



# 제 32회 한국반도체학술대회

The 32nd Korean Conference on Semiconductors

2025년 2월 12일(수)-14일(금) | 강원도 하이원리조트

## *Future Normal in Semiconductor*

TA1-K-6 10:30-10:45	<p>A Study on the Cb/Cs Ratio in <math>3.5F^2</math> DRAM Cell Array</p> <p>Hyeok Je Jeong<sup>1</sup>, Kwang Ryeol Kim<sup>1</sup>, Chai Rok Lim<sup>1</sup>, Yong Soo Kim<sup>2</sup>, Dae Young Kim<sup>3</sup>, Jae Hyun Lee<sup>4</sup>, and Gi Yeol Yun<sup>1</sup></p> <p><sup>1</sup>Taesung Environmental Research Institute, <sup>2</sup>University of Ulsan, <sup>3</sup>Osan University, <sup>4</sup>Pusan National University</p>
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2025년 2월 13일(목), 09:00-10:45

Room B(그랜드볼룸III), 4층

K. Memory (Design & Process Technology) 분과

**002\_[TB1-K] Charge Trapped Memory Application - I**

좌장: 강대웅 교수(서울대학교), 전종욱 교수(성균관대학교)

초청 TB1-K-1 09:00-09:30	<b>Key Challenges of VNAND Unit Cell Design for Higher Layer Stacking</b> Doo Hee Hwang, Sang Hoon Kim, Seung Jae Baik, and Jae duk Lee Flash TD Team, Semiconductor R&D Center, Samsung Electronics Co., Ltd.
TB1-K-2 09:30-09:45	<b>Array-level NAND Cell Simulator for Feasibility Assessment of Novel Memory Cells in 3D NAND Architecture</b> Seong Hwan Kong and Wonbo Shim Seoul National University of Science and Technology
TB1-K-3 09:45-10:00	<b>Improved Memory Characteristics of MONOS Device with High-k dots Embedded Si<sub>3</sub>N<sub>4</sub> Charge Trap Layer</b> Seongho Lee <sup>1</sup> , San Park <sup>1</sup> , Sehyeon Choi <sup>1</sup> , Yun Seo Lim <sup>1</sup> , Hyungjun Kim <sup>2</sup> , Jaehyun Yang <sup>2</sup> , Bio Kim <sup>2</sup> , Youngseon Son <sup>2</sup> , Hanmei Choi <sup>2</sup> , and Changhwan Choi <sup>1</sup> <sup>1</sup> Division of Materials Science & Engineering, Hanyang University, <sup>2</sup> Memory Process Development Team, Samsung Electronics Co., Ltd.
TB1-K-4 10:00-10:15	<b>Analysis of the Dominant Mechanism in Hybrid NAND Flash for Enhanced Memory Window</b> Jaeseon Eo <sup>1</sup> , Kihoon Nam <sup>1</sup> , Donghyun Kim <sup>1</sup> , Jiyeon Kim <sup>1</sup> , Sanghun Jeon <sup>2</sup> , and Rock-Hyun Baek <sup>1</sup> <sup>1</sup> Department of Electrical Engineering, POSTECH, <sup>2</sup> School of Electrical Engineering, KAIST
TB1-K-5 10:15-10:30	<b>Leveraging Negative Capacitance for Reducing Operating Voltage in High-Density 3D NAND Technology</b> Sangho Lee, Yunseok Nam, Giuk Kim, Hunbeom Shin, Seokjoong Shin, and Sanghun Jeon School of Electrical Engineering, KAIST
TB1-K-6 10:30-10:45	<b>Unveiling the Origin of Disturbance in FeFET and the Potential of Multifunctional TiO<sub>2</sub> as a Breakthrough for Disturb-free 3D NAND Cell</b> Hyunjun Kang, Giuk Kim, and Sanghun Jeon School of Electrical Engineering, KAIST



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Room C(컨벤션홀 L), 5층

D. Thin Film Process Technology 분과

003\_[TC1-D] Emerging Devices - I

좌장: 백인환 교수(인하대학교), 이웅규 교수(송실대학교)

초청 TC1-D-1 09:00-09:30	Atomic Layer Deposition of Chalcogenide Materials for Futuristic Memory Devices Chanyoung Yoo Hongik University
TC1-D-2 09:30-09:45	Self-Rectifying RRAM with CMOS compatible materials So Jung Yoo and Gun Hwan Kim Department of System Semiconductor Engineering, Yonsei University
TC1-D-3 09:45-10:00	Self-Rectifying Resistive Memory in 4K Passive Crossbar Arrays Ik Joon Seo and Gun Hwan Kim Department of System Semiconductor Engineering, Yonsei University
TC1-D-4 10:00-10:15	Thermal Perspective on the Impact of Operating Current in Selector-Only Memory Devices: A Study of Joule Heating Effect Ju Hwan Park <sup>1</sup> , Hyun Wook Km <sup>1</sup> , Se Hwan Jeon <sup>1</sup> , Tae Jun Yang <sup>1</sup> , Guesuk Lee <sup>2</sup> , Sungsoon Choi <sup>2</sup> , Tae Hee Jung <sup>2</sup> , and Byung Joon Choi <sup>1</sup> <sup>1</sup> Seoul National University of Science and Technology, <sup>2</sup> KETI
TC1-D-5 10:15-10:30	Selector-Only Memory with Switchable Threshold Voltage Behavior Hyun Kyu Seo, Jae Jun Lee, Min Kyung Lee, Se Yeon Jeong, and Min Kyu Yang Sahmyook University
TC1-D-6 10:30-10:45	The Effects of Indium Doping on the Structural and Electrical Properties of the Selector-Only-Memory (SOM) Device Won Hee Jeong and Gun Hwan Kim Department of System Semiconductor Engineering, Yonsei University



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2025년 2월 13일(목), 09:00-10:45

Room D(에메랄드 I), 5층

### A. Interconnect & Package 분과

#### 004\_[TD1-A] Emerging Interconnect 1

좌장: 류제인 박사(한국전자기술연구원), 이은호 교수(성균관대학교)

