DTDA2026 Full Program

Day 1, October 11th (Sunday), 2026

13:00-18:30, October 11

High School Student General Audiences Event

Chair: Kaori Shigetomi (Hokkaido University)

Venue: Crystal Hall, B1F, East Building of Sapporo Grand Hotel

13:00-18:30	**TBD**

13:00-18:20, October 11

Short Course "Advanced packaging"

Chair: Kentaro Totsu (Tohoku University)

Venue: Community Room (Dohmin Base) A, B1F, Red Brick Building

13:00-13:10	**Opening**
13:10-14:10	**Advanced Packaging for Chiplet Systems: Fundamentals, Technologies, and Future Trends** Fumihiro Inoue, Yokohama National University, Japan
14:10-15:10	**CMP Technologies for Advanced Packaging Process** Seiichi Kondo, Resonac Corporation, Japan
15:10-15:20	Break
15:20-16:20	**High-Resolution 3D X-ray Imaging for Hybrid Bonding, Advanced Packaging, and Heterogeneous Integration** Till Dreier, Excillum AB, Sweden
16:20-17:20	**Micro- and Nano-Scale Thermal Characterization for Advanced Packaging Using Frequency-Domain Thermoreflectance Microscopy** Tomoya Uchiyama, ScienceEdge Inc., Japan
17:20-18:20	**Yield Issues in three-dimensional integrated circuits (3D-ICs)** Koichiro Saga, Yokohama National University, Japan

13:00-18:00, October 11

Expo-Demo/Poster Session for the 2nd International IEEE EDS MEMS Student Challenge

Venue: Red Brick Hall B, 2F, Red Brick Building

13:00-18:30	**Hokkaido Univ. IFERS**
Expo Demo	**KSOL Corp.**
	Micro System Integration Center, Tohoku University
	NY Creates
	Saginomiya Seisakusho, inc.
	ScienceEdge Inc.
	SCREEN Semiconductor Solutions Co., Ltd.
	tei SOLUTIONS
	ThreeBond Co., Ltd.
	TOYOTA MOTOR CORPORATION
	Yokogawa Electric Corporation

13:00-18:30	Xuanqi Wang, Northwestern Polytechnical University, Xi'an, China
IEEE EDS	Cheng-Chuan Chou, National Sun Yat-sen University, Taiwan (R.O.C.)
MEMS	Geer Teng, Northwestern Polytechnical University, Xi'an, China
Student	Zhicong Li, Aerospace Information Research Institute, Chinese Academy of
Challenge	Sciences / University of Chinese Academy of Sciences, China
Finalists	Ryugo Shimamura, The University of Tokyo, Japan
	Yu Tian KU Leuven, Belgium
	Jiaxiang Wang, Shanghai Jiao Tong University, China
	Jiawei Nie, ShanghaiTech University, China
	Xingyu Liu, The Hong Kong University of Science and Technology, Hong Kong SAR

18:00-21:00, October 11

Welcome Reception

Venue: Red Brick Hall A, 2F, Red Brick Building

Day 2, October 12th (Monday), 2026

8:30-12:00, October 12

Opening/Plenary/Keynote

Chair: Hocheon Yoo (Hanyang University), General Co-Chair, DTDA2026

Venue: KINSHI Room, 2F, Main Building of Sapporo Grand Hotel

8:30-8:40	**Welcome Remark** Hiroyuki Akinaga, General Chair, DTDA 2026
8:40-8:45	**Welcome Address** Tsuyoshi MITSUHASHI, Vice Governor of Hokkaido, Japan
8:45-8:55	**Opening Remark by EDS** Arokia Nathan, President, IEEE Electron Device Society
KY-1 8:55-9:35	**Evolution of the Thin film Transistor and the Rise of Oxide Electronics [Keynote]** Arokia Nathan, President, IEEE Electron Device Society, University of Cambridge
KY-2 9:35-10:15	**GaN Vertical Power Devices: Technology Breakthroughs Toward Energy-Efficient Systems [Keynote]** Jun Suda, Nagoya University, Japan
10:15-10:20	Break
KY-3 10:20-11:00	**Implantable Optoelectronic Devices for Photoceuticals: From Electroceuticals to Cell-Type-Specific Diagnosis and Therapy [Keynote]** Jun Ohta, Nara Institute of Science and Technology, Japan
PN-1 11:00-12:00	**AI Power Efficiency and People [Plenary]** Gill Pratt, Toyota Research Institute, Japan

9:00-18:30, October 12

Expo-Demo/Poster Session for the 2nd International IEEE EDS MEMS Student Challenge

Venue: Red Brick Hall B, 2F, Red Brick Building

9:00-18:30	**Hokkaido Univ. IFERS**
Expo Demo	**KSOL Corp.**
	Micro System Integration Center, Tohoku University
	NY Creates
	Saginomiya Seisakusho, inc.
	ScienceEdge Inc.
	SCREEN Semiconductor Solutions Co., Ltd.
	tei SOLUTIONS
	ThreeBond Co., Ltd.
	TOYOTA MOTOR CORPORATION
	Yokogawa Electric Corporation
9:00-18:30	Xuanqi Wang, Northwestern Polytechnical University, Xi'an, China
IEEE EDS	Cheng-Chuan Chou, National Sun Yat-sen University, Taiwan (R.O.C.)
MEMS	Geer Teng, Northwestern Polytechnical University, Xi'an, China
Student	Zhicong Li, Aerospace Information Research Institute, Chinese Academy of
Challenge	Sciences / University of Chinese Academy of Sciences, China
Finalists	Ryugo Shimamura, The University of Tokyo, Japan
	Yu Tian KU Leuven, Belgium
	Jiaxiang Wang, Shanghai Jiao Tong University, China
	Jiawei Nie, ShanghaiTech University, China
	Xingyu Liu, The Hong Kong University of Science and Technology, Hong Kong SAR

12:10-12:50, October 12

Lunch Session: "Semiconductors; The New Global Economy" Sponsored by NY Creates

Chair: TBD

Venue: KINSHI Room, 2F, Main Building of Sapporo Grand Hotel

12:10-12:50	**TBD**

13:00-16:15, October 12

Application Session Area 5: Environmental Impact Mitigation, Energy Reduction and Water Risk Management (Session 1: Sustainability General)

