, J. J. Beato-Lopez^{2,3}, E. Garayo^{2,3}, and C. Gomez-Polo^{2,3}

¹IETSII, Technical University of Madrid (UPM)

²Departamento de Ciencias, Universidad Publica de Navarra

³Institute for Advanced Materials and Mathematics (INAMT²), Universidad Publica de Navarra

P-4 Interplanetary Trajectory Design and Determination

M. Gavira-Aladro¹, and C. Bombardelli²

¹School of Aerospace Engineering, Technical University of Madrid (UPM)

²Space Dynamics Group, Technical University of Madrid (UPM)

P-5 Nash Equilibrium of 2-Agent Game with Quadratic Vector Payoffs and Its Stability

Zehui Guo¹, Tomohisa Hayakawa¹, and Yuyue Yan¹

¹Department of Systems and Control Engineering, School of Engineering, Tokyo Institute of Technology

11:00 – 11:15 **Short Break**

11:15 – 12:15 **Oral Presentation Session A1**

Digital Multi-Purpose Hall

Chairperson: **Chia Yang Lin**

A1-1 Scaffold Peptide Design for High Sensitivity of *in vitro* Imaging of Osteoclast Activity using Monolayer MoS₂ to Visualize Proton Secretion

Naho Yamazawa¹, Miwako Umei¹, Kenichi Watanabe¹, Yoshiki Nakamura¹, Masayoshi Tanaka¹, Yuhei Hayamizu¹, and Mina Okochi¹

¹Department of Chemical Science and Engineering, School of Materials and Chemical Technology, Tokyo Institute of Technology

A1-2 EECs based Forward Scattering Prediction for Complex CCS of Human Body at 300 GHz Band

Chechia Kang¹, Xin Du¹, and Jun-ichi Takada¹

¹Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology

A1-3 Machine Learning Approach to Simulate the Growth of Microalga *Chlorella vulgaris*

V. C. Liyanaarachchi¹, P. H. V. Nimarshana², and T. U. Ariyadasa¹

¹Department of Chemical and Process Engineering, University of Moratuwa, Sri Lanka

²Department of Mechanical Engineering, University of Moratuwa, Sri Lanka

A1-4 Deep Learning Based Lung Nodule Detection in CT Images

A. Baigutanova¹, S. Kodera², Z. Jin², and K. Suzuki²

¹School of Computing, Korea Advanced Institute of Science and Technology (KAIST)

²Institute of Innovative Research, Tokyo Institute of Technology

11:15 – 12:15 **Oral Presentation Session B1**

Collaboration Room

Chairperson: **Anisah Andika Fajar**

B1-1 Exploring the Water-Energy Nexus in the Face of Climate Change: Interdependencies, Challenges, and Opportunities

H. A. Al-Ali¹ and K. Tokimatsu¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

B1-2 Comparison on Air Quality Policy in Indonesia and Japan

A. Marzaningrum¹ and T. Murayama¹

¹School of Environment and Society, Tokyo Institute of Technology

B1-3 Typhoon-induced Rainfall: Improving Statistical Prediction using Sinkhorn Distance

J. A. Hokson¹, and S. Kanae¹

¹Department of Civil and Environmental Engineering, Tokyo Institute of Technology

B1-4 Estimation of the Solar Power Output of Hyderabad Railway Station (India) using Transfer Learning and Bayesian Regression

Jinesh Mohan¹, Tatsuya Wakeyama¹, and Jeffrey S. Cross¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

12:15 – 13:30 **Lunch Break**

13:30 – 14:30 **Oral Presentation Session A2**

Digital Multi-Purpose Hall

Chairperson: **Naho Yamazawa**

A2-1 E-Waste Management Assessment in Jordan Using Analytical Hierarchy Process

Sadeer Issa¹

¹Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology

A2-2 Preparation of Biodiesel from Waste Cooking Oil

Md. Rubel¹, Cheng Shuo¹, Sasipa Boonyubol¹, and Jeffrey S. Cross¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