TD1-A-1 09:00-09:15	<p>Frequency Dependency of Cu Flexible Interconnects in Cracking Behavior during Bending Fatigue</p> <p>Jun Hyeok Hyun<sup>1</sup>, Seongi Lee<sup>2</sup>, Sung-Jae Choi<sup>2</sup>, Young-Chang Joo<sup>1</sup>, and So-Yeon Lee<sup>2</sup></p> <p><sup>1</sup>School of Material Science and Engineering, Kumoh National Institute of Technology, <sup>2</sup>Department of Materials Science &amp; Engineering, Seoul National University</p>
TD1-A-2 09:15-09:30	<p>열처리 온도에 따른 Ru/SiGe 계면에서의 반응을 통한 접촉저항 공정 평가</p> <p>정희윤<sup>1,4</sup>, 김성준<sup>2,4</sup>, 박준형<sup>1,4</sup>, 이태호<sup>4</sup>, 박인성<sup>3,4</sup>, 신왕철<sup>1,4</sup>, 박영욱<sup>1</sup>, 안진호<sup>1,2,4</sup></p> <p><sup>1</sup>한양대학교 신소재공학과, <sup>2</sup>한양대학교 나노반도체공학과, <sup>3</sup>한양대학교 나노과학기술연구소, <sup>4</sup>Center for Hyperscale, Hyperfunction, Heterogeneous Integration Pioneering Semiconductor Technology</p>
TD1-A-3 09:30-09:45	<p>Influence of Oxygen/Carbon Ratio on Low-k SiCOH Films Deposited by PECVD Using a Novel C<sub>5</sub>H<sub>16</sub>OSi Precursor</p> <p>Sangwoo Lee<sup>1</sup>, Jaejin Hwang<sup>2</sup>, Joonbong Lee<sup>1</sup>, Hyunbin Chung<sup>1</sup>, Dae Haa Ryu<sup>1</sup>, Heeseo Yun<sup>1</sup>, In Gyu Choi<sup>3</sup>, Hyojun Jung<sup>3</sup>, Kwangwoo Lee<sup>3</sup>, Sanghak Yeo<sup>3</sup>, Sungwoo Lee<sup>3</sup>, Jaeyoung Yang<sup>3</sup>, Ho Jung Jeon<sup>4</sup>, You Seung Rim<sup>4</sup>, Jaekwang Lee<sup>2</sup>, and Taekjib Choi<sup>1</sup></p> <p><sup>1</sup>Hybrid Materials Research Center and Department of Nanotechnology and Advanced Materials Engineering, Sejong University, <sup>2</sup>Department of Physics, Pusan National University, <sup>3</sup>Research and development laboratory, TES Co., Ltd., <sup>4</sup>Department of Semiconductor Systems Engineering and Convergence Engineering for Intelligent Drone, Sejong University</p>
TD1-A-4 09:45-10:00	<p>나노 초 그린 레이저 어닐링을 활용한 Contact/via 접촉 불량 해소</p> <p>정재중<sup>1</sup>, 박영근<sup>1</sup>, 김영준<sup>1</sup>, 김희태<sup>1</sup>, 김동빈<sup>1</sup>, 조희재<sup>2</sup>, 권수현<sup>2</sup>, 조병진<sup>1</sup></p> <p><sup>1</sup>한국과학기술원 전기및전자공학부, <sup>2</sup>나노종합기술원 나노공정기술실</p>





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TD1-A-5 10:00-10:15	초미세 반도체 소자용 후면 전력 공급 기술(BSPDN) 특허 출원 동향 방기인, 인치복, 김희태 특허청 반도체심사추진단
<a href="#">초청</a> TD1-A-6 10:15-10:45	Atomic Layer Deposition of Platinum Group Metals for Next-Generation Interconnects Minsu Kim Kyonggi University



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Room E(에메랄드 II+III), 5층

### D. Thin Film Process Technology 분과

#### 005\_[TE1-D] Ferroelectrics

좌장: 최창환 교수(한양대학교), 전우진 교수(경희대학교)

TE1-D-1 09:00-09:15	<b>BEOL-Compatible and Robust Ferroelectricity in 5 nm-thick <math>\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2</math> film by Adopting TiN and Mo Alloy Electrode</b> Jaewook Lee, Yong Hyeon Cho, Hyeong Seok Choi, Hyun Woo Jeong, Hyojun Choi, and Min Hyuk Park Seoul National University
TE1-D-2 09:15-09:30	<b>N-Terminated TiN Electrodes with (111) Texture for Low-Voltage Switching (0.8 V) in Ferroelectric <math>\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2</math> Capacitors</b> Geun Hyeong Park <sup>1</sup> , Yong Hyeon Cho <sup>1</sup> , Dong Hyun Lee <sup>1</sup> , Se Hyun Kim <sup>1</sup> , Ho Jun Kim <sup>2</sup> , and Min Hyuk Park <sup>1</sup> <sup>1</sup> Seoul National University, <sup>2</sup> Hanyang University
TE1-D-3 09:30-09:45	<b>BEOL-Compatible Fabrication of Reliable FeFETs with Sub 10nm <math>\text{Hf}_x\text{Zr}_{1-x}\text{O}_2</math> Films</b> Geonwook Kim <sup>1</sup> , Hyunho Seok <sup>2</sup> , Sihoon Son <sup>2</sup> , Hyunbin Choi <sup>3</sup> , Jinhyoung Lee <sup>1</sup> , and Taesung Kim <sup>1,2,3</sup> <sup>1</sup> Department of Mechanical Engineering, Sungkyunkwan University, <sup>2</sup> SKKU Advance Institute of Nano Technology, <sup>3</sup> Department of Semiconductor Convergence Engineering, Sungkyunkwan University
TE1-D-4 09:45-10:00	<b>Enhancing Memory Characteristics of MIFIS-FeFET: Effects of <math>\text{Si}_3\text{N}_4</math> Charge Injection Layer and Its Composition</b> Hyojin Ahn <sup>1</sup> , Hyunjin Lim <sup>1</sup> , Sangkuk Han <sup>1</sup> , Yehbeen Im <sup>1</sup> , Wonjae Choi <sup>2</sup> , Youngseo Na <sup>2</sup> , and Changhwan Choi <sup>1,2</sup> <sup>1</sup> Division of Materials Science and Engineering, Hanyang University, <sup>2</sup> Department of Semiconductor Engineering, Hanyang University
TE1-D-5 10:00-10:15	<b>Understanding Domain switching Kinetics in Ferroelectric <math>\text{HfO}_2</math> : A Pseudo-Voigt and Machine Learning Approach</b> Yong Hyeon Cho, Geun Hyeong Park, Dong Hyun Lee, Hyun Woo Jung, Young Min Kim, Ho Won Jang, and Min Hyuk Park Department of Materials Science and Engineering, Inter-university Semiconductor Research Center, Seoul National University



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초청 TE1-D-6 10:15-10:45	Parallel Synaptic Design of Ferroelectric Tunnel Junctions for Neuromorphic Computing Taehwan Moon Department of Intelligence Semiconductor Engineering, Ajou University
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Room F(사파이어 I), 5층

### C. Material Growth & Characterization 분과

#### 006\_[TF1-C] Complex Oxide Thin Films and Heterostructures

좌장: 김태현 책임박사(KIST), 이수길 교수(가천대학교)

