

MISW 2024 Program and Contents

5th August (Monday)

9:00 - 9:10 **Opening Remarks**
by Dr. Kazuya Masu, President of Tokyo Institute of Technology

9:10 - 9:15 **Photo Session**

9:15 - 10:00 **Short Presentations**
Introduction of AOTULE Universities (5 min for each)

1. Tsinghua University
2. The Hong Kong University of Science and Technology
3. National Taiwan University
4. Korea Advanced Institute of Science and Technology
5. Nanyang Technological University
6. Hanoi University of Science and Technology
7. Indian Institute of Technology Madras
8. University of Moratuwa
9. Chulalongkorn University

10:00 - 11:00 **Poster Session**
Media Hall

**P-1 Analysis of High Power Magnetically Levitated Bearingless Motor
For Greener Industry**

Diksha Singh¹, Akira Chiba¹ and Yusuke Fujii¹

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

**P-2 Proposal of Pulse-jet Solid Oxide Electrolysis Cells As a Hydrogen Production Method
Following the Power Fluctuations of Renewable Energy Power Sources.**

N. Okazaki¹, K. Kameda¹, S. Manzhos¹, and M. Ihara¹

¹Energy science and informatics, School of Materials and Chemical Technology, Tokyo Institute of Technology

**P-3 Separation of multipath signals from multiple SSR Mode S signals for the case of
aircraft en-route surveillance.**

L. Arias¹, N. Keerativoranan¹, and J. Takada¹

¹ School of Environment and Society, Tokyo Institute of Technology

P-4 Robotic penguin: fabrication and experiment

Taiki Shimooka¹

¹Department of Mechanical Engineering, Tokyo Tech

P-5 Application of Control Barrier Functions for Obstacle Avoidance in Mobile Robots

Chi Han Looi¹, Hayato Dan², Daisuke, and Kurabayashi³

¹Systems and Control Engineering, Tokyo Institute of Technology, AOSU Exchange Researcher

²Systems and Control Engineering, Tokyo Institute of Technology, Assistant Professor

³Systems and Control Engineering, Tokyo Institute of Technology, Professor

P-6 Promoting Eco-innovation in Small and Medium Enterprises (SMEs) in Japan and China: An Agent-based Model Approach

R. Zhang¹, J. S. Cross¹, and T. Wakeyama¹

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

11:00 – 11:10 **Short Break**

11:10 – 12:10 **Oral Presentation Session A1**

Digital Multi-Purpose Hall

Chairperson: **K.D. Cabatit**

A1-1 Cement Silica Fume Slurry Soaking Method to Improve Compressive Strength of Recycled Aggregate Concrete

S. Mineyama¹, M. Iwanami¹ and, K. Nakayama¹

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

A1-2 Multi-colored fluorescent properties of thiol-containing imide compound via excited state intramolecular proton transfer

Yuka ANDO¹, Marina DOI¹, Atsuko TABUCHI¹, Haonan LIU¹ and Shinji ANDO¹

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

A1-3 A Study on the Ion Transport Through Axons Mimicked Hydrogel

Kittawat Wardcharoen¹, Shoichiro Kanno¹, Kenta Shimba², Yoshitaka Miyamoto³, and Tohru Yagi¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

²Department of Transdisciplinary Sciences, School of Frontier Sciences, University of Tokyo

³Department of Maternal-Fetal Biology, National Research Institute for Child Health and Development

A1-4 Natural-like grain generation of TiO₂ and the effects of grain boundaries on band structure

Takuma Okamoto¹, Anastassia Sorkin², Keisuke Kameda¹, Wang Hao², Sergei Manzhos¹, Manabu Ihara¹

¹School of Materials and Chemical Technology, Tokyo Institute of Technology

²Department of Mechanical Engineering, National University of Singapore

11:10 – 12:10 **Oral Presentation Session B1**

Collaboration Room

Chairperson: **B. Tran-Huu**

B1-1 Proposal of a Cooperative Control Method Using Manipulative Quantities of Dominant and Non-Dominant Hands

R. Sakurai¹ and S. Miura¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

B1-2 Proposal for a Driving Assistance System Using Brain Wave Analysis and Electrical Stimulation