A2-3 Building Performance Simulation of Near Zero Energy Building Design in Indonesia

A. A. Fajar¹ and K. Tokimatsu¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

A2-4 Electrocatalytic Reduction of Glycerol into High Value-added Chemicals

Muhammad Harussani Moklis¹, Cheng Shuo¹, Sasipa Boonyubol¹, and Jeffrey S. Cross¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

13:30 – 14:30 **Oral Presentation Session B2**

Collaboration Room

Chairperson: **Hamad Ahmed Hassan Baroun Al Ali**

B2-1 Facing Target Sputtering Process for High-Efficiency Silicon Solar Cells

Shasha Li¹ and Shinsuke Miyajima¹

¹Department of Electrical and Electronic Engineering, School of Engineering, Tokyo Institute of Technology

B2-2 Eye Movement Scan-Path Extraction of Fixation Data for Metro Maps using a Shortest Route Search Task

Taiki Kodomaru¹, and Minoru Nakayama¹

¹Department of Information and Communications Engineering, Tokyo Institute of Technology

B2-3 Double Machine Lot Scheduling Problem with Two Different Job Sizes

M. A. Fauzi¹ and A. Shioura²

¹Department of Industrial Engineering and Management, Bandung Institute of Technology

²Department of Industrial Engineering and Economics, Tokyo Institute of Technology

B2-4 Personalized Continual Federated Learning

Alysa Ziyang Tan^{1,2,3}, Han Yu¹, and Takayuki Nishio²

¹School of Computer Science and Engineering, Nanyang Technological University

²School of Engineering, Tokyo Institute of Technology

³Aibaba-NTU Singapore Joint Research Institute

14:30 – 14:45 **Short Break**

14:45 - 15:45 **Oral Presentation Session A3**

Digital Multi-Purpose Hall

Chairperson: **Rubel Md**

A3-1 Stoichiometric Syngas Production in Dry Reforming of Methane by Photocatalyst

Hiroaki Kaneko¹, Akira Yamaguchi¹, and Masahiro Miyauchi¹

¹Department of Materials Science and Engineering, School of Materials and Chemical Technology, Tokyo Institute of Technology

A3-2 The Effect of Micropore on Oxygen Reduction Reactions in Alkaline Electrolyte Solutions

Kota Nakahara¹, Atsunori Ikezawa¹, and Hajime Arai¹

¹Department of Chemical Science and Engineering, School of Materials and Chemical Technology, Tokyo Institute of Technology

A3-3 The Study on CsPbBr₃ Photovoltaic Power Converter of OWPT System

Yuejie Tan¹ and Shinsuke Miyajima¹

¹Department of Electrical and Electronic Engineering, School of Engineering, Tokyo Institute of Technology

A3-4 Development of Imaging and Dielectric Property Estimation Technology under Shielding by Dielectric Object

K. Ichijo¹, H. Song¹, X. Du¹, and J. Takada¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

14:45 - 15:45 **Oral Presentation Session B3**

Collaboration Room

Chairperson: **Jinesh Mohan**

B3-1 2D-Smoothing and Vectorization in Non-stationary Environments

L. Jiang¹, N. Keerativoranan¹, T. Matsumoto^{1,2}, and J. Takada¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

²IMT Atlantique Bretagne Pays, de la Loire, JAIST and University of Oulu

B3-2 Pose2Text Transformer for Multilingual Sign Language Translation: P2TMSLT

B. Sae-jia¹, T. Chay-intr², and M. Okumura³

¹International School of Engineering, Chulalongkorn University

²School of Engineering, Tokyo Institute of Technology

³Institute of Innovative Research, Tokyo Institute of Technology

B3-3 Development of AR System to Present Virtual Opponents for Karate Kata

S. Ito¹ and S. Miura¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

B3-4 Understanding Iconicity for Improving Language Learning in Virtual Reality

R. A. Olexa¹ and Jeffrey S. Cross¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

15:45 – 16:00 **Short Break**

16:00 – 17:00 **Oral Presentation Session A4**

Digital Multi-Purpose Hall

Chairperson: **Yuejie Tan**

A4-1 Solar-Driven Steam Generation Properties of D-A Molecules Functionalized by [2+2] Cycloaddition-Retroelectrocyclization Reaction