초청 TF1-C-1 09:00-09:30	Superconducting Epitaxial Thin Films of (111) $\text{KTaO}_3$ Grown by Hybrid PLD Jieun Kim Department of Materials Science and Engineering, KAIST
TF1-C-2 09:30-09:45	Thermal Characterization of Phase-Separated $\text{TiO}_2$ Thin Films Deposited by Plasma-Enhanced Atomic Layer Deposition Jihyun Kim <sup>1</sup> , Seunghyeon Lee <sup>2</sup> , Sung Il Park <sup>1</sup> , Jongwon Baek <sup>1</sup> , Dongyun Seo <sup>1</sup> , Gyung-Min Choi, Jihwan An <sup>3</sup> , and Jungwan Cho <sup>1</sup> <sup>1</sup> Sungkyunkwan University, <sup>2</sup> Seoul National University of Science and Technology, <sup>3</sup> POSTECH
TF1-C-3 09:45-10:00	MOCVD 성장 변수에 따른 $\text{Ga}_2\text{O}_3$ 박막의 상전이 거동 분석과 단일상 성장 연구 김형윤 <sup>1,2</sup> , 김선재 <sup>1,3</sup> , 신재명 <sup>1</sup> , 이도원 <sup>1</sup> , 박지현 <sup>1</sup> , 전대우 <sup>1</sup> <sup>1</sup> 한국세라믹기술원, <sup>2</sup> 고려대학교, <sup>3</sup> 한국항공대학교
초청 TF1-C-4 10:00-10:30	Topotactic Engineering for Oxide Quantum Materials Woo Jin Kim School of Materials Science and Engineering, Pusan National University
TF1-C-5 10:30-10:45	Graphene/Oxide Hybrid Heterostructures Woo Seok Choi Department of Physics, Sungkyunkwan University



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Room G(사파이어 II+III), 5층

J. Nano-Science & Technology 분과

007\_[TG1-J] 2D Materials & Devices

좌장: 이철호 교수(서울대학교), 김태욱 교수(전북대학교)

초청 TG1-J-1 09:00-09:30	Hypotaxy of Wafer-Scale Single Crystal Transition Metal Dichalcogenides for Advanced Electronics Gwan-Hyoung Lee Department of Materials Science and Engineering, Seoul National University
TG1-J-2 09:30-09:45	Boltzmann Switching MoS <sub>2</sub> Metal-Semiconductor Field-Effect Transistors Enabled by Monolithic-Oxide-Gapped Metal Gates at the Schottky-Mott Limit Yeon Ho Kim <sup>1</sup> , Wei Jiang <sup>2</sup> , Donghoon Moon <sup>3</sup> , Gwan-Hyoung Lee <sup>3</sup> , Tony Low <sup>2</sup> , and Chul-Ho Lee <sup>3</sup> <sup>1</sup> Korea University, <sup>2</sup> University of Minnesota, <sup>3</sup> Seoul National University
TG1-J-3 09:45-10:00	Direct Metallization on Cauterized Two-Dimensional Semiconductors for Low-Resistance p-Type Contacts Woo-Ju Lee <sup>1,2</sup> , Kyu-myung Lee <sup>3</sup> , GunWoo Yoo <sup>1,2</sup> , TaeJoon Mo <sup>1,2</sup> , Yongsup Park <sup>3,4</sup> , and Cheol-Joo Kim <sup>1,2</sup> <sup>1</sup> Center for Van der Waals Quantum Solids, IBS, <sup>2</sup> Department of Chemical Engineering, POSTECH, <sup>3</sup> Department of Physics and Institute of Basic Sciences, Kyung Hee University, <sup>4</sup> Department of Information Display, Kyung Hee University
TG1-J-4 10:00-10:15	Semimetal Contact Engineering for Low-Noise, High-Performance WSe <sub>2</sub> -Based Phototransistors Sunggyu Ryoo <sup>1</sup> , Jinwoo Sim <sup>1</sup> , Jaeyong Woo <sup>1</sup> , Jaehyoung Park <sup>1</sup> , Yeeun Kim <sup>1</sup> , Youngmin Song <sup>1</sup> , Heebeom Ahn <sup>2</sup> , Kyungjune Cho <sup>3</sup> , and Takhee Lee <sup>1</sup> <sup>1</sup> Department of Physics and Astronomy, Seoul National University, <sup>2</sup> Department of Materials Science and Engineering, Seoul National University, <sup>3</sup> Convergence Research Center for Solutions to Electromagnetic Interference in Future-Mobility, KIST
TG1-J-5 10:15-10:30	양극성 이황화 몰리브덴 기반 자가구동 광검출기 송준기 <sup>1</sup> , 황재하 <sup>1</sup> , 이수연 <sup>1</sup> , 장한별 <sup>2</sup> , 이가영 <sup>1</sup> <sup>1</sup> 한국과학기술원, <sup>2</sup> 광주과학기술원



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TG1-J-6 10:30-10:45	Unique Electrical Properties of Junctionless Electric-Double-Layer MoS <sub>2</sub> Transistor with Electrostatically Highly Doped Channel Dae Young Jeon <sup>1</sup> , Jimin Park <sup>2</sup> , So Jeong Park <sup>3</sup> , and Gyu Tae Kim <sup>4</sup> <sup>1</sup> Gyeongsang National University, <sup>2</sup> KIST Jeonbuk, <sup>3</sup> Korean Intellectual Property Office, <sup>4</sup> Korea University
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2025년 2월 13일(목), 09:00-10:45

Room H(루비 I), 5층

F. Silicon and Group-IV Devices and Integration Technology 분과

### 008\_[TH1-F] Memory Device Technology

좌장: 이용규 마스터(삼성전자), 김경록 교수(울산과학기술원)

초청 TH1-F-1 09:00-09:30	Evolution of Flash Memory Device Technology in AI Era Suk-Kang Sung Samsung Electronics Co., Ltd.
TH1-F-2 09:30-09:45	Self-Defect Compensated IGZO/ITO Capacitors for Memory Applications Sumin Han and Changhwan Shin School of Electrical Engineering, Korea University
TH1-F-3 09:45-10:00	V <sub>t</sub> Tuning Without Memory Window Reduction in HZO-based FeFET Using Fluorine Surface Treatment for High-Performance Analog In-Memory Computing Kyungsoo Park, Chulwon Chung, Seung Hyun Yoon, Junhyeok Park, and Changhwan Choi Division of Materials Science and Engineering, Hanyang University
TH1-F-4 10:00-10:15	A Study on the Neuromorphic Synaptic Characteristics of Mesh-Type Floating Gate Transistors So Yeon Jeong <sup>1</sup> , Jae Min Kim <sup>1</sup> , Hyeong Jin Chae <sup>1</sup> , Tae Hwan Koo <sup>1</sup> , Ju Yeong Chae <sup>1</sup> , Hyeon Seok Jeong <sup>1</sup> , and Moon Gyu Jang <sup>1,2</sup> <sup>1</sup> School of Nano Convergence Technology, Hallym University, <sup>2</sup> Nano Convergence Technology Center, Hallym University
TH1-F-5 10:15-10:30	Design of Current Sense Amplifier for SRAM Consisting of a Feedback Field-Effect Transistor Jong Hyeok Oh and Yun Seop Yu Major of ICT & Robotics Eng., Hankyong National University



