## AWAD 2021 Schedule

### Aug 26 (Thu)

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<th>Time</th>
<th>Main Room</th>
<th>Break-Out A</th>
<th>Break-Out B</th>
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<tr>
<td>9:00-9:15</td>
<td>Opening Remarks</td>
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<tr>
<td>9:15-10:45</td>
<td>-</td>
<td>Session A1: Advanced semiconductor technologies I</td>
<td>Session B1: Characterization and simulation</td>
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<tr>
<td>10:45-11:00</td>
<td>Break</td>
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<tr>
<td>11:00-12:15</td>
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<td>Session A2: MOS logic and memory devices I</td>
<td>Session B2: Emerging technology I</td>
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<tr>
<td>12:15-13:30</td>
<td>Lunch</td>
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<td></td>
<td>Interactive Session (Free talk)</td>
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<tr>
<td>13:30-14:50</td>
<td>PLENARY SESSION</td>
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<td>14:50-15:00</td>
<td>Break</td>
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<tr>
<td>15:00-16:00</td>
<td>Poster Session</td>
<td>Break-Out Session (Break-Out 1 - Break-Out 15)</td>
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<td>16:00-16:15</td>
<td>Break</td>
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<td>16:15-17:15</td>
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<td>Session A3: Emerging technology II</td>
<td>Session B3: Emerging technology III</td>
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<tr>
<td>17:15-18:00</td>
<td>Interactive Session (Free talk)</td>
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<tr>
<td>Time</td>
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<tr>
<td>9:00-10:45</td>
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<td>Session A4 : Neuromorphic devices and compute technologies</td>
<td>Session B4 : Emerging technology IV</td>
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<td>10:45-11:00</td>
<td>Break</td>
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<tr>
<td>11:00-12:15</td>
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<td>Session A5 : Advanced semiconductor technologies II</td>
<td>Session B5 : Quantum devices and compute technologies</td>
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<td>12:15-14:00</td>
<td>Lunch</td>
<td>Interactive Session (Free talk)</td>
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<td>14:00-14:40</td>
<td>PLENARY SESSION</td>
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<td>14:40-15:00</td>
<td>Break</td>
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<tr>
<td>15:00-16:30</td>
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<td>Session A6 : MOS logic and memory devices II</td>
<td>Session B6 : Power electronic devices</td>
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<td>16:30-16:45</td>
<td>Closing Remarks</td>
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AWAD 2021 Program
August 26 (Thursday)

Opening Remarks 09:00-09:15

Session A1: Advanced Semiconductor Technologies
Session Co-Chairs: TBA
A1-1 9:15-9:45
[Invited] Compact Model for Reconfigurable Field-Effect Transistors
Sungyeop Jung (Advanced Institute of Convergence Technology); Seong Hyun Lee (Electronics and Telecommunications Research Institute); Sang Hoon Kim (Electronics and Telecommunications Research Institute); Jeong Woo Park (Electronics and Telecommunications Research Institute); Tae Moon Roh (Electronics and Telecommunications Research Institute); Dongwoo Suh (Electronics and Telecommunications Research Institute)
A1-2 9:45-10:00
Low-Temperature Formation of n-type GeSn on Insulator by Bi-Induced Layer Exchange Crystallization
Satoshi Kawahara (Kyushu Univ.); Sen Liu (Kyushu Univ.); Taizoh Sadoh (Kyushu Univ.)
A1-3 10:00-10:30
[Invited] Reaction Mechanism of Area-Selective Deposition for Advanced Device Fabrication
Il-Kwon Oh (Ajou University)
A1-4 10:30-10:45
Analysis of Work-Function Variation Effects on a Negative Capacitance Tunnel Field-Effect Transistor
Seungwon Go (Ajou University); Sangwan Kim (Ajou University)