Chia-Yang Lin¹ and Tsuyoshi Michinobu¹

¹Department of Materials Science and Engineering, Tokyo Institute of Technology

A4-2 A Novel Liquid Organic Hydrogen Storage Carrier (LOHC) for Efficient Hydrogen Storage: Cyclohexanemethanol

Liu Wai Kwan¹, Gabriel Sikukuu Nambafu¹, and Shao Minhua¹

¹Department of Chemical and Biological Engineering, The Hong Kong University of Science and Technology

A4-3 Low Volumetric Thermal Expansion Based on Microphase-Separated Structure of Polyimide-PDMS Block Copolymer

A. Momoze¹, T. Higashihara², N. Matsuda², Y. Maruyama³, S. Fujitomi³, S. Ando¹, and R. Ishige¹

¹Department of Chemical Science and Engineering, Tokyo Institute of Technology

²Graduate School of Organic Material Science, Yamagata University

³JSR. Corporation

A4-4 Synthesis and Characterization of Bio-based Semi-Alicyclic Polyimides Derived from an Isosorbide-containing Diamine

Yoshiyuki Tsurusaki¹, Ririka Sawada¹, and Shinji Ando¹

¹Department of Chemical Science and Engineering, Tokyo Institute of Technology

16:00 – 17:00 **Oral Presentation Session B4**

Collaboration Room

Chairperson: **Lei Jiang**

B4-1 Adaptive Sharpness Aware Minimization with YOLO v7

Tan Kai Noel Quah¹, Rei Kawakami², Nakamasa Inoue², and Li Kong Ho Holden³

¹Mechanical and Aerospace Engineering, Nanyang Technological University

²Department of Computer Science, School of Computing, Tokyo Institute of Technology

B4-2 Spatial Interpolation of Channel Responses from Sparsely Sampled Measurements for Site-Specific Wireless Emulators

B. Tran-Huu¹, N. Keerativoranan¹, and J Takada¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

B4-3 A 0.1 V Input Subthreshold Operation Energy Harvesting Charge Pump Using Advanced Dynamic Gate Biasing

Jack Kee Yong¹ and Harikrishnan Ramiah²

¹Department of Electrical and Electronic Engineering, School of Engineering, Tokyo Institute of Technology

B4-4 Design of Passive Reflectors for Illuminating the Shadowed Regions at Millimeter Wave Band

Y. Zhang¹, N. Keerativoranan¹, X. Du¹, and J. Takada¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

4th August (Friday)

9:45 - 11:00 | **Oral Presentation Session A5**

Digital Multi-Purpose Hall

Chairperson: **Harussani Muhammad Moklis**

A5-1 Transient Liquid Phase Diffusion Bonding Dualing Short Time of TiAl Static Blade Sections for a Small Jet Engine

M. Tahakaru¹ and Y. Takahisa¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

A5-2 Development of New Concrete Building Material with Excellent Radio Wave Permeability

R. Sakamoto¹, N. Chijiwa¹, K. Saito², and K. Nakayama¹

¹Department of Civil and Environmental Engineering, School of Environment and Society, Tokyo Institute of Technology

²Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

A5-3 Redevelopment of CubeSat's Deployable Membrane Structure with Hybrid Composite Booms

L. Newman¹ and H. Sakamoto²

¹Dyson School of Design Engineering, Imperial College London

²Department of Mechanical Engineering, Tokyo Institute of Technology

A5-4 Thermophysical Property Distribution Analysis in a Sample by Using Nanosecond Pulse Laser and Structure Function