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H1-F-6 10:30-10:45	<p>Top-Gate Oxide Semiconductor FETs for Reliable 2T0C Read/Write Operation with Reduced Capacitive Coupling</p> <p>Minho Park<sup>1</sup>, Hyeonho Gu<sup>1</sup>, Hyeonjin Lee<sup>2</sup>, Yongwoo Lee<sup>1</sup>, and Jimin Kwon<sup>1,2</sup></p> <p><sup>1</sup>Department of Electrical Engineering, UNIST, <sup>2</sup>Graduate School of Semiconductor Materials and Devices Engineering, UNIST</p>
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2025년 2월 13일(목), 09:00-10:45

Room I(스페이드 I), 6층

### I. MEMS & Sensor Systems 분과

#### 009\_[TI1-I] MEMS & Sensor Systems (I)

좌장: 유재영 교수(성균관대), 박윤석 교수(경희대학교)

TI1-I-1 09:00-09:15	<b>Flexible Pressure Sensors and Sensor Arrays with Tunable Sensitivity and Pressure Range by Using Pressure Concentration Structures</b> Sehwan Park <sup>1</sup> , Haechang Lee <sup>2</sup> , Dongsik Jeong <sup>1</sup> , Bongjun Kim <sup>3</sup> , and Hanul Moon <sup>1</sup> <sup>1</sup> Department of Chemical Engineering (BK21 FOUR Graduate Program) & Department of Semiconductors, Dong-A University, <sup>2</sup> Sensor System Research Center, KIST, <sup>3</sup> Department of Electrical Engineering, Sookmyung Women's University
TI1-I-2 09:15-09:30	<b>Skin-Attachable pH Sensor Enabled by Polyaniline/Graphene Transfer</b> Hyo Ju Lee , Sang Chan Park, and Jae Hyuk Ahn Department of Electronics Engineering, Chungnam National University
TI1-I-3 09:30-09:45	<b>Near Infrared Detection with Non-Fullerene Acceptors based Ambipolar Phototransistor</b> Jae Won Park, HwaPyeong Noh, Dong Hyun Nam, Swarup Biswas, and Hyeok Kim University of Seoul
TI1-I-4 09:45-10:00	<b>Improving the Thermo Sensing Characteristics of Amorphous Silicon Through Metal Post Annealing</b> Seong Jo Jo Woon San Ko Do Yeon Lee So Yeon Gwon, So Yeong Park , Hye Ri Hong, and Ga Won Lee Department of Electronic engineering, Chungnam National University
초청 TI1-I-5 10:00-10:30	<b>Bio-Inspired Electronic Eyes for In-Sensor Computing</b> Changsoon Choi KIST



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2025년 2월 13일(목), 09:00-10:45

Room J(스페이드 II+III), 6층

G. Device & Process Modeling, Simulation and Reliability 분과

### 010\_[TJ1-G] TCAD Simulation

좌장: 장지원 교수(연세대학교), 백록현 교수(포항공과대학교)

초청 TJ1-G-1 09:00-09:30	Impact of Random Discrete Dopants on 6F <sup>2</sup> DRAM Cell Transistors: A Simulation Study Jaehyun Lee School of Electrical and Electronics Engineering, Pusan National University
TJ1-G-2 09:30-09:45	Effect of Metal-Capping Layer on Electrical Performances in a-IGZO TFTs: Experiment and TCAD Simulation Seongbin Lim <sup>1</sup> , Soohyun Lim <sup>1</sup> , Jaewook Yoo <sup>1</sup> , Hyeonjun Song <sup>1</sup> , Soyeon Kim <sup>1</sup> , Hongseung Lee <sup>1</sup> , Minah Park <sup>1</sup> , Seohyeon Park <sup>1</sup> , Sojin Jung <sup>1</sup> , Jin-Ha Hwang <sup>2</sup> , Kiyong Lee <sup>2</sup> , Sangmoon Yoon <sup>3</sup> , and Hagyoul Bae <sup>1</sup> <sup>1</sup> Jeonbuk National University, <sup>2</sup> Hongik University, <sup>3</sup> Gachon University
TJ1-G-3 09:45-10:00	Random Phase Distribution Effects of Ferroelectric Tunneling Field-Effect-Transistors (FeTFETs) Jiwon Park and Woo Young Choi Department Electrical and Computer Engineering and ISRC, Seoul National University
TJ1-G-4 10:00-10:15	Assessment of Logic Circuit Characteristics with Contact Resistance in 2D Material-Based Complementary-FETs (CFETs) Hanggyo Jung <sup>1</sup> and Jongwook Jeon <sup>2</sup> <sup>1</sup> Department of Semiconductor Convergence Engineering, Sungkyunkwan University, <sup>2</sup> School of Electronic and Electrical Engineering, Sungkyunkwan University
TJ1-G-5 10:15-10:30	Comprehensive Analysis of Random Variability in Forksheet FETs Compared to Nanosheet FETs Minchan Kim, Seunghwan Lee, Junjong Lee, Sanguk Lee, Yonghwan Ahn, Gunryeol Cho, and Rock-Hyun Baek Department of Electrical Engineering, POSTECH



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J1-G-6 10:30-10:45	A Novel Simulation Method of Harmonic Distortion of RF Substrates using Ramo-Shockley Theorem Nakwon Yu, Jongmin Kim, Youngchul Kim, and Hyunchul Nah TE Team, DB HiTek
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Room K(하트 I), 6층

G. Device & Process Modeling, Simulation and Reliability 분과

### 011\_[TK1-G] Device Characterization & Modeling 1

좌장: 이재우 교수(고려대학교), 김세영 교수(포항공과대학교)

초청 TK1-G-1 09:00-09:30	Multiscale Investigation for Semiconductor Process Design with Computational Science and Artificial Intelligence Byungjo Kim UNIST
TK1-G-2 09:30-09:45	Ballistic Transport in State-of-the Art $\text{In}_{0.65}\text{Ga}_{0.35}\text{As}/\text{In}_{0.52}\text{Al}_{0.48}\text{As}$ Quantum-Well HEMTs at Room and Cryogenic Temperatures Seung-Woo Son, In-Geun Lee, Min-Seo Yu, Su-Min Choi, Yong-Soo Jeon, Sang-Pyeong Son, Ji-Hoon Yoo, Sang-Ki Yun, Jae-Hak Lee, and Dae-Hyun Kim School of Electronic and Electrical Engineering Kyungpook National University
TK1-G-3 09:45-10:00	Design Optimization of Capacitor-Based Synaptic Cells for Efficient Analog Neural Network Training Byoungwoo Lee, Wonjae Ji, Hyejin Kim, Seungmin Han, Junyoung Choi, and Seyoung Kim Department of Material Science and Engineering, POSTECH
TK1-G-4 10:00-10:15	Exploring the Channel Thickness Effect on Carrier Transport Mechanism of Schottky Contacts in Ultrathin a-IGZO TFTs Hongseung Lee <sup>1</sup> , Jaewook Yoo <sup>1</sup> , YuJun Roh <sup>1</sup> , Hyeonjun Song <sup>1</sup> , Soyeon Kim <sup>1</sup> , Seongbin Lim <sup>1</sup> , Seohyeon Park <sup>1</sup> , Minah Park <sup>1</sup> , Sojin Jung <sup>1</sup> , Jin-Ha Hwang <sup>2</sup> , Kiyoun Lee <sup>2</sup> , and Hagyoul Bae <sup>1</sup> <sup>1</sup> Jeonbuk National University, <sup>2</sup> Hongik University
TK1-G-5 10:15-10:30	Exploring the Deuterium Annealing Effect on Persistent Photoconductivity Related to Subgap DOS in IGZO TFTs Hyeonjun Song <sup>1</sup> , Jaewook Yoo <sup>1</sup> , Soyeon Kim <sup>1</sup> , Hongseung Lee <sup>1</sup> , Seongbin Lim <sup>1</sup> , Minah Park <sup>1</sup> , Seohyeon Park <sup>1</sup> , Sojin Jung <sup>1</sup> , Jun-Young Park <sup>2</sup> , Yoon Kyeung Lee <sup>1</sup> , Kiyoun Lee <sup>3</sup> , and Hagyoul Bae <sup>1</sup> <sup>1</sup> Jeonbuk National University, <sup>2</sup> Chungbuk National University, <sup>3</sup> Hongik University