Chair: Shin Nakagawa (SCREEN), Slava Libman (FTD Solutions)

Session Facilitators: Laurent Pain (CEA-Leti), Hiroshi Yano (University of Tsukuba), Harold W. Stokes (SCREEN)

Venue: Red Brick Hall A, 2F, Red Brick Building

13:00-13:05	**Opening Talk: Sustainability Through Diverse Perspectives - Let's Learn Together!** Shin Nakagawa, SCREEN Semiconductor Solutions, Japan
AR-5-1 13:05-13:35	**SiC CMOS Integrated Circuits and CMOS Image Sensors for Extreme Environment Applications [Invited]** Shin-ichiro Kuroki, Hiroshima University, Japan
AR-5-2 13:35-13:55	**Dilute Ammonia Wet Rinse Process Monitored on a Sensing Wafer Using Electrochemical Impedance Spectroscopy** Mai Nagase[1], Kensuke Shinohara[2], Yuto Nakamura[1], and Yukifumi Yoshida[1], [1]SCREEN Semiconductor Solutions Co., Ltd., Japan, [2]SCREEN Holdings Co., Ltd., Japan
AR-5-3 13:55-14:15	**Wafer-scale epitaxial platform for high-performance functional piezoelectric thin films on Si enabled by an oxide buffer layer** Azusa N. Hattori, Osamu Nakagawara, and Kenji Ogata, I-PEX Piezo Solutions Inc., Japan
AR-5-4 14:15-14:45	**Flexible PZT thin films on metal foils and their application in micro-power sources [Invited]** Isaku Kanno, Kobe University, Japan
14:45-14:55	Break
AR-5-5 14:55-15:25	**Beyond Energy Efficiency and Circularity: Functional Preservation Through Health Intelligence [Invited]** Aurore Lepecq[1], Youssof Fassi[2], Jerome Boutet[1] and Vincent Heiries[1] [1]CEA-Leti Grenoble, France, [2]CEA-Liten Grenoble, Frace
AR-5-6 15:25-15:40	**Zinc Hydroxide Chloride Surface Treatment on Zinc Metal Powders for High-Performance Aqueous Zn-Ion Batteries** John Hong, Kookmin University, Republic of Korea
AR-5-7 15:40-15:55	**Multigenerational Wrinkles in Solution-processed MoS2 Photoanodes for Photoelectrochemical Water Oxidation** Su Yeon Jung[1,2] and Joohoon Kang[1], [1]Yonsei University, Republic of Korea, [2]Sungkyunkwan University, Republic of Korea

AR-5-8 15:55-16:15	**Bridging the Lab-to-Fab Gap: Driving Semiconductor Sustainability at NY Creates** Irina Spiry and Frank Tolic, NY Creates, U.S.A.

13:00-16:20, October 12

Application Session Area 4: Mobility

Chairs: Chihiro Nakagawa (Osaka Metropolitan Univ.), Naoya Kaneko (Toyota Motor Corp.)

Venue: Community Room (Dohmin Base) A, B1F, Red Brick Building

AR-4-1 13:00-13:20	**Study on the Application of Machine Learning Algorithms in Internal Combustion Engine Analysis** Rachi Shojun, Kanazawa Institute of Technology, Japan
AR-4-2 13:20-13:40	**Sparse and Narrow-word Memory Access for Energy-Efficient Spiking Neural Network Inference** Yoshinari Wada, Tetsuro Mizuno, Seiji Adachi, Ayane Matsuzaki, Kota Ando, Tetsuya Asai, and Takao Marukame, Hokkaido University, Japan
AR-4-3 13:40-14:00	**Triage-by-Design for Mixed-Traffic Priority: From Medical Allocation to Real-World Automated-Bus Dilemmas** Chie Hikasa[1] and Takashi HIkasa[2]., [1]Shinshu University, Japan, [2] Tama University, Japan
AR-4-4 14:00-14:15	**Wheel-Foot Humanoids for Public-Space Mobility: Integrating Efficient Body Design, Digital-Twin Evaluation, and ELSI** Chihiro Nakagawa[1], Akio Yamano[1], Hirokazu Fukuda[1], Asuka Takai[1], Takashi Hikasa[2] and Tsutomu Sawai[3] [1]Osaka Metropolitan University, Japan, [2]Tama University, Japan, [3]Hiroshima University, Japan
14:15-14:20	Break
AR-4-5 14:20-14:35	**AI Runs on Real-World Data: How Sensing Value Is Changing in Mobility and Beyond [Invited]** Peter Frackelton, Sensata Technologies, U.S.A.
AR-4-6 14:35-14:50	**Electrical Pulsed Discharge for Recycling of Devices and Composite Materials [Invited]** Chiharu Tokoro[1,2], [1]Waseda University, Japan, [2]The University of Tokyo, Japan
AR-4-7 14:50-15:05	**TBA [Invited]** Norihisa Miki, Keio University, Japan
AR-4-8 15:05-15:20	**TBA [Invited]** Hirofumi Aoki, Nagoya University, Japan

15:20 – 15:25	Break

AR-4-9	**Future Mobility Society [Panel Discussion]**
15:25 – 16:20	Gill Pratt, Toyota Research Institute, Japan Peter Frackelton, Sensata Technologies, U.S.A. Chiharu Tokoro, Waseda University, Japan Norihisa Miki, Keio University, Japan Hirofumi Aoki, Nagoya University, Japan

16:30-18:00, October 12

Application Session Area 3: Robotics for Smart Society I: Tactile Sensing, Recognition, and Haptic Feedback

Chairs: Masanori Muroyama (Tohoku Inst. of Tech.), Haruo Noma (Ritsumeikan University)