A. Mitani¹ and K. Fushinobu¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

A5-5 Analysis of Taylor-Couette Flow Field of Thixotropic Fluid

Yuya Matsufuji¹, Masami Kadonaga¹, and Kazuyoshi Fushinobu¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

9:45 - 11:00 | **Oral Presentation Session B5**

Collaboration Room

Chairperson: **Robert Anthony Olexa**

B5-1 Cloth Scattering Model and Measurement at 300 GHz

L. Y. Su¹, X. Du¹, and J. Takada¹

¹Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology

B5-2 Socket Controlled by Smartphone Design

Pham Thi Trang¹

¹Department of Automation, School of Electrical and Electronic Engineering, Hanoi University of Science and Technology

B5-3 Development of Passive Crowd Sensing Technology by Using 5G signal

Y. Yang¹, H. Song¹, and J. Takada¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

B5-4 Use of Artificial Neural Networks for Aerotrain Performance Evaluation and Sensitivity Analysis Based on a Three-Dimensional Dynamic Model

Antanas Zilinskas¹ and Yusuke Sugahara²

¹Dyson School of Design Engineering, Imperial College London

²Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

11:00 - 11:15 **Short Break**

11:15 - 12:15 **Oral Presentation Session A6**

Digital Multi-Purpose Hall

Chairperson: **Kota Nakahara**

A6-1 Partial Phase Diagram around Cuspidine-Gehlenite in the CaO-SiO₂-Al₂O₃-CaF₂ Tetrametric System

Yuto Akai¹ and Miyuki Hayashi¹

¹Department of Materials Science and Engineering, Tokyo Institute of Technology

A6-2 Effect of Si Addition on Hydrogen Embrittlement in CoCrNi Medium Entropy Alloy

T. C. Huang¹ and H. W. Yen¹

¹Department of Materials Science and Engineering, School of Engineering, National Taiwan University

A6-3 Utilization of Duckweed for Removal of Antibiotics from Wastewater

M. Premaratne¹, H. Habaki¹, and R. Egashira¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

A6-4 Hydrogen Gas Permeability and Characterization of Pd₆₀Cu₄₀ Membranes

Kimheng Keang¹, Cheng Shou¹, and Jeffrey S. Cross¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology

11:15 - 12:15 **Oral Presentation Session B6**

Collaboration Room

Chairperson: **Jose Angelo Hokson**

B6-1 Mirror Kirchhoff Approximation Method for Predicting the Shadowing Effect by Rectangular Cylinder

D. Zhou¹, X. Du¹, and J. Takada¹

¹Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology

B6-2 Multiphysics Approach to the Accurate Thermal Resistance Prediction of Automatic Electronics Housing

Hiromu Ishii

¹Department of Mechanical Engineering, Tokyo Institute of Technology

B6-3 Analytical Study on the Cause Mechanism of Excessive Deflection Occurred at a π -Shaped Rigid Frame Bridge with PC Diagonal Members

N. Ohashi¹, N. Chijiwa¹, M. Yoshino², and S. Kikuchi²

¹Department of Civil and Environmental Engineering, School of Environment and Society, Tokyo Institute of Technology

²Showa Sekkei Co. Ltd.

³Japan Construction Method and Machinery Research Institute

B6-4 Statics Analysis of Over-constraint Link Mechanisms with Structural Error

Daichi Habara¹, Nobuyuki Iwatsuki¹, and Kotara Hoshiba¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

12:15 - 13:30 **Lunch Break**

13:30 - 14:30 **Plenary Lecture**
Messenger RNA as a New Drug Modality

Professor Keiji Itaka

Professor, Tokyo Medical and Dental University

Professor, Osaka University

14:30 - 14:45 **Short Break**

14:45 - 15:30 **Game**

15:30 - 16:30 **Banquet**

16:00 - 17:00 **Award Ceremony**