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<b>TK1-G-6</b> <b>10:30-10:45</b>	<b>Analysis on Effect of Proton Irradiation on Schottky-Barrier a-IGZO TFTs using TCAD Simulation</b> Eunchong Kim <sup>1</sup> , Hyunwook Jeong <sup>1</sup> , Yubin Choi <sup>1</sup> , Junseong Park <sup>1</sup> , Haesung Kim <sup>1</sup> , Hyojin Yang <sup>1</sup> , Sung-Jin Choi <sup>1</sup> , Dae Hwan Kim <sup>1</sup> , Dong Myong Kim <sup>2</sup> , Sung Yun Woo <sup>3</sup> , and Jong-Ho Bae <sup>1</sup> <sup>1</sup> School of the Electronic Engineering, Kookmin University, <sup>2</sup> Department of Advanced Technology, DGIST
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Room L(하트II+III), 6층

M. RF and Wireless Design 분과

012\_[TL1-M] RF Transceiver

좌장: 권구덕 교수(강원대학교), 한정환 교수(충남대학교)

초청 TL1-M-1 09:00-09:30	Low-Power and Low-Cost RFIC supporting Legacy Cellular and 5G FR1 Jongsoo Lee Samsung Electronics Co., Ltd.
TL1-M-2 09:30-09:45	Low-Noise IIP2 Calibration-free Receiver Front-End with Dual RF and BB N-path Filters for 5G New Radio Cellular Applications Sukju Yun and Kuduck Kwon Department of Electronics Engineering, Kangwon National University
TL1-M-3 09:45-10:00	An 8x8 Optoelectronic Readout Array Using T2V Converter in 180-nm CMOS for Short-Range LiDAR Sensors Sunkyung Lee <sup>1,2</sup> , Somi Park <sup>1,2</sup> , Bobin Seo <sup>1,2</sup> , and Sung Min Park <sup>1,2</sup> <sup>1</sup> Division of Electronic & Semiconductor Engineering, Ewha Womans University, <sup>2</sup> Graduate Program in Smart Factory, Ewha Womans University
TL1-M-4 10:00-10:15	55 W 3.4-3.8 GHz 2-Stage Doherty Power Amplifier for 5G NR 배순철 <sup>1</sup> , 송재성 <sup>1</sup> , 배경동 <sup>1,2</sup> , 이윤정 <sup>1</sup> , 양영구 <sup>1,2</sup> <sup>1</sup> 성균관대학교 전자전기컴퓨터공학과, <sup>2</sup> para-PA Inc.



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Room M(다이아몬드 I), 6층

H. Display and Imaging Technologies 분과

### 013\_[TM1-H] Display and Imaging Technologies I

좌장: 오누리 교수(한양대학교), 이성민 교수(한양대학교)

초청 TM1-H-1 09:00-09:30	Fibertronic OLEDs for Wearable Displays Sung-Min Lee Hanyang University
TM1-H-2 09:30-09:45	Nanostructure Engineering of Thermally Evaporated Perovskite Films for Large-Area Light-Emitting Diodes Chan-Yul Park <sup>1</sup> , Jung-Min Heo <sup>1</sup> , Joo Sung Kim <sup>2,3</sup> , and Tae-Woo Lee <sup>1,2,3,4</sup> <sup>1</sup> Department of Materials Science and Engineering, Seoul National University, <sup>2</sup> SN Display Co. Ltd., <sup>3</sup> Soft Foundry, Seoul National University, <sup>4</sup> Research Institute of Advanced Materials, School of Chemical and Biological Engineering, Institute of Engineering Research, Seoul National University
TM1-H-3 09:45-10:00	Noninvasive Painless Bilirubin Theragnosis using a Flexible Textile-based Blue Light OLED-OPD Chaeyeong Lee <sup>1</sup> , Young Woo Kim <sup>1</sup> , Ye Ji Shin <sup>1</sup> , MinSeong Park <sup>1</sup> , Youjin Cho <sup>1</sup> , Seojin Kim <sup>1</sup> , SeoHyeon Kim <sup>1,2</sup> , Yuhwa Bak <sup>1,2</sup> , Junpyo Song <sup>1</sup> , Youngjin Song <sup>1</sup> , Eou-Sik Cho <sup>3</sup> , Sang Jik Kwon <sup>3</sup> , and Yongmin Jeon <sup>1,2</sup> <sup>1</sup> Department of Semiconductor Engineering, Gachon University, <sup>2</sup> Department of Biomedical Engineering, Gachon University, <sup>3</sup> Department of Electronic Engineering, Gachon University
TM1-H-4 10:00-10:15	Understanding the Sidewall Passivation Effects in AlGaInP/GaInP Micro-LED Juhyuk Park <sup>1</sup> , Dae-Myeong Geum <sup>2</sup> , Woojin Baek <sup>1</sup> , and Sanghyeon Kim <sup>1</sup> <sup>1</sup> Electrical Engineering, KAIST, <sup>2</sup> Department of Electrical & Computer Engineering, Inha University
TM1-H-5 10:15-10:30	Size Effect of Passivation Treatment on Infrared Micro-LEDs Yu-Jeong Kang <sup>1,2</sup> , Tae-Yeon Kim <sup>1</sup> , Won-Ryung Lee <sup>3</sup> , Woo-Young Choi <sup>2</sup> , and Jae-Hoon Han <sup>1</sup> <sup>1</sup> Center for Quantum Technology, KIST, <sup>2</sup> Department of Electrical and Electronic Engineering, Yonsei University, <sup>3</sup> Sensor System Research Center, KIST