Session B1: Characterization and Simulation
Session Co-Chairs: TBA
B1-1 9:15-9:30
Characterization of Seebeck Coefficient Under Periodic Heating for Simultaneous Thermoelectric Properties Measurement
Faiz Salleh (University of Malaya)
B1-2 9:30-9:45
Electromotive Force Characteristics of Piezoelectric/Thermoelectric-Combined Power Generator
Naoki Kawamura (Shizuoka University); Ryoya Suzuki (Shizuoka University); Kotomu Naito (Shizuoka University); Yasuhiro Hayakawa (Shizuoka University); Kenji Murakami (Shizuoka University); Masaru Shimomura (Shizuoka University); Hiroya Ikeda (Shizuoka University)
B1-3  9:45-10:00
Output Power Characteristics of Flexible Thermoelectric Power Generators
Daiki Kansaku (Shizuoka University); Nobuhiro Kawase (Shizuoka University); Naoki Fujiwara (Shizuoka University); Faizan Khan (Shizuoka University); Kristy Arockiyasamy Periyanayaga (Shizuoka University); Nisha Kuruvankatil Dharmajan (SRM Institute of Science and Technology); Toshitaka Yamakawa (Kumamoto University); Kazushi Ikeda (Nara Institute of Science and Technology); Yasuhiro Hayakawa (Shizuoka University); Kenji Murakami (Shizuoka University); Masaru Shimomura (Shizuoka University); Hiroya Ikeda (Shizuoka University)

B1-4  10:00-10:15
Implementation of High-Sensitivity Diode Temperature Sensor
Chun-Hyung Cho (Hongik University)

B1-5  10:15-10:30
Local Electric Field Concentration of Tunnel Field-Effect Transistors
Jaeseung Woo (Sogang University); Jang Woo Lee (Sogang University); Woo Young Choi (Sogang University)

B1-6  10:30-10:45
Assessment of Data Retainability in Capacitorless Dynamic Random-Access Memory by Time- and Position-Dependent Hole Diffusion Function
Yi Ju Lee (Gachon University); Seungjo Baek (Gachon University); Seongjae Cho (Gachon University)

Break  10:45-11:00

Session A2 : MOS logic and memory devices I
Session Co-Chairs: TBA
A2-1  11:00-11:30
[Invited] Phase change materials enabling low-energy PCRAM
Yuji Sutou (Tohoku University)

A2-2  11:30-11:45
The effect of inter layers on the ferroelectric undoped HfO2 formation
Masakazu Tanuma (Tokyo Institute of Technology); Joong-Won Shin (Tokyo Institute of Technology); Shun-ichiro Ohmi (Tokyo Institute of Technology)

A2-3  11:45-12:00
Effect of low sputtering gas pressure on the LaBxNy insulator formation for pentacene-based floating-gate memory application
Eun-Ki Hong (Tokyo Institute of Technology); KyungEun Park (Tokyo Institute of Technology); Shun-ichiro Ohmi (Tokyo Institute of Technology)
A2-4  12:00-12:15
Nonvolatile Content-Addressable Memory using Nanoelectromechanical Memory Switches for Data-Intensive Computation
Jae Seong Lee (Sogang University); Woo Young Choi (Sogang University)

Session B2 : Emerging technology I
Session Co-Chairs: TBA
B2-1  11:00-11:30
[Invited] Ultra-thin and lightweight organic amplifier enabling bio-signal monitoring with reduced noise levels
Tsuyoshi Sekitani (Osaka University)
B2-2  11:30-11:45
Surface-enhanced Raman scattering spectroscopy with utilizing Au thin film and green laser light
Naoki Matsuda (AIST)
B2-3  11:45-12:15
[Invited] Low-Loss Polymer Cap Transfer Packaging of MMIC-Integrated RF-MEMS Switches
Seonho Seok (C2N-Orsay)

LUNCH / INTERACTIVE SESSION (Free talk)  12:15-13:30

PLENARY SESSION
Session Co-Chairs: TBA
K1-1  13:30-14:10
STT-MRAM and MTJ/CMOS hybrid NV-application processor for IoT and AI era
Tetsuo Endoh (Tohoku Univ.)
K1-2  14:10-14:50
Si highly resistive substrate (HRS) based RF process and devices for mobile front end applications
Yoon Jong Lee (DB Hitek)

Break  14:50-15:00

Poster Session  15:00-16:00
Session Co-Chairs: TBA
P-1 The Manufacture of Photo detectors consisting of Polysilicon Film as Light Absorption Layer
Jae-Sung Lee (Uiduk University); Ihn-Seok Ahn (Uiduk University)
P-2 Investigation of poly silicon channel variation in Vertical 3D NAND flash memory
Inyoung Lee (Myongji University); Seongjae Cho (Gachon University); IL HWAN CHO (Myongji University)

P-3 The TID Circuit Simulation in 5nm Node GAAFET
Jongwon Lee (Korea national university of transportation); Myounggon Kang (Korea National University of Transportation)

P-4 The Comparison of Single Event Upset in Gate-All-Around FET
Yunjae Kim (korea national university of transportation); Myounggon Kang (Korea National University of Transportation)