Venue: Red Brick Hall A, 2F, Red Brick Building

AR-3-1	**Dynamics of Touch Sense: from Skin to Cognition and Haptic Augmentation [Invited]**
16:30-17:00	Yoshihiro Tanaka, Nagoya Institute of Technology/Inamori Research Institute for Science, Japan
AR-3-2	**Pulse Density Modulation Circuit for SNN-based Tactile Recognition Using a Resistive MEMS Pressure Sensor**
17:00-17:20	Daiki Terao, Tomoya Kimura, Haruo Noma, and Hiroyuki Ochi, Ritsumeikan University, Japan
AR-3-3	**Material Information in Predictive Reservoir States of Tactile Time-Series Signals**
17:20-17:40	Kazuki Takaesada[1], Mitsuhito Ando[1], Yuichi Katori[2], and Haruo Noma[1], [1]Ritsumeikan University, Japan, [2]Future University Hakodate, Japan
AR-3-4	**Preliminary Evaluation of a Haptic Wristband Combining McKibben-Actuated Pressure and an Addressable Vibrotactile Array**
17:40-18:00	Yuito Miyata and Masanori Muroyama, Tohoku Institute of Technology, Japan

16:30-18:15, October 12

Application Session Area 1: Unleashing Power of MEMS

Chairs: Shinya Yoshida (Shibaura Institute of Technology), Yuki Okamoto (AIST)

Venue: Community Room (Dohmin Base) A, B1F, Red Brick Building

AR-1-1 16:30-16:45	**Experimental Evaluations of Accuracy and Long-Term Stability of a Wave-Height Sensor Using MEMS Differential-Pressure Sensing Elements** Maya Kurihara[1,2], Kyota Shimada[1,2], Sora Ishikawa[2], Naho Yashiro[2,3], Takuto Kishimoto[3], Hidetoshi Takahashi[1], [1]Keio University, Japan, [2]Future University, Japan, [3]The University of Tokyo, Japan
AR-1-2 16:45-17:00	**A Circular Polarization-Splitting Metalens for Digital Holography** Nobuaki Arai[1], Ayaka Yamazaki[1], Kentaro Iwami[1], Tatsuki Tahara[2] [1]Tokyo University of Agriculture and Technology, Japan, [2]National Institute of Information and Communications Technology, Japan
AR-1-3 17:00-17:15	**Development of a Compact Six-Axis Force Plate System with High Force and Temporal Resolutions Using Multi-Camera High-Speed Imaging** Mai Kawamata, Ohga Nomura, Yukitake Nakahar, Toshihiro Shiratori, Hidetoshi Takahashi, Keio University, Japan
17:15-17:30	Break
AR-1-4 17:30-17:45	**A CMOS-MEMS Wheatstone-Bridge Pirani Gauge with a Monolithically Integrated Instrumentation Amplifier** Yuki Okamoto[1], Hironao Okada[1], Soya Sato[1], Kei Misumi[2], Masato Goto[2], Yoshio Mita[2],[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2]The University of Tokyo, Japan
AR-1-5 17:45-18:00	**Development of a MEMS-Based Dual-Gas Microsensor for NH3 and H_2 Detection** Chia-Hsu Hsieh, Bo-Yan Liu, Cheng-Chuan Chou National Sun Yet-Sen University, R.O.C.
AR-1-6 18:00– 18:15	**Convex Micromirror Formed by Out-of-Plane Buckling During Self-Aligned Sacrificial Release of PDMS/AlSi Membranes** Koshiro Hiroyasu[1], Yuki Okamoto[2], Shun Yasunaga[1], Gilgueng Hwang[1, 3], Ryosho Nakane[1], Akio Higo[4], and Yoshio Mita[1,3] [1]The University of Tokyo, Japan, [2]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [3]LIMMS-CNRS, Japan, [4]Tokyo Denki University, Japan

18:15-19:30, October 12

Poster Session

Venue: Grand Hall, 2F, Annex Building of Sapporo Grand Hotel

P-1-1	**Gamma Distribution Emulation and Wavelength-Selectivity with Triple Split-Gate Anti-Ambipolar Transistor** Suhyeon Kim, Youngmin Han, Won Woo Lee, and Hocheon Yoo Hanyang University, Republic of Korea
P-1-2	**A CMOS-Compatible Al/SiO_2/TiN Metasurface Absorber with a Phonon-Pinned LWIR Edge for Label-Free Biosensing and Uncooled Thermal Imaging** Krishna Siddapuram [1,2], Shun Yasunaga[2], Shiv Govind Singh[1], and Yoshio Mita[2] [1] Indian institute of Technology Hyderabad, India,[2] The University of Tokyo, Japan
P-1-3	**Miniaturizing Atomic Clocks with a Multifunctional Metasurface** Haruki Morita[1], Yuto Kataoka[1], Faris Hazmi Zulhaimi[1], Kentaro Iwami[1], and Motoaki Hara[2] [1] Tokyo University of Agriculture and Technology, Japan, [2] National Institute of Information and Communications, Japan
P-1-4	**Skew-Gaussian Device Design and Application for Realistic Gaussian Distribution Representation** Youngmin Han[1], Kyounghoon Kim[2], and Hocheon Yoo[1] [1] Hanyang University, Republic of Korea, [2] Gachon University, Republic of Korea
P-1-5	**Direct Observation of a Geometry-Stabilized Magnetic Vortex in a Three-Dimensional Fe-Film Microstructure** Juharni Juharni[1], Ni'matil Mabarroh[1], Liliany Pamasi[1], Azusa Hattori[2], Hidekazu Tanaka[3], Nobuyoshi Hosoito[1], Satoru Yoshimura[4], Ken Hattori[1] [1] Nara Institute of Science and Technology, Japan, [2] I-PEX Piezo Solutions, Japan,[3] The University of Osaka, Japan, [4] Akita University, Japan
P-1-6	**Parallel Photochemical Weight Modulation in a Flexible Hardware Neural Crossbar** Ji-Hoon Choi[1], Hyo-Bin Jang[1], Juhyung Seo[2], Hocheon Yoo[3], and Hea-Lim Park[1] [1] Seoul National University of Science and Technology, Republic of Korea, [2] Hanyang University, Republic of Korea
P-1-7	**Impact-Triggered Stereo Vision Referencing for IMU Drift Correction in Golf Swing Analysis** Geonho Hong, Hyeonbin Seo, and Seyong Oh Hanyang University ERICA, Republic of Korea