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TM1-H-6 10:30-10:45	<p>Stacked AC Wearable Heater-OLED for Therapy/Diagnosis Fusion Theranostics Platform</p> <p>Yuhwa Bak<sup>1,2</sup>, Seojin Kim<sup>2</sup>, Young Woo Kim<sup>2</sup>, Eou-Sik Cho<sup>3</sup>, Sang Jik Kwon<sup>3</sup>, and Yongmin Jeon<sup>1,2</sup></p> <p><sup>1</sup>Department of Biomedical Engineering, Gachon University, <sup>2</sup>Department of Semiconductor Engineering, Gachon University, <sup>3</sup>Department of Electronic Engineering, Gachon University</p>
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Room N(다이아몬드 II), 6층

H. Display and Imaging Technologies 분과

### 014\_[TN1-H] Display and Imaging Technologies II

좌장: 권혁인 교수(중앙대학교), 정예환 교수(한양대학교)

초청 TN1-H-1 09:00-09:30	The Use of Shape Memory Polymers for Micro-LED Transfer Junhyung Kim, Seungbeom Kim, and Seok Kim POSTECH
TN1-H-2 09:30-09:45	Adaptive Synaptic Phototransistor Inspired by Neuronal Excitability Regulation for High-clarity Contour Extraction Jong Ik Kwon and Changsoon Choi Center for Quantum Technology, Post-silicon Semiconductor Institute, KIST
TN1-H-3 09:45-10:00	Impact of Intermediate Control Layer Implemented for Enhancing Device Performance of Top-Gate Thin-Film Transistor Using Sputtered In <sub>2</sub> O <sub>3</sub> Film Se-Hyun Chun, Chae-Eun Oh, and Sung-Min Yoon Kyung Hee University
TN1-H-4 10:00-10:15	Tuning the Properties of Hybrid Organic-Inorganic Negative Transconductance Field-Effect Transistors for Advanced Electronic Applications Juhjung Seo <sup>1</sup> , Seungme Kang <sup>2</sup> , and Hocheon Yoo <sup>1,2</sup> <sup>1</sup> Department of Electronic Engineering, Gachon University, <sup>2</sup> Department of Semiconductor Engineering, Gachon University
TN1-H-5 10:15-10:30	Hafnium Oxide Enhanced Ambipolar Single Walled Carbon Nanotube Transistors for Minimally Footprinted Neuromorphic Computing Seo-young Jo <sup>1</sup> , Yun-Sung Lee, Jang-Jun Seo, Ji-Won Kim, Nam-Gyu Sun, Kyeon-Moo Han, and Sung Hun Jin Incheon National University
TN1-H-6 10:30-10:45	Crosstalk Characteristics in Vertical Nanowire Photodiode Array Seonyoung Park, Jihun Lee, Eunseo Nam, Bongno Yun, Juwon Yun, and Kihyun Kim Department of Electronics and information Engineering, Jeonbuk National University



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Room C(컨벤션홀 L), 5층

D. Thin Film Process Technology 분과

015\_[TC2-D] Emerging Devices - II

좌장: 손준우 교수(서울대학교), 최병준 교수(서울과학기술대학교)

초청 TC2-D-1 10:55-11:25	Interface-Type Memristor Devices Based on Transition Metal Oxides Synthesized via Atomic Layer Deposition Minjae Kim School of Materials Science and Engineering, Yeungnam University
TC2-D-2 11:25-11:40	The Influence of Plasma Energy for the Interface Layer Deposition on the Resistance Switching Properties of a-IGZO-Based Memory Devices Haripriya G. R. <sup>1</sup> , Hee Yeon Noh <sup>1</sup> , Yerim Kim <sup>1</sup> , Hyunki Lee <sup>2</sup> , June-Seo Kim <sup>1</sup> , Myoung-Jae Lee <sup>1</sup> , and Hyeon-Jun Lee <sup>1,2</sup> <sup>1</sup> Division of Nanotechnology, DGIST, <sup>2</sup> Division of Intelligent Robotics, DGIST
TC2-D-3 11:40-11:55	Electronic Threshold Switching of As-SiO <sub>2</sub> Selector: Charged Oxygen Vacancy Model Hye Rim Kim <sup>1</sup> , Tae Jun Seok <sup>1</sup> , Tae Jung Ha <sup>2</sup> , Jeong Hwan Song <sup>2</sup> , Kyun Seong Dae <sup>3</sup> , Sang Gil Lee <sup>3</sup> , Hyun Seung Choi <sup>1</sup> , Su Yong Park <sup>1</sup> , Byung Joon Choi <sup>4</sup> , Jae Hyuck Jang <sup>3</sup> , Soo Gil Kim <sup>2</sup> , and Tae Joo Park <sup>1</sup> <sup>1</sup> Department of Materials Science and Chemical Engineering, Hanyang University, <sup>2</sup> SK hynix Inc., <sup>3</sup> Electron Microscopy and Spectroscopy Team, KBSI, <sup>4</sup> Department of Materials Science and Engineering, Seoul National University of Science and Technology
TC2-D-4 11:55-12:10	High-Reliability Leaky-Integrate-and-Fire Neuron Devices Enabled by Carbon Doping for Holding Voltage Control and Their Applications Jeong Hwan Song and Kim Gun Hwan Department of System Semiconductor Engineering, Yonsei University
TC2-D-5 12:10-12:25	Polarity-Dependent Memory Effect and Its Conduction Mechanism in Ovonic Threshold Switch Hyun Wook Kim, Ju Hwan Park, Se Hwan Jeon, Yoon Jae Hong, and Byung Joon Choi Department of Materials Science and Engineering, Seoul National University of Science and Technology



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TC2-D-6 12:25-12:40	Reliability Characteristics of GeSbSeTe Devices According to In Doping Concentration Soohyun-Lee and Gun Hwan Kim Yonsei University
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Room D(에메랄드 I), 5층

### A. Interconnect & Package 분과

#### 016\_[TD2-A] Emerging Interconnect 2

좌장: 안상훈 마스터(삼성전자), 이원준 교수(세종대학교)