P-5 Operation of NO2 gas sensor based on Pd-AlGaN/GaN HEMT up to 500 °C
Cuong Van Nguyen (Hongik University); Hyungtak Kim (Hongik University)

P-6 Influence of Al Capping Layer Thickness on Stability and Electrical Performance of IGTO TFTs
Hyun Seok Cha (School of Electrical and Electronics Engineering, Chung-Ang University); Hwan-Seok Jeong (School of Electrical and Electronics Engineering, Chung-Ang University); Seong Hyun Hwang (School of Electrical and Electronics Engineering, Chung-Ang University); Dong Ho Lee (School of Electrical and Electronics Engineering, Chung-Ang University); Hyuck In Kwon (Chung-Ang University)

P-7 Fabrication of flexible bottom-gate MoS2 transistor array on a Parylenc C substrate
Jaewon Park (university of seoul)

P-8 Effect of Work Function Variation of Transfer Characteristics and Memory Performances in Gate-All-Around JLFET
Sang Ho Lee (Kyungpook National University)*; Young Jun Yoon (Korea Atomic Energy Research Institute); Jae Hwa Seo (Korea Electrotechnology Research Institute); Min Su Cho (Kyungpook National University); Jin Park (Kyungpook National University); Hee Daen An (Kyungpook National University); So Ra Min (Kyungpook National University); Geon Uk Kim (Kyungpook National University); Jaewon Jang (Kyungpook National University); Jin-Hyuk Bae (Kyungpook National University); Sin-Hyung Lee (Kyungpook National University); In Man Kang (Kyungpook National University)

P-9 Effect of Body Thickness on the Electrical Characteristics of Source-Pocket (PNPN) Tunnel Field-Effect Transistor (TFET)
Hyungju Noh (Ajou university); Sangwan Kim (Ajou University)

P-10 A parallelly-connected resistance model for evaluating the electrical properties of polycrystalline graphene layers
Jaewoon Kang (Kyungpook National University); Hongsik Park (Kyungpook National University)
P-11  Operating Characteristics of Gamma Irradiated Si BJT  
Sung Ho Ahn (Korea Atomic Energy Research Institute); Gwang Min Sun (Korea Atomic Energy Research Institute); Hani Baek (Korea Atomic Energy Research Institute); Byung Gun Park (Korea Atomic Energy Research Institute)

P-12  Prediction of Variability for Super-Junction IGBT with separated N-buffer Layers using a Machine Learning Approach  
Kiyeong Kim (Pukyong University); Jooseok Noh (Pukyong University); Janghyun Kim (Pukyong University)

P-13  Design and Analysis of DC/DC Boost Converter Using Vertical GaN Power Device based on GaN-on-Sapphire epitaxial  
Min Su Cho (Kyungpook National University); Sang Ho Lee (Kyungpook National University); Hee Dae An (Kyungpook National University); Jin Park (Kyungpook National University); So Ra Min (Kyungpook National University); Geon Uk Kim (Kyungpook National University); Young Jun Yoon (Korea Atomic Energy Research Institute); Jae Hwa Seo (Korea Electrotechnology Research Institute); Jaewon Jang (Kyungpook National University); Jin-Hyuk Bae (Kyungpook National University); Sin-Hyung Lee (Kyungpook National University); In Man Kang (Kyungpook National University)

P-14  Electrical Performance of Vertical GaN-based Trench MOSFETs with Cylindrical and Hexagonal Structure  
Geon Uk Kim (Kyungpook National University); Young Jun Yoon (Korea Atomic Energy Research Institute); Jea Hwa Seo (Korea Electrotechnology Research Institute); Min Su Cho (Kyungpook National University); Sang Ho Lee (Kyungpook National University); Jin Park (Kyungpook National University); Hee Dea An (Kyungpook National University); So Ra Min (Kyungpook National University); Jeawon Jang (Kyungpook National University); Jin-Hyuk Bea (Kyungpook National University); Sin-Hyung Lee (Kyungpook National University); In Man Kang (Kyungpook National University)

P-15  AlGaN/GaN HEMT-based NO2 gas sensor  
dahee kim (Ajou univ. NODE); Seongho hong (Ajou university); Hyeonchae kwon (Ajou university); Junseok Heo (Ajou University)

Session A3 : Emerging technology II  
Session Co-Chairs: TBA

A3-1  16:15-16:45  
[Invited] A Numerical Investigation of Delta-Doped β-(AlxGa1-x)2O3/β-Ga2O3 Double Channel Heterostructure MODFETs  
Gokhan Atmaca (Hongik University); Ho-Young Cha (Hongik university)
Session B3: Emerging technology III
Session Co-Chairs: TBA