P-1-8	**Flexible Dual-Functional Optoelectronic Synaptic Devices via Defect-Engineered ZnON and Flash-Induced Debonding** Hyuk Ju Ahn, Gang Guk Park, Yun Hyeok Jeong, Joo hyun Jeong, Jisu Kim, Kyeongsik Ko, Seung Min Lee, In Ho Kim, Hyun Seo Kim, Sang Jik Kwon, Min-Kyu Park, Eou-Sik Cho, Gachon University, Republic of Korea
P-1-9	**Bias-Tunable Multi-Band Photodetection with Wavelength-Dependent Negative Photocurrent and Current Polarity Switching** Geon Park, Wangmyung Choi, Junhyung Cho, Seungwoo Baek, and Hocheon Yoo Hanyang University, Republic of Korea
P-1-10	**Photo-stimulated Floating-gate Synapse Transistor for Neuromorphic Computing** Seungme Kang,and Hocheon Yoo, Hanyang University, Republic of Korea
P-1-11	**Implementation of Gaussian and Sigmoid Activation Using a Top Split Gate IGZO Transistor** Kyounghoon Kim[1], Youngmin Han[2], and Hochoen Yoo[2] [1] Gachon University, Republic of Korea, [2] Hanyang University, Republic of Korea
P-1-12	**Influence of Localized Pressure Loading on the Electromechanical Response of a PVDF-Based MEMS Capacitive Sensor** K.-W. Chee, and Liangxiao Ding, Kyungpook National University, Republic of Korea
P-2-1	**Evaluation of and attitudes towards a smart integrated healthcare service model among Korean older-adult users and healthcare professionals in a rural community: A mixed-method study** Min Jeong Kim, and Ye Seul Bae Kangbuk Samsung Hospital, Sungkyunkwan University, Republic of Korea,
P-2-2	**Smart contact lenses for medical and augmented reality applications** Takeo Miyake, Waseda University, Japan
P-2-3	**Bootstrap-Assisted Cross-Coupled-Load OTFT Differential Amplifier for Biosignals** Ran Wang, Yunyi Gou, Taoming Guo, and Chen Jiang, Tsinghua University, China
P-2-4	**Fully Transparent Neural Interfaces for Simultaneous Recording of Electrophysiology and Cell Photon Imaging** Hyun Woo Kim, and Ki Jun Yu, Yonsei University, Republic of Korea
P-2-5	**Fully Implantable and Battery-Free Wireless Optoelectronic System for Modulable Cancer Therapy and Real-Time Tumor Monitoring** In Sik Min, and Ki Jun Yu, Yonsei University, Republic of Korea
P-2-6	**Functional Polymer Materials for Low-Power Flexible and Stretchable Electronics** Junhwan Choi, Dankook University, Republic of Korea

P-2-7	**Band-Engineered Charge-Trap Memory with Tunable Synaptic Characteristics for Flexible Edge Neuromorphic Computing** Eunjun Choi[1], Jungyeop Oh[2], Hyeonji Lee[3], Geonwoo Kim[1], Min-Kyu Shin[1], and Min Ju Kim[1], [1]Dankook University, Republic of Korea, [2]Chung-Ang University, Republic of Korea , [3]KAIST, Republic of Korea
P-2-8	**Neuromorphic Devices Based on van der Waals Heterostructures for Edge-AI Sensor Systems** Seyong Oh, Hanyang University, Republic of Korea
P-2-9	**6-Inch Atomic-Layer-Controlled WS2 Opto-Memristors for Physical Reservoir Computing** Seongho Kim[1,2], Hocheon Yoo[3], Woo seok Kang[1], and Hyeong-U Kim[1,4,5], [1]Korea Institute of Machinery & Materials, Republic of Korea, [2]Chungnam National University, Republic of Korea, [3]Hanyang University, Republic of Korea, [4]Sungkyunkwan University, Republic of Korea, [5]University of Science & Technology, Republic of Korea
P-2-10	**Surface-Functionalized Polymer Dielectrics for Thin-Film Transistor via Click Chemistry** SeongCheol Jang, and Hyun-Suk Kim, Dongguk University, Republic of Korea
P-2-11	**Peptide–rGO Composite Chemiresistors for Humidity Sensing** Minori Nagashima, Taisei Takasuka, Yuhei Hayamizu, Institute of Science Tokyo, Japan
P-2-12	**Electrical Detection of Poly(D,L-aspartic acid)–Poly-L-lysine Interactions Using an Extended-Gate FET** Takuma Kamioka and Yuhei Hayamizu, Institute of Science Tokyo, Japan
P-2-13	**Morphological and Structural Analysis of Dimensional Carbon/TPU Composites for Flexible Piezoresistive Sensing Applications** Hu Tang[1], Weiyong Yuan[2], Qinghua Xia[2], and K.-W.. Chee[1], [1] Kyungpook National University, Republic of Korea, [2] Zhejiang University, Republic of China
P-3-1	**Gate Tunable Short- and Long-Term Synaptic Plasticity in Anti-Ambipolar Transistors** Taejun Ohm, Youngmin Han, Young Woo Yoo and Hocheon Yoo, Hanyang University, Republic of Korea
P-3-2	**Retinomorphic Event-Driven Photoresponse in an Organic-Inorganic Double p-n Junction Device with Polymer-Based Capacitive Interfaces** Minchul Roh, Junhyung Cho, Taehyun Park, and Hocheon Yoo, Hanyang University, Republic of Korea
P-3-3	**Multidimensional and Reconfigurable Memristor-Based Physical Unclonable Functions for Secure Robotic Sensing** Chang-Jae Beak, and Sin-Hyung Lee, University of Seoul, Republic of Korea