Naoya Yamashita¹ and Satoshi Miura¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

B1-3 Comparative Kinematics Analysis of Grand Jeté Performance between Professional Ballet Dancers and Students

Yi-Ching Wang¹, Ami Kuromaru¹, and Takeo Maruyama²

¹Department of Social and Human Sciences, School of Environment and Society, Tokyo Institute of Technology

²Institute for Liberal Arts, Tokyo Institute of Technology

B1-4 Prediction of Radio Channel under Dynamic Human Body Shadowing at Millimeter Wave Bands with 3D CG Animation Software

Y. Yang¹, N. Keerativoranan¹, H. Song¹, and J. Takada¹

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

12:10 – 13:20 **Lunch Break**

13:20 – 14:20 **Oral Presentation Session A2**

Digital Multi-Purpose Hall

Chairperson: **Xu Chen**

A2-1 Aligned Calcium Phosphate Materials for Osteoblast Differentiation

Jane Christy^{1,2}, Takuma Watanabe², Hayato Laurence Mizuno², Yasutaka Anraku², Toshiyuki Ikoma²

¹Department of Chemical Engineering, College of Engineering, National Taiwan University

²Department of Materials Science and Engineering, School of Materials and Chemical Technology, Tokyo Institute of Technology

A2-2 Localization of Surgical Needle Tips Buried in Organs Using Generative Adversarial Networks

S. Memida¹ and S. Miura¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

A2-3 Evaluating Latency Effects on Tele-robotic Surgery Operability Using Brain Activity

J. Ichihara¹ and S. Miura¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

A2-4 Folic Acid-Modified Luminescent Europium(III) Substituted Hydroxyapatite Nanocrystals for Enhanced Cancer Bioimaging

G. M. Quindoza¹, R. Horimoto¹, Y. Nakagawa¹, Y. Aida¹, V. Irawan¹, J. Norimatsu², H. L. Mizuno, Y. Anraku¹, & T. Ikoma¹

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

¹Department of Bioengineering, Graduate School of Engineering, The University of Tokyo

13:20 – 14:20 Oral Presentation Session B2

Collaboration Room

Chairperson: **H.G. Tan**

B2-1 Leadership in the organization of national project

N. Suyama¹ and M. Ikegami¹

¹School of Environment and Society, Tokyo Institute of Technology

B2-2 Crowd-shipping via Public Transportation: The Impact of Subsidized Transit Passes on Commuter Sentiment in Japan

Q. Huang¹ and S. Hanaoka¹

¹GEDES, School of Environment and Society, Tokyo Institute of Technology

B2-3 Weather's Impact on Pedestrian Behavior

Bao D. M¹, and VARQUEZ Alvin C. G¹

¹School of Environment and Society

B2-4 Unmasking Hate: An Integrated Approach to Detecting Hate Speech in Social Media

P.S. Kalansooriya¹

¹Department of Computer Science and Engineering, University of Moratuwa

14:20 – 14:30 Short Break

14:30 - 15:30 Oral Presentation Session A3

Digital Multi-Purpose Hall

Chairperson: **Trong Nhan Ngo**

A3-1 Performance Enhancement of 5G massive MIMO networks using Intelligent Optimization.

S.J.Karthik¹ and J.Takada¹

¹School of Environment and Society, Tokyo Institute of Technology

A3-2 Point-to-Point Reflector Design for Illuminating Designated Region at 28 GHz Band

C. M. H. Le¹, Y. Zhang¹, H. Song¹, N. Keerativoranan¹ and J. Takada¹

¹School of Environment and Society, Tokyo Institute of Technology

A3-3 Facilitating Personalized Online Learning of Linear Algebra Concepts using Large Language Models

X. Yipeng¹, N. Keerativoranan¹ and Jeffrey S. Cross¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society

A3-4 Distributed TD-learning with Time-Delay

Han-Dong Lim¹, Takeshi Hatanaka²

¹Electrical Engineering, School of Engineering, KAIST

²Department of Systems and Control Engineering, School of Engineering, Tokyo Institute of Technology