B3-1 16:15-16:30
Solar-blind ultraviolet-C AlGaN photodetector
Yeongseok Shim (Ajou University); Junseok Heo (Ajou University)

B3-2 16:30-16:45
Magnetic-Field Dependent Electron Transport of Fe3Si Nanodots
Jialin Wu (Nagoya Univ.); Katsunori Makihara (Nagoya Univ.); Hai Zhang (Inner Mongolia University of Technology); Noriyuki Taoka (Nagoya Univ.); Akio Ohta (Nagoya Univ.); Seiichi Miyazaki (Nagoya Univ.)

B3-3 16:45-17:00
Pseudo-magnetic field-induced slow carrier dynamics in periodically strained graphene
Dong-Ho Kang (Nanyang Technological University); Donguk Nam (NTU)

B3-4 17:00-17:15
MoS2-Ge Visible-IR wideband photodetector
Hwang Aujin (Ajou univ.)

INTERACTIVE SESSION (Free talk) 17:15-18:00
Session A4 : Neuromorphic devices and compute technologies

Session Co-Chairs: TBA

A4-1  9:00-9:30

[Invited] Application of electromigrated Au nanogaps to artificial synaptic devices and physical reservoir computing
Keita Sakai (Tokyo Univ. of Agriculture and Technology)

A4-2  9:30-9:45

Nonlinear Node Using Tunnel Diode and Its Connection for Physical Reservoir Computing System
Shunsuke Saito and Seiya Kasai (Hokkaido Univ.)

A4-3  9:45-10:15

[Invited] Capacitor-less Neuron Circuit with Floating-body Positive Feedback Field Effect Transistor for Low Power operation
MinWoo Kwon (Gangneung-Wonju National University); Kyungchul Park (Seoul National University); Byung-Gook Park (Seoul National University)

A4-4  10:15-10:30

Two-dimensional Materials-based Floating Gate Memory Device for Linear Synaptic Weight Update
Eunpyo Park (Korea Institute of Science and Technology); Gichang Noh (Korea Institute of Science and Technology); In Soo Kim (Korea Institute of Science and Technology); Jiwon Chang (Yonsei University); Kibum Kang (KAIST); Joon Young Kwak (Korea Institute of Science and Technology)

A4-5  10:30-10:45

Ionic Memristive Behavior of Spontaneous Potassium Ion Intercalated Layered MnO2 for Synaptic Device
Gichang Noh (Korea Institute of Science and Technology); Jeongho Kim (Korea Advanced Institute of Science and Technology); Eunpyo Park (Korea Institute of Science and Technology); Hamid Reza Rasouli (Bilkent University UNAM); Naveed Mehmood (Bilkent University UNAM); Ali Sheraz (Bilkent University); Min-kyung Jo (Korea Advanced Institute of Science and Technology); Talip Serkan Kasirga (Bilkent University UNAM); Kibum Kang (Korea Advanced Institute of Science and Technology); Joon Young Kwak (Korea Institute of Science and Technology)
Session B4 : Emerging technology IV

Session Co-Chairs: TBA

B4-1 9:00-09:30
[Invited] Present Status and Prospect of Graphene Interconnect Applications
Kazuyoshi Ueno (Shibaura Institute of Technology)

B4-2 9:30-9:45
Low-temperature atomic layer deposition of AlN by using trimethylaluminium and plasma excited ammonia
Kentaro Saito (Yamagata University); Kazuki Yoshida (Yamagata University); Masanori Miura (Yamagata University); Kansaku Kanomata (Yamagata University); Bashir Ahmad (Yamagata University); Shigeru Kubota (Yamagata University); Fumihiko Hirose (Yamagata University)

B4-3 9:45-10:15
[Invited] The role of photon to electron converted organic materials for image sensor
Kyung-Bae Park (Samsung Advanced Institute of Technology)

B4-4 10:15-10:30
Study of MFIM structure-based ferroelectric tunnel junction according to dielectric thickness and annealing temperature
Joonho Park (Ajou university); Moonjung Choi (Ajou university); Sangwan Kim (Ajou university)

Break 10:45-11:00

Session A5 : Advanced semiconductor technologies II

Session Co-Chairs: TBA

A5-1 11:00-11:30
[Invited] GaN-based light-emitting diode with hole distribution layer for high efficiency and color tunability
Garam Kim (Myongji University)