P-3-4	**Beyond Conventional CMOS: Multi-Activation Functions in a Single-Channel Device for Neuromorphic Computing** Yeonho Choi, Jaechan Song, Seungwoo Baek and Hocheon Yoo, Hanyang University, Republic of Korea
P-3-5	**Gaussian-shaped Transfer Characteristics in Molybdenum Disulfide-based Split-Gate Transistor** Dong Hyun Lee, Youngmin Han, and Hocheon Yoo, Hanyang University, Republic of Korea
P-3-6	**Two-Dimensional Template-Assisted Conversion for Ultrathin Indium Oxide for Reconfigurable Optoelectronic Synaptic Transistors** Jinhong Min, Gwang Ya Kim, and Joohoon Kang, Yonsei University, Republic of Korea,
P-3-7	**Crack-Templated Organic Heterointerfaces for Wavelength-Selective Photoresponse Modulation** Tae Woo Park[1], Dong Hyun Lee[1], Taehyun Park[1], Dong Chan Kim[2] and Hocheon Yoo[1], [1]Hanyang University, Republic of Korea, [2]Gachon University, Republic of Korea,
P-3-8	**Gate-Selective Programming of Gaussian Responses in a Memory-Integrated Split-Gate Organic Transistor** Jaechan Song, Youngmin Han, and Hocheon Yoo, Hanyang University, Republic of Korea,
P-3-9	**Dual-Plasticity Memristive-Gated Synaptic Transistors for Reservoir Computing in Robotic Edge AI** Eunjoo Yoo, Yun-Seo Shin, Ki-Hoon Son, Hyun-Sik Kim, Dae-Hee Han, Jeong Hyeon Son, Seung Hwan Lee, and Hong-Sub Lee, Kyung Hee University, Republic of Korea,
P-3-10	**Device-aware Attention Using ZnO/ZnON Neuromorphic Devices for On-device Transformer Training** Seungwoo Baek, Won Woo Lee, and Hocheon Yoo, Hanyang University, Republic of Korea,
P-4-1	**Scalable Fabrication of Size-Tunable NiCoFe/Carbon Hybrids for Electromagnetic Interference Shielding Application across Broad Frequency Regimes** Jihun Leeand Joohoon Kang, Yonsei University, Republic of Korea,

P-4-2	**CMOS Low-Noise Amplifier Using A Darlington Structure Technique** Yu-Hsin Chang and Shen-Cheng Yu, National Formosa University, Taiwan
P-5-1	**Ga_2O_3/IGZO Interfacial Engineering for Long-Retention, High-Mobility 2T0C DRAMs** Taeyoon Lee[1,2] and Ho Won Jang[1], [1]Seoul National University, Republic of Korea, [2]Samsung Electronics Co., Ltd. Republic of Korea,
P-5-2	**Predicting Effective Risk Communication for Human-Bear Conflict Mitigation Using Bear Encounter Monitoring Data** Mayu Sekimori and Yusuke Fukazawa, Sophia University, Japan
P-5-3	**Multispectral Photoresponse and Enhanced Charge-Trapping in Organic-Assisted Photomemory Synapses for Hardware-based Neuromorphic Computing** Wangmyung Choi[1], Kyounghoon Kim[2], Dmytro F. Perepichka[3], and Hocheon Yoo[1], [1]Hanyang University, Republic of Korea, [2]Gachon University, Republic of Korea, [3]McGill University, Canada
P-5-4	**The Gaussian Transistors on Circuit Board System** Youngwoo Yoo[1,†], Youngmin Han[1], Young-Joon Kim[2], and Hocheon Yoo[1], [1]Hanyang University, Republic of Korea, [2]Gachon University, Republic of Korea
P-5-5	**Electrical Breakdown Reliability of Non-Porous pV3D3 Ultra Low-k Dielectrics for BEOL Integration** Chae Eun Oh, Sang Hyeok Han, Myung Jin Kim, Hyung Jun Kim, Sang Ho Song and Min Ju Kim, Dankook University, Republic of Korea,
P-5-6	**Rapid Synthesis of Mn2ZnO4 Spinel Oxide for Environmental and Energy Applications** Cheyeon Park and Ha-Jin Lee, Seoul Women's University, Republic of Korea
P-5-7	**ALD-Grown VO2 Thin Films for Selector-Only Memory** Si Yeon Song, Hong Sub Lee, Kyung Hee University, Republic of Korea
P-5-8	**Graph-Based Inter-Signal Correlation Elimination for In-Memory Stochastic Computing** Kenshin Takamura, Seiya Muramatsu, Kohei Nishida, Kota Ando, Katsuhiro Tomioka, and Tetsuya Asai, Hokkaido University, Japan

P-5-9	**Noise-Spectroscopy PUF-Keyed CNN Inference Using Dual-Function Floating-Body Charge-Trap Flash Transistors** Min Wook Kang[1], Youngchan Cho[1], Seonjae Park[2], Jaehong Park[1], Seo Hui Baek[1], Radermacher David[1], Joon-Kyu Han[2], and Wonjun Shin[1] [1]Sungkyunkwan University, Republic of Korea, [2]Seoul National University, Republic of Korea
P-5-10	**Enhanced Endurance of Low-Voltage Te-Rich GeTe OTS Using a Ti–Te-Based Interlayer** Min Seo Kwon and Seung Hwan Lee, Kyung Hee University, Republic of Korea
P-5-11	**Alkali-Ion Based NbOx Memristor for Selector-Free Neuromorphic Inference** Jin Gyu Choi, Jeong Hyeon Son, Hyun-Sik Kim, Ki-Hoon Son, Yun-Seo Shin, Dae-Hee Han, and Hong Sub Lee, Kyung Hee University, Republic of Korea
P-5-12	**Molten-Salt Synthesis of Biomass-Derived Carbon/ZnCo2O4 Composites for Environmental and Energy Applications** Dain An[1], Chaeyoung Shin[1], John Hong[2], and Ha-Jin Lee[1*,] [1]Seoul Women's University, Republic of Korea, [2]Kookmin University, Republic of Korea
P-6-1	**Polymer–Carbon Nanocomposite Sensor Array for Odor Sensing-based Broccoli Head Rot Detection beyond Visual Inspection** Kana Fukazawa, Yuta Kazama, Le Chen, Jirayupat Chaiyanut, Sayuki Oka, Yohei Yomogida, Kazuki Nagashima, Hokkaido University, Japan
P-6-2	**Impact of Electric Irradiation on Germination and Early Growth of Nicotiana benthamiana in Hydroponic Plant Factories** Mayumi B. Takeyama[1,2], Masaru Sato[1], Koji Kashima[3],[1]Kitami Institute of Technology, Japan, [2]Institute of Science Tokyo, Japan, [3]ASAHI KOGYOSHA, Japan
P-6-3	**Spatial and Temporal Localization of Male Deer Calls Using a Five-Microphone System** Kazuo Oki[1,2], Ibrahim Salem Salem[2], and Sakae Shirayama[2] [1]The University of Tokyo, Japan, [2]Kyoto University of Advanced Science, Japan
P-6-4	**RGB-NIR Fusion with a Per-Pixel Gate for Grapevine Segmentation** Thatreesophon Ekkorn[1], Yohei Hoshino[1], Yang Liangliang[2] [1]Kitami Institute of Technology, Japan, [2]Hokkaido University, Japan