TD2-A-1 10:55-11:10	광반도체 수명평가를 위한 고정밀 정선온도 세팅 기술 마병진, 정태희, 최성순, 김제민 한국전자기술연구원
TD2-A-2 11:10-11:25	Application of Physics-Informed Neural Networks (PINN) in Extreme Ultraviolet Lithography (EUVL) Process Simulation Sang-Kon Kim Hongik University
TD2-A-3 11:25-11:40	ALD Ru/ZnO의 공정 열처리 조건에 따른 박막 물성이 계면접착에너지에 미치는 영향 정대윤 <sup>1</sup> , 김가희 <sup>1</sup> , 김민진 <sup>1</sup> , 손예슬 <sup>2</sup> , Yuki Mori <sup>2,3</sup> , 김경현 <sup>5</sup> , 이주현 <sup>5</sup> , 변창우 <sup>5</sup> , 김수현 <sup>2,4</sup> , 박영배 <sup>1</sup> <sup>1</sup> 국립안동대학교 반도체·신소재공학과 청정에너지 소재기술연구센터, <sup>2</sup> 울산과학기술원 반도체 소재부품 대학원, <sup>3</sup> Chemical Materials Development Department, TANAKA precious metals, <sup>4</sup> 울산과학기술원 신소재공학과, <sup>5</sup> 차세대융합기술연구원 경기도 반도체혁신센터
TD2-A-4 11:40-11:55	Ultra Low-k Properties of Atomic Layer Deposited Amorphous Boron Nitride for Futuristic Inter Metal Dielectric Inkyu Sohn <sup>1</sup> , Taehoon Kim <sup>2</sup> , and Hyungjun Kim <sup>1</sup> <sup>1</sup> School of Electrical and Electronic Engineering, Yonsei University, <sup>2</sup> SAIT
TD2-A-5 11:55-12:10	A Theoretical Study of the Selective Silylation of Silicon Oxide with Dimethylaminotrimethylsilane Mi-Soo Kim, Khabib Khumaini, Hye-Lee Kim, and Won-Jun Lee Department of Nanotechnology and Advanced Materials Eng., Sejong University
초청 TD2-A-6 12:10-12:40	Advanced Amorphous Carbon Hardmasks for High-Density Semiconductor Patterning So-Yeon Lee <sup>1</sup> , Hongik Kim <sup>2</sup> , Ung-Gi Kim <sup>2</sup> , Sungtae Kim <sup>2</sup> , and Young-Chang Joo <sup>2</sup> <sup>1</sup> Kumoh National Institute of Technology, <sup>2</sup> Seoul National University



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Room E(에메랄드 II+III), 5층

D. Thin Film Process Technology 분과

017\_[TE2-D] Memory Capacitors

좌장: 안지훈 교수(한양대학교), 김건환 교수(연세대학교)

TE2-D-1 10:55-11:10	Investigation of Atomic Layer Deposited SnO <sub>2</sub> Thin Films for Next-Generation DRAM Electrode Application InHong Hwang <sup>1,2</sup> and In-Hwan Baek <sup>1,2</sup> <sup>1</sup> Department of Chemistry and-Chemical Engineering, Inha University, <sup>2</sup> Program in Semiconductor Convergence, Inha University
TE2-D-2 11:10-11:25	Achieving Equivalent Oxide Thickness Scaling of ZrO <sub>2</sub> Dielectric Thin Film via Gd Doping without Sacrificing Tetragonal Crystallinity Seungwoo Lee <sup>1</sup> , Jihun Nam <sup>1</sup> , Yoona Choi <sup>1</sup> , Jonghwan Jeong <sup>1</sup> , Min Kyeong Nam <sup>1</sup> , Hansol Oh <sup>2</sup> , Hanbyul Kim <sup>2</sup> , Yongjoo Park <sup>2</sup> , Youngjin Kim <sup>3</sup> , and Woojin jeon <sup>1</sup> <sup>1</sup> Department of Advanced Materials Engineering for Information and Electronics, and Integrated Education Program for Frontier Science & Technology (BK21 Four), Kyung Hee University, <sup>2</sup> Advanced Research Development Team, SK Trichem Co. Ltd., <sup>3</sup> Department of Chemical Engineering, Kyonggi University
TE2-D-3 11:25-11:40	Influence of Zr-Precursor Ligands on the Growth and Capacitor Properties of ZrO <sub>2</sub> Thin Films Grown by ALD Hyeongjun Kim <sup>1</sup> , Haram Yang <sup>2</sup> , and Woongkyu Lee <sup>1,2</sup> <sup>1</sup> Department of Green Chemistry and Materials Engineering, Soongsil University, <sup>2</sup> Department of Materials Science and Engineering, Soongsil University
TE2-D-4 11:40-11:55	Strategy for Stabilizing Metastable Rutile-Structured TiO <sub>2</sub> without Substrate Crystallographic Limitations Jihoon Jeon <sup>1,2</sup> and Seong Keun Kim <sup>1,2</sup> <sup>1</sup> Electronic Materials Research Center, KIST, <sup>2</sup> KU-KIST Graduate School of Converging Science and Technology, Korea University
TE2-D-5 11:55-12:10	High Performance TiO <sub>2</sub> -based DRAM Capacitors with Ultrathin ALD Sn-Doped MoO <sub>2</sub> Buffer Layer Jae Hyeon Lee and Jeong Hwan Han Department of Materials Science and Engineering, Seoul National University of Science and Technology



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TE2-D-6 12:10-12:25	<p>Dielectrics with Sub-surface Dopant Implantation-Mediated Lattice Relaxation and <math>V_o</math> Annihilation via Chemo-physical Plasma Annealing</p> <p>Gyuha Lee<sup>1</sup>, Hyongjune Kim<sup>1</sup>, Geongu Han<sup>2</sup>, Sangwon Lee<sup>3</sup>, Jeongmin Oh<sup>3</sup>, and Jihwan An<sup>1,3</sup></p> <p><sup>1</sup>Department of Mechanical Engineering, POSTECH, <sup>2</sup>Department of Manufacturing Systems and Design Engineering, Seoul National University of Science and Technology, <sup>3</sup>Graduate School of Semiconductor Technology, POSTECH</p>
TE2-D-7 12:25-12:40	<p>Synthesis of perovskite <math>SrTiO_3</math> thin films by atomic layer deposition of <math>SrF_2</math> and <math>TiO_2</math></p> <p>Jaejun Lee, Sangyeon Jeong, and Woongkyu Lee</p> <p>Department of Materials Science and Engineering, Soongsil University</p>



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Room F(사파이어 I), 5층

### C. Material Growth & Characterization 분과

#### 018\_[TF2-C] Characterization of Oxide Heterostructures for Advanced Applications

좌장: 김우진 교수(부산대학교), 김지운 교수(KAIST)

초청 TF2-C-1 10:55-11:25	<i>In-situ/Operando</i> Analysis of Topotactic Phase Transition in Complex Oxides Dooyong Lee Department of Physics Education, Kyungpook National University
TF2-C-2 11:25-11:40	Spatially-Resolved Mapping of Ferroelectric Phase Transition in Two-Dimensional Halide Perovskite Tae Hyun Jung, Yunseung Kuk, Sang Woo Lee, Sung Bin Bae, June Hee Shin, Kang Min Ok, and Sang Mo Yang Sogang University
TF2-C-3 11:40-11:55	Advanced Spectroscopic Methods for Probing In-Gap Defect States in Amorphous SiNx for Charge Trap Memory Applications Hyun Don Kim <sup>1,2</sup> , Minseon Gu <sup>1</sup> , Kyu-Myung Lee <sup>3</sup> , Hanyeol Ahn <sup>1</sup> , Jinwoo Byun <sup>4</sup> , Gukhyon Yon <sup>4</sup> , Junghyun Beak <sup>1,2</sup> , Hyeongjoon Lim <sup>1,2</sup> , Jaemo Jung <sup>1,2</sup> , Jaehyeon Park <sup>1,2</sup> , Jwa Soon Kim <sup>5</sup> , HaeJoon Hahm <sup>5</sup> , Soobang Kim <sup>5</sup> , Won Ja Min <sup>5</sup> , Moon Seop Hyun <sup>6</sup> , Yun Chang Park <sup>6</sup> , Gyungtae Kim <sup>6</sup> , Y <sup>1</sup> Department of Physics, University of Seoul, <sup>2</sup> Department of Smart Cities, University of Seoul, <sup>3</sup> Department of Physics and Research Institute of Basic Sciences, Kyung Hee University, <sup>4</sup> Advanced Process Development Team, Semiconductor R&D Center, Samsung Electronics Co., Ltd., <sup>5</sup> HB Solution, <sup>6</sup> National NanoFab Center (NNFC), <sup>7</sup> Department of Information Display, Kyung Hee University, <sup>8</sup> Department of Intelligent Semiconductor Engineering, University of Seoul
TF2-C-4 11:55-12:10	DFT Study on Schottky Barrier Heights in MoS <sub>2</sub> with Direct and van der Waals Contacts Hyunijn Lee <sup>1</sup> , Soheil Ghods <sup>1,2</sup> , Jinuk Kwon <sup>3</sup> , Yoon Kyeong Lee <sup>4,5</sup> , Jae-Hyun Lee <sup>2</sup> , Taehun Lee <sup>4,6</sup> , and Keun Heo <sup>1,3</sup> <sup>1</sup> School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Jeonbuk National University, <sup>2</sup> Department of Materials Science and Engineering and