A5-2 11:30-11:45
Negative Differential Resistance (NDR) in Hetero-Gate-Dielectric Negative Capacitance Tunnel Field-Effect Transistor (NCTFET)
Shinhee Kim (Ajou University); Jae Yeon Park (Ajou University); Sangwan Kim (Ajou University)

A5-3 11:45-12:15
[Invited] Charge-Balanced GaN Super-Heterojunction Schottky Barrier Diode: Design and Experimental Demonstration
Sang-Woo Han (Pennsylvania State University)
Session B5: Quantum devices and compute technologies

Session Co-Chairs: TBA

B5-1 11:00-11:30  
[Invited] Information processing nanodevices learning from natural system  
Takahide Oya (Yokohama National University)

B5-2 11:30-11:45  
Method for Extracting Quantum Transport Parameters from Measured S-parameters in Triple-Barrier Resonant Tunneling Diodes  
Kotaro Aikawa (Tokyo Metropolitan University); Michihiko Suhara (Tokyo Metropolitan University); Takumi Kimura (Tokyo Metropolitan University); Junki Wakayama (Tokyo Metropolitan University); Takeshi Makino (Tokyo Metropolitan University); Katsuhiko Usui (Tokyo Metropolitan University); Kiyoto Asakawa (Tokyo Metropolitan College of Industrial Technology); Kouichi Akahane (National Institute of Information and Communication Technology (NICT)); Issei Watanabe (National Institute of Information and Communications Technology)

B5-3 11:45-12:15  
[Invited] Quantum Chemical Understanding of Atomic Layer Deposition Process  
Bonggeun Shong (Hongik University)

LUNCH / INTERACTIVE SESSION (Free talk) 12:15-14:00

PLENARY SESSION

Session Co-Chairs: TBA

K2-1 14:00-14:40  
Towards topological quantum bits  
Koji Ishibashi (RIKEN)

Break 14:40-15:00

Session A6: MOS logic and memory devices II

Session Co-Chairs: TBA

A6-1 15:00-15:30  
[Invited] Phase stability of ferroelectric HfO2-based films  
Hiroshi Funakubo (Tokyo Institute of Technology, Japan); Yuki Tashiro (Tokyo Institute of Technology, Japan); Takanori Mimura (Tokyo Institute of Technology, Japan); Takao Shimizu (National Institute for Materials Science)
A6-2 15:30-15:45  
Sputtering power dependence of Pt gate electrode deposition on 5 nm thick ferroelectric nondoped HfO₂ formation  
Joong-Won Shin (Tokyo Institute of Technology); Shun-ichiro Ohmi (Tokyo Institute of Technology);  
Masakazu Tanuma (Tokyo Institute of Technology)

A6-3 15:45-16:15  
[Invited] SiC MOSFET - Key Device for Future Electrification  
Tomohide Terashima (Mitsubishi Electric corporation)

A6-4 16:15-16:30  
28nm Atom-Switch FPGA: Static Timing Analysis and Evaluation  
Xu Bai (NanoBridge Semiconductor, Inc.)*; Ryusuke Nebashi (NanoBridge Semiconductor, Inc.);  
Makoto Miyamura (NanoBridge Semiconductor, Inc.); Kazunori Funahashi (NanoBridge Semiconductor, Inc.);  
Naoki Banno (NanoBridge Semiconductor, Inc.); Koichiro Okamoto (NanoBridge Semiconductor, Inc.);  
Hideaki Numata (NanoBridge Semiconductor, Inc.); Noriyuki Iguchi (NanoBridge Semiconductor, Inc.);  
Tadahiko Sugibayashi (NanoBridge Semiconductor, Inc.); Toshitsugu Sakamoto (NanoBridge Semiconductor, Inc.);  
Munehiro Tada (NanoBridge Semiconductor, Inc.)

Session B6: Power electronic devices  
Session Co-Chairs: TBA

B6-1 15:00-15:30  
[Invited] Investigation of HfSiOₓ gate insulator formed by changing fabrication process conditions for GaN power device  
Toshihide Nabatame (National Institute for Materials Science)

B6-2 15:30-16:00  
[Invited] GaN HEMT technology for low-loss and high-voltage applications  
Masaaki Kuzuhara (Kwansei Gakuin Univ.)

B6-3 16:00-16:30  
[Invited] Approaches of Highly Reliable Package for High Power Electronic Devices  
Sang Won Yoon (Hanyang University)

Closing Remarks  16:30-16:45