Poster Session for the 2nd International IEEE EDS MEMS Student Challenge

IEEE EDS MEMS Student Challenge Finalists	Xuanqi Wang, Northwestern Polytechnical University, Xi'an, China Cheng-Chuan Chou, National Sun Yat-sen University, Taiwan Geer Teng, Northwestern Polytechnical University, Xi'an, China Zhicong Li, Aerospace Information Research Institute, Chinese Academy of Sciences / University of Chinese Academy of Sciences, China Ryugo Shimamura, The University of Tokyo, Japan Yu Tian KU Leuven, Belgium Jiaxiang Wang, Shanghai Jiao Tong University, China Jiawei Nie, ShanghaiTech University, China Xingyu Liu, The Hong Kong University of Science and Technology, Hong Kong SAR

19:30-21:30, October 12

Banquet

Expo-Demo

Expo Demo	**Hokkaido Univ. IFERS** **Micro System Integration Center, Tohoku University** **NY Creates** **Saginomiya Seisakusho, inc.** **ScienceEdge Inc.** **SCREEN Semiconductor Solutions Co., Ltd.** **tei SOLUTIONS** **TOYOTA MOTOR CORPORATION** **Yokogawa Electric Corporation**

Pitch Contest Final (TBD)

Venue: Grand Hall, 2F, Annex Building of Sapporo Grand Hotel

Day 3, October 13th (Tuesday), 2026

9:00-12:00, October 13

Plenary/Keynote

Chair: Hocheon Yoo (Hanyang University), General Co-Chair, DTDA2026

Venue: KINSHI Room, 2F, Main Building of Sapporo Grand Hotel

PN-2 9:00-9:50	**From Research to Clinical Practice: The Real-World Implementation of Medical Imaging AI [Plenary]** Kohsuke Kudo, Hokkaido University, Japan
KY-4 9:50-10:30	**2D Materials, Interface engineering, Integrated electronic devices [Keynote]** Hyeon-Jin Shin, Gwangju Institute of Science and Technology, Republic of Korea
10:30-10:40	Break
KY-5 10:40-11:20	**Energy harvesters and self-power sensors: from prototypes to applications [Keynote]** Yunjia Li, Xi'an Jiaotong University, China
KY-6 11:20-12:00	**Beyond Stimulation: Engineering Safe and Reversible Neural Inhibition [Keynote]** Min-Ho Seo, Pusan National University, Republic of Korea

13:00-18:30, October 13

Expo-Demo/Poster Session for the 2nd International IEEE EDS MEMS Student Challenge

Venue: Red Brick Hall B, 2F, Red Brick Building

9:00-18:30	**Hokkaido Univ. IFERS** **KSOL Corp.** **Micro System Integration Center, Tohoku University** **NY Creates** **Saginomiya Seisakusho, inc.** **ScienceEdge Inc.** **SCREEN Semiconductor Solutions Co., Ltd.** **tei SOLUTIONS** **ThreeBond Co., Ltd.** **TOYOTA MOTOR CORPORATION** **Yokogawa Electric Corporation**

9:00-18:30	Xuanqi Wang, Northwestern Polytechnical University, Xi'an, China
IEEE EDS	Cheng-Chuan Chou, National Sun Yat-sen University, Taiwan (R.O.C.)
MEMS	Geer Teng, Northwestern Polytechnical University, Xi'an, China
Student	Zhicong Li, Aerospace Information Research Institute, Chinese Academy of
Challenge	Sciences / University of Chinese Academy of Sciences, China
Finalists	Ryugo Shimamura, The University of Tokyo, Japan
	Yu Tian KU Leuven, Belgium
	Jiaxiang Wang, Shanghai Jiao Tong University, China
	Jiawei Nie, ShanghaiTech University, China
	Xingyu Liu, The Hong Kong University of Science and Technology, Hong Kong SAR

12:10-12:50, October 13

Lunch Session: Sponsored by Saginomiya Seisakusho, Inc.

Chair: TBD

Venue: KINSHI Room, 2F, Main Building of Sapporo Grand Hotel

12:10-12:50	**TBD**

13:00-16:00, October 13

Application Session Area 1: Unleashing Power of MEMS

Chairs: Shinya Yoshida (Shibaura Institute of Technology), Yuki Okamoto (AIST)

Venue: Red Brick Hall A, 2F, Red Brick Building

AR-1-7	**Nanofiber-Cavity-Based Quantum Interconnect for Distributed Fault-Tolerant**
13:00-13:30	**Quantum Computing [Invited]**
	Akihisa Goban
	Nanofiber Quantum Technologies, Inc., Japan
AR-1-8	**Metasurface-based Wavefront Shaping: From Holographic Illumination to**
13:30-14:00	**High-Power Laser Applications [Invited]**
	Kentaro Iwami
	Tokyo University of Agriculture and Technology, Japan
AR-1-9	**On-Site and Continuous Chemical Analysis: Evolution of Ball SAW Technology**
14:00-14:30	**[Invited]**
	Nobuo Takeda, Shigo Akao, Takamitsu Iwaya, Kazushi Yamanaka, Hideyuki Fukushi, Tatsuhiro Okano, Masashi Fukuzaki, Tomoki Tanaka, Toru Ohizumi, Akinobu Takeda, Yusuke Tsukahara
	Ball Wave Inc., Japan