14:30 - 15:30 Oral Presentation Session B3

Collaboration Room

Chairperson: **K. F. K. Tan**

B3-1 Development of an Augmented Reality Feedback System for Hand Motor Imagery Tasks

P. Rangpong¹, A. Connelley¹, P. Li¹, and T. Yagi²

¹Dept. of Transdisciplinary Science and Engineering, School of Environment and Society

²Dept. of Mechanical Engineering, School of Engineering

B3-2 Study of a Posture Control Method with Galvanic Vestibular Stimulation

I. Tsuta¹, T. M. T. Vo², T. Shibata³, and T. Yagi¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

²Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology

³Faculty of Medicine, University of Toyama

B3-3 Detecting Sit-to-Stand Intent Using Toe-Applied Mechanical Stimulus and Its Application to Assistive Device

Jian ZHENG¹, Ming JIANG¹, Qizhi MENG¹, Yusuke SUGAHARA¹ and Yukio TAKEDA¹

¹ Department of Mechanical Engineering, Tokyo Institute of Technology

B3-4 Enabling Intuitive Operation by Switching Coordinate System in the Alignment of a Six-DOF Robot Arm

R. Owada¹, S. Miura¹, T. Takeda² and K. Asami²

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

²Advanced Research and Innovation Center, DENSO CORPORATION

15:30 – 15:40 Short Break

15:40 – 16:40 Oral Presentation Session A4

Digital Multi-Purpose Hall

Chairperson: **Rika WATANABE**

A4-1 Adaptive Surfaces Characterized by Nano Infrared Scanning Force Microscopy

Hexuan Mao¹, Benjamin Leibauer², Rüdiger Berger² and Ken Nakajima¹

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

²Division Physics at Interfaces, Max Planck Institute for Polymer Research

A4-2 Synthesis of Water-soluble Cyano-containing Polymeric Additives and Their Application to the Preparation of Ag⁺-loaded Hydrogels

Xu Chen¹ and Tsuyoshi Michinobu¹

¹School of Materials and Chemical Technology, Tokyo Institute of Technology

A4-3 Prediction of Shadowing Loss of 2D Object by Mirror Kirchhoff Approximation with Unequal Interval

D. Zhou¹, X. Du², H. Song¹ and J. Takada¹

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

²Graduate School of Sciences and Technology for Innovation, Yamaguchi University

A4-4 Human Comfort Assessment of Multi Legged Rimless Wheel using a Simulator Platform

Paras Saini¹, Manish Anand¹, Hiroshi Yoshitake² and Motoki Shino²

¹Department of Mechanical Engineering, Indian Institute of Technology Madras, India

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

15:40 – 16:40 Oral Presentation Session B4

Collaboration Room

Chairperson: **J.W. Chan**

B4-1 Radar-Based Vital Signs Detection

T. Kamolklang¹, N. Keerativoranan¹, and J. Takada¹

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

B4-2 A Novel Method for Training Active BCIs Using Passive Audition

Z. Zhang¹, P. Li², P. Rangpong², A. Connelly², and T. Yagi¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

²Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology

B4-3 Aerodynamics simulations of human running and fluttering clothes

H.G. Tan¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

B4-4 Trial-Adjusted Neurofeedback for Hand Motor Imagery Performance Bias

A. Connelly¹, P. Li¹, P. Rangpong¹, and Y. Tohru²

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

²Department of Mechanical Engineering, Tokyo Institute of Technology

16:40 – 16:50 Short Break

16:50 – 18:05 **Oral Presentation Session A5**

Digital Multi-Purpose Hall

Chairperson: **S. Memida**

A5-1 The Impact of Transcranial Direct Current Stimulation on Neurocognition under Mental Fatigue State

T. M. T. Vo¹, I. Tsuta², P. Li¹, T. Shibata³, Y. Watanabe⁴, and T. Yagi²

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

²Department of Mechanical Engineering, Tokyo Institute of Technology

³Faculty of Medicine, University of Toyama

⁴Brain Functions Laboratory. Inc

A5-2 EEG Features Modulated by Depressive State in Healthy Individuals

P. Li¹, H. Nakatani³, M. Takahashi⁴, R. Inayoshi⁴, and T. Yagi²

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

²Department of Mechanical Engineering, Tokyo Institute of Technology

³School of Information and Telecommunication Engineering, Tokai University

⁴Graduate School of Education, The University of Tokyo

A5-3 Photophysical Properties of Thianthrene-Containing Imide Compounds and Polyimides under High Pressure