14:30-14:40	Break
AR-1-10 14:40-15:10	**Two Microelectrode Array Approaches for Chemical and Bioimaging: CMOS Amperometric Sensors and Bipolar Electrochemical Microscopy [Invited]** Kumi Y. Inoue University of Yamanashi, Japan
AR-1-11 15:10-15:40	**Simultaneous and Independent Control of Multiple Eigenmodes in a Single Resonator for Multimodal Sensing [Invited]** Takashiro Tsukamoto Tohoku University, Japan
AR-1-12 15:40-15:50	**Reconfigurable Gaussian and Sigmoid Function Generation in Parallel Split-Gate Anti-Ambipolar Transistors** Juhyung Seo,Wangmyung Choi,Hocheon Yoo Hanyang University, Republic of Korea
AR-1-13 15:50-16:00	**Development of a MEMS-based Monitoring System for Crack Propagation on Concrete Surface** Makoto Iwasaki[1],Emika Sugawara[1],Katsufumi Hashimoto[1],Hiroyuki Mitsuya[2] [1] Hokkaido University, Japan, [2] Saginomiya Seisakusho, Japan

13:00-18:30, October 13

Workshop and Application Session Area 6: Smart Agriculture on the Ground and in Space

Chairs: Mayumi Takeyama (Kitami Institute of Technology), Kazuo Oki (The Univ. Tokyo / KUAS)

Venue: Community Room (Dohmin Base) A, B1F, Red Brick Building

Presentation Order TBA	**Individual Broccoli Detection from UAV Orthomosaic Imagery: Balancing Accuracy and Training Cost [Invited]** Hiroto Shimazaki[1,5], Hiroki Hayashi[2], Ryoji Korei[3], Kazuo Oki[4,5], [1]National Institute of Technology, Kisarazu College, Japan, [2]Chiba University, Japan, [3]Air Water Inc., Japan, [4]Kyoto University of Advanced Science, Japan, [5]The University of Tokyo, Japan
Presentation Order TBA	**Remote Sensing for Wildlife Damage Control [Invited]** Naoko Miura, The University of Tokyo, Japan
Presentation Order TBA	**Potential of Satellite Remote Sensing to Estimate Rice Grain Moisture Content for Optimal Harvest Timing [Invited]** Shoko Kobayashi, Tamagawa University, Japan
Presentation Order TBA	**From Bear Encounter Prediction to Risk Communication: A Data-Driven Approach to Human–Bear Conflict Mitigation [Invited]** Yusuke Fukazawa, Sophia University, Japan

Presentation Order TBA	**From Earth to Space: Ultra-Compact Soil Moisture and Nutrient Sensing Technologies for Future Agriculture [Invited]** Masaru Ozeki, NTT DATA Japan
Presentation Order TBA	**What Connects a Rice Plant Factory, an Oral Vaccine and Farming on the Moon? [Invited]** Kashima Koji, Asahi Kogyosha, Japan

16:30-17:50, October 13

Application Session Area 3: Robotics for Smart Society II: Adaptive, Secure, and Human-Centered Intelligent Systems

Chairs: Masanori Muroyama (Tohoku Inst. of Tech.), Takashiro Tsukamoto (Tohoku University)

Venue: Red Brick Hall A, 2F, Red Brick Building

AR-3-5 16:30-16:50	**An Area-Efficient eFPGA IP for Adaptive Robot SoCs in a Smart Society** Ryo Iwasaki and Masahiro Iida, Kumamoto University, Japan
AR-3-6 16:50-17:10	**Integrated True Random Number Generators and Physically Unclonable Functions in a Hybrid Ferro-Ionic Duality for Secure Robotic Nodes** Sangwan Kim[1], Hosu Park[1], JeongHan Kim[2], Daewoong Kwon[2], and Wonjun Shin[1], [1]Sungkyunkwan University, Republic of Korea, [2]Hanyang University, Republic of Korea
AR-3-7 17:10-17:30	**FPGA Implementation of an ADC-Free sEMG Input Unit for Robot Teleoperation with Force Feedback** Tatsuya Nagasawa[1], Mitsuhito Ando[1], Takahiro Adachi[2], and Haruo Noma[1], [1]Ritsumeikan University, Japan, [2]ATR-Promotions Inc., Japan
AR-3-8 17:30-17:50	**Development and Evaluation of a NotebookLM-Based Nature-Tech TRIZ Ideation Support System** Kensuke Yoshino[1], Itsuki Obata[1], Yoshinori Fujihira[1], Takeshi Yamauchi[2], Toru Kobayashi[3], and Shigeaki Tanimoto[4], [1]Muroran Institute of Technology, Japan, [2]Niigata University, Japan, [3]Komazawa University, Japan, [4]Japan International University, Japan

18:30-21:00, October 13

IEEE EDS Women in Electron Devices (WiED)/Young Profesionals (YP) Panel Session

Chair: TBD

Venue: Red Brick Hall A, 2F, Red Brick Building

18:30-21:00	**TBD**

Day 4, October 14th (Wednesday), 2026

9:00-12:00, October 14

Workshop: Advanced Packaging for Quantum Computing (I)

Chair: TBD

Venue: GINSEN Room, East Building of Sapporo Grand Hotel

Presentation Order TBA	**3D Integration Approaches for the Upscaling of Quantum Systems on 300 mm Silicon Wafers** Jaber Derakhshandeh, Imec, Belgium
Presentation Order TBA	**Towards Efficient Design Automation of Large Scale Quantum Circuits** Darsen D. Lu, National Cheng Kung University, Tainan
Presentation Order TBA	**Laser-assisted technologies for cryogenic quantum–classical integration** Wagno Alves Bragança Júnior, QuTech, Delft University of Technology, The Netherlands

9:00-12:00, October 14

Application Session Area 2: Biosensors, Bioelectronics, Biomedical Devices

Chairs: Takashi Tokuda (Inst. of Science Tokyo), Yuhei Hayamizu (Inst. of Science Tokyo)

Venue: Red Brick Hall A, 2F, Red Brick Building

AR-2-1 9:00-9:30	**Biohybrid Olfactory Sensing with Insect Antennae: From Robotic Odor Tracking to Long-Term Biointerface Engineering [invited]** Daigo Terutsuki, Shinshu University, Japan
AR-2-2 9:30-10:00	**Vascular Microphysiological Systems with Real-Time Impedance Monitoring for Kidney, Lung, and Tumor Modeling [invited]**Ryuji Yokokawa, Kyoto University, Japan
AR-2-3 10:00-10:20	**Ultrathin EIT E-Skin for Robust Three-Dimensional Tactile Mapping** Jung-Hoon Hong, and Ki Jun Yu, Yonsei University, Republic of Korea
10:20-10:40	Break
AR-2-4 10:40-11:00	**Operation of Peptide-Functionalized Graphene Odor Sensors in Humid Air** Mariko Sato, Yui Yamazaki, and Yuhei Hayamizu, Institute of Science Tokyo, Japan
AR-2-5 11:00-11:20	**Bio-Inspired Multimodal Iontronic Sensing Based on Electric Double Layers** Shimpei Ono[1], Kazumoto Miwa[2], [1]Tohoku University, Japan, [2]Central Research Institute of Electric Power Industry, Japan