Liangkang YU¹, Hiroka YAMAMATSU¹, Ryuichi ISODA¹, Haonan LIU¹, and Shinji ANDO¹

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

A5-4 Interaction of near-wall turbulent coherent structures and premixed flame

F.Z. Lyu¹, Y. Wang² and M. Tanahashi²

¹Department of Engineering Mechanics, Tsinghua University

²Department of Mechanical Engineering, Tokyo Institute of Technology

A5-5 Effect of inclination angle of target surfaces on droplet behavior for advanced inkjet technology

T. Yasuyoshi¹ and K. Fushinobu¹

¹Department of Mechanical Engineering,

16:50 – 17:50 **Oral Presentation Session B5**

Collaboration Room

Chairperson: **P.S. Kalansooriya**

B5-1 Ultrasound beam forming for automated object identification

K. F. K. Tan¹

¹School of Materials Science and Engineering, Nanyang Technological University

B5-2 Unraveling Alternate Airport Patterns in China's Flight Data: A Comprehensive Analysis of Deviated Landings

Bolong Zhou^{1,2}, Shinya Hanaoka², and Kashin Sugishita²

¹Department of Civil and Environmental Engineering, the Hong Kong University of Science and Technology

²Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology

**B5-3 Proposal for a Method to Construct a Force Feedback Model in a Haptic Device
Using Alignment Accuracy and Brain Activity**

H. Nagai¹ and S. Miura¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

B5-4 Experimental Investigation on Variation of Paste Content in Permeable Concrete

K. Tsuboi¹, M. Iwanami¹ and K. Nakayama¹

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

6th August (Tuesday)

9:30 - 10:45 | **Oral Presentation Session A6**

Digital Multi-Purpose Hall

Chairperson: **Q. Huang**

A6-1 Effect of Water Immersion Time on Water Movement Distance along Reinforcing Steel in Reinforced Concrete

R. Takeshita¹, M. Iwanami¹ and K. Nakayama¹

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

A6-2 Numerical investigation of two-phase flow characteristics in porous media with different capillary numbers and Reynolds number ratios

Chao Jiannan¹, Wang Kailin², Shintaro Matsushita and Tetsuya Suekane²

¹School of Aerospace Engineering, Tsinghua University

²Department of Mechanical Engineering, Tokyo Institute of Technology

A6-3 Spatiotemporal Distributions of People during Crisis Time: A Case Study of Japan during Typhoon Disasters

A.K. Yudha¹, T. Osaragi²

¹Department of Industrial Engineering, Faculty of Engineering, Chulalongkorn University

²Department of Architecture and Building Engineering, School of Environment and Society, Tokyo Institute of Technology

A6-4 Estimation of streamflow from GRACE and Water balance method: Case study of the Upper Indus Basin

H. Sattar¹, T. Kinouchi¹

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

A6-5 Power mix and demand for imported and domestic hydrogen in 2050 using technoeconomic model with electricity grid in Japan

Masashi Oya¹, Tatsuya Okubo¹, Hamasaki¹, Hiroshi¹, Keisuke¹, Kameda¹, Sergei Manzhos*, and Manabu Ihara¹

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

9:30 - 10:45 | **Oral Presentation Session B6**

Collaboration Room

Chairperson: **Jane Christy**

B6-1 State Space Methods for Video Respiration Estimation

J.W. Chan¹, K. Funakoshi²

¹College of Computing and Data Science, Nanyang Technological University

²Department of Information and Communications Engineering, School of Engineering, Tokyo Institute of Technology

B6-2 Detection of Local Relaxation Phenomena of Amorphous Polymers based on Temperature Dependence of Phosphorescence of Imide Compound

Rika WATANABE¹, Marina DOI¹, Haonan LIU¹ and Shinji ANDO¹

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

B6-3 Research on DNA nanotubes that enable mass transport by ultrasound irradiation.