AR-2-6 11:20-11:40	**Silane-Coupled Redox Zwitterionic Hydrogel Modified Bioanodes on Flexible Carbon Cloth for Implantable Enzymatic Biofuel Cells** Yixuan Huang, Madoka Takai, University of Tokyo, Japan
AR-2-7 11:40-12:00	**Normalized SERS Sweat Sensing Using a Skin-Mounted Microfluidic Reactor** Bon Jekal, Daeun Sung, and Jahyun Koo, Korea University, Republic of Korea

9:00-10:40, October 14

Expo-Demo

Venue: Red Brick Hall B, 2F, Red Brick Building

9:00-10:40	**Hokkaido Univ. IFERS** **KSOL Corp.** **Micro System Integration Center, Tohoku University** **NY Creates** **Saginomiya Seisakusho, inc.** **ScienceEdge Inc.** **SCREEN Semiconductor Solutions Co., Ltd.** **tei SOLUTIONS** **ThreeBond Co., Ltd.** **TOYOTA MOTOR CORPORATION** **Yokogawa Electric Corporation**
9:00-10:40 **IEEE EDS MEMS Student Challenge Finalists**	Xuanqi Wang, Northwestern Polytechnical University, Xi'an, China Cheng-Chuan Chou, National Sun Yat-sen University, Taiwan (R.O.C.) Geer Teng, Northwestern Polytechnical University, Xi'an, China Zhicong Li, Aerospace Information Research Institute, Chinese Academy of Sciences / University of Chinese Academy of Sciences, China Ryugo Shimamura, The University of Tokyo, Japan Yu Tian KU Leuven, Belgium Jiaxiang Wang, Shanghai Jiao Tong University, China Jiawei Nie, ShanghaiTech University, China Xingyu Liu, The Hong Kong University of Science and Technology, Hong Kong SAR

12:10-12:50, October 14

Lunch Session: Sponsored by ScienceEdge Inc.

Chair: TBD

Venue: GINSEN Room, East Building of Sapporo Grand Hotel

12:10-12:50	**TBD**

13:00-15:25, October 14

Application Session Area 5: Environmental Impact Mitigation, Energy Reduction and Water Risk Management (Session 2: AI x Sustainability)

Chairs: Shin Nakagawa (SCREEN), Slava Libman (FTD Solutions)

Session Facilitators: Akiko Ueda (AIST), Azusa N. Hattori (I-PEX Piezo Solutions), Harold W. Stokes (SCREEN)

Venue: Red Brick Hall A, 2F, Red Brick Building

13:00-13:05	**Opening Talk: A Place to Learn, Share, and Connect - Building a Sustainable Future Together!** Shin Nakagawa, SCREEN Semiconductor Solutions, Japan
AR-5-9 13:05-13:20	**Lower-Voltage and Reliable Arsenic-Free Ge-Bi-Se Selector-Only Memory** Suyong Chae, Changdeok Han, and Seung Hwan Lee, Kyung Hee University, Republic of Korea
AR-5-10 13:20-13:35	**Memory Capacity, Not Compute, Bounds Large-MoE Serving: A 15x Latency Reduction on GLM-5.1** Yoshiki Kunimoto and Aki Asahara, Fixstars Corporation, Japan
AR-5-11 13:35-13:55	**High-Density MoS2-Channel Charge-Trap Flash Memory and Machine Learning-Assisted Sensing Methodologies** Ki Han Kim[1], Ju Han Park[1], Khang June Lee[2], Ji-Won Seo[3], Yeong Kwon Kim[1], Junhwan Choi[4], Min-Jae Seo[3], Byung Chul Jang[1*,] [1]Kyungpook National University, Republic of Korea, [2]The University of Suwon, Republic of Korea, [3]University of Seoul, Republic of Korea, [4]Dankook University, Republic of Korea
AR-5-12 13:55-14:15	**Energy-Efficient Multilevel MoS2-Channel Charge-Trap Flash Memory with a High Gate-Coupling Ratio for In-Memory Computing** Yeong Kwon Kim and Byung Chul Jang, Kyungpook National University, Republic of Korea
14:15-14:30	Break

AR-5-13 14:30-14:50	**Error Detection and Weight Masking Architecture for Low-Voltage Floating-Point SRAM-CIM** Tetsuro Mizuno, Seiji Adachi, Yoshinari Wada, Ayane Matsuzaki, Kota Ando, Tetsuya Asai, and Takao Marukame, Hokkaido University, Japan
AR-5-14 14:50-15:05	**Real-Time Wireless Early Fire Detection Platform Enabled by a ZTO Nanocomposite Deep-UV Sensor** Junhyung Cho, Taehyun Park, Seungme Kang and Hocheon Yoo, Hanyang University, Republic of Korea
AR-5-15 15:05-15:25	**Device-Enabled Digital Twins for Water Risk Management in Advanced Semiconductor Facilities** lava Libman[1], Gil Maron[1], Alex Evashenk[1], Kelly Osborne[2], and Alex Milshteen[2], [1]FTD Solutions, U.S.A., [2]Intel, U.S.A.

13:00-16:00, October 14

Workshop: Advanced Packaging for Quantum Computing (II)

Chair: TBD

Venue: Community Room (Dohmin Base) B, B1F, Red Brick Building

13:00-14:00	**TBD**
14:00-15:00	**TBD**
15:00-16:00	**TBD**

16:00-18:00, October 14

Closing

Chair: Hocheon Yoo (Hanyang University), General Co-Chair, DTDA2026

Award Ceremony

Venue: Red Brick Hall A, 2F, Red Brick Building