S. Yoshizaki¹, S. Kanno², Z. Peng¹, K. Shimba², Y. Miyamoto³ and T. Yagi¹

¹Department of Mechanical Engineering, Tokyo Institute of Technology

²Department of Transdisciplinary Sciences, School of Frontier Sciences, University of Tokyo

³Department of Maternal-Fetal Biology, National Research Institute for Child Health and Development

B6-4 Role of Droplet Evaporation Research to Realize Environmentally Friendly Inkjet Printer

A.R. Irsyad¹, K. Fushonobu¹ and M. Kadonaga^{1,2}

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

²Advanced Technology R&D Division, Ricoh Company, Ltd.

B6-5 Viscosity Measurement of Highly Concentrated Dispersion Systems by Means of Dynamic Light Scattering for Inkjet Technology

T. Sano¹, K. Fushinobu¹

¹Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

10:45 - 10:55

Short Break

10:55 - 12:10

Oral Presentation Session A7

Digital Multi-Purpose Hall

Chairperson: **K. Tsuboi**

A7-1 Experimental Investigation of the Effects of Steel Reinforcement Section Loss and Bond Loss Due to Corrosion and Concrete Spalling on RC Structural Performance

K.D. Cabatit¹ and N. Chijiwa¹

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

A7-2 Compressive behavior of polyethylene terephthalate films: Insights from bending surface strain measurements and numerical analysis

Jiayi Yu¹, Kyohei Hisano¹ and Atsushi Shishido¹

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

A7-3 Potential of Solar Cells Installation with Façade of Buildings in Tokyo considering the Threshold of Power Generation Costs

Shuai Wang¹, Masashi Oya¹, Natsuki Ootoshi¹, Keisuke Kameda¹, Sergei Manzhos¹, Manabu Ihara¹

¹Tokyo Institute of Technology, Japan

A7-4 The Dual Use of Wave Energy Converters (WECs) and Wave Farms for Coastal Protection and Renewable Energy Generation

Avinash Boodoo¹, Tatsuya Wakeyama¹ and Jeffrey S. Cross¹

¹Department of Transdisciplinary Science and Engineering, School of Environment and Society

A7-5 Utilizing Lunar Regolith for Thermoelectric Energy Storage

Muneaki Kamiosako¹, Jeffrey S. Cross¹ and Tatsuya Wakeyama¹

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

10:55 - 12:10 **Oral Presentation Session B7**

Collaboration Room

Chairperson: **A. Connelly**

B7-1 A Method for Reducing AC Battery Current in Dual-Source Train Fed by Battery and AC Catenary

Trong Nhan Ngo¹, Suzuki Atsuya² and Hagiwara Makoto¹

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

²Electrical and Electronic Engineering, School of Engineering, Tokyo Institute of Technology

B7-2 Angular-Domain Parameter Matching and Tracking Utilizing Clustering Technique for Grid-Based Wireless Channel Emulation in Wideband Scenario

A. Kietkajornrit¹, N. Keerativoranan¹ and J. Takada¹

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

B7-3 Interpolation of Channel Responses from Sparsely Sampled Measurements for Cyber-Physical 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

B7-4 Metal Ion Sensitive Electrochemical Transistors based on a Conducting Polymer

A. Murayama¹, T. Michinobu¹

¹School of Materials and Chemical Technology, Tokyo Institute of Technology

B7-5 Ultrafast heat transport in multilayered structure analyzed by network identification by deconvolution

H. Hanma¹, D. Higuma¹, B. Kim¹ and K. Fushinobu¹

¹Department of Mechanical Engineering,

12:10 - 13:30 **Lunch Break**

13:30 - 14:30 **Plenary Lecture**

Zeolite Catalysis for Carbon Neutrality

Professor Toshiyuki Yokoi^{1,2}

¹ Nanospace Catalysis Unit, Institute of Innovative Research, Tokyo Institute of Technology

² iPEACE223 Inc.

14:30 - 14:40 **Short Break**

14:40 – 15:30 **Game**

15:30 – 16:30 **Banquet**

16:30 - 17:30 **Award Ceremony**