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	Department of Energy Systems Research, Ajou University, <sup>3</sup> School of Semiconductor Science & Technology, Jeonbuk National University, <sup>4</sup> School of Advanced Materials Engineering, Jeonbuk National University, <sup>5</sup> Department of Nano Convergence Engineering, Jeonbuk National University, <sup>6</sup> Hydrogen and Fuel Cell Research Center, Jeonbuk National University
TF2-C-5 12:10-12:25	<b>Impact of Bulk Traps on Polarization Switching in <math>\alpha</math>-In<sub>2</sub>Se<sub>3</sub> Ferroelectric Semiconductor FETs by Frequency Dispersive <math>C</math>-<math>V</math> Characteristics</b> Minah Park <sup>1</sup> , Sieun Lee <sup>1</sup> , Jaewook Yoo <sup>1</sup> , Seohyeon Park <sup>1</sup> , Hongseung Lee <sup>1</sup> , Hyeonjun Song <sup>1</sup> , Soyeon Kim <sup>1</sup> , Seongbin Lim <sup>1</sup> , Sojin Jung <sup>1</sup> , TaeWan Kim <sup>3</sup> , Peide D. Ye <sup>2</sup> , and Hagyoul Bae <sup>1</sup> <sup>1</sup> Jeonbuk National University, <sup>2</sup> Purdue University, and <sup>3</sup> University of Seoul
TF2-C-6 12:25-12:40	<b>Temperature-dependent {111}-Texture Transfer to Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> Films from (111)-textured TiN Electrode and Its Impact on Ferroelectricity</b> Dong Hee Han <sup>1</sup> , Seung Yeon Kim <sup>2</sup> , Younghwan Lee <sup>3</sup> , Young Yong Kim <sup>4</sup> , Woojin Jeon <sup>2</sup> , and Min Hyuk Park <sup>1,5</sup> <sup>1</sup> Seoul National University, <sup>2</sup> Kyung Hee University, <sup>3</sup> Chonnam National University, <sup>4</sup> PAL, POSTECH, <sup>5</sup> Institute of Engineering Research, Seoul National University





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Room G(사파이어 II+III), 5층

J. Nano-Science & Technology 분과

### 019\_[TG2-J] Emerging Nanomaterial Electronics

좌장: 김태욱 교수(전북대학교), 이관형 교수(서울대학교)

초청 TG2-J-1 10:55-11:25	Single Element, Multiple Functions: Te-based Nanoelectronics Joonki Suh Department of Materials Science and Engineering & Graduate School of Semiconductor Materials and Devices Engineering, UNIST
TG2-J-2 11:25-11:40	A Ternary Inverter based on 2D Tellurium/IGZO Heterojunction FET with Mxene H. J. Park <sup>1</sup> , J. Jang <sup>2</sup> , H. Kim <sup>3</sup> , J. P. Hong <sup>1</sup> , H. Oh <sup>3</sup> , and M. S. Jeong <sup>1</sup> <sup>1</sup> Department of Physics, Hanyang University, <sup>2</sup> Department Of Energy Science, Sungkyunkwan University, <sup>3</sup> Department of Physics, Soongsil University
TG2-J-3 11:40-11:55	Negative Differential Transconductance in CMOS-Integrable 2D Ambipolar Tellurene Transistor for Multi-Valued Logic Computing Jihoon Huh <sup>1,2</sup> , Bolim You <sup>1,2</sup> , Yuna Kim <sup>1</sup> , Mino Yang <sup>3</sup> , Unjeong Kim <sup>4</sup> , Min-Kyu Joo <sup>5,6</sup> , Myung Gwan Hahm <sup>1,7</sup> , and Moonsang Lee <sup>1,2</sup> <sup>1</sup> Inha University, <sup>2</sup> Program in Semiconductor Convergence, Inha University, <sup>3</sup> KBSI, <sup>4</sup> Department of physics, Dongguk university, <sup>5</sup> Department of Applied Physics, Sookmyung Women's University, <sup>6</sup> Institute of Advanced Materials and Systems, Sookmyung Women's University, <sup>7</sup> Institute for Bio-Medical and Translational Health Care, Inha University Hospital
TG2-J-4 11:55-12:10	2-Dimensional InSe Ambipolar Transistors and Their Conversion to Reconfigurable Electronics Dongju Yeom <sup>1</sup> , Minsu Kim <sup>1</sup> , Yong wook Seok <sup>1</sup> , Jungi Song <sup>1</sup> , Hanbyeol Jang <sup>2</sup> , YiTaek Choi <sup>2</sup> , Yeonghyeon Ko <sup>1</sup> , and Kayoung Lee <sup>1</sup> <sup>1</sup> School of Electrical Engineering, KAIST, <sup>2</sup> School of Materials Science and Engineering, GIST
TG2-J-5 12:10-12:25	Bundle-Free Aligned Semiconductor Carbon Nanotubes for Field-Effect Transistors Yehyun Shin <sup>1</sup> , Sungmin Eum <sup>1</sup> , Haksoon Jung <sup>2</sup> , and Jimin Kwon <sup>1,2</sup> <sup>1</sup> Graduate School of Semiconductor Materials and Devices Engineering, UNIST, <sup>2</sup> Department of Electrical Engineering, UNIST



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TG2-J-6

12:25-12:40

Fabrication of Nanoscale Underlap Carbon Nanotube Field-Effect Transistors on 8-inch Wafer with Enhanced Electrical Performance

Jun-Ho Jang<sup>1</sup>, Hanbin Lee<sup>1</sup>, Gyeongsu Min<sup>1</sup>, Hyo-In Yang<sup>1</sup>, So-Jeong Park<sup>1</sup>, Jeong Yeon Im<sup>1</sup>, Ji Won Park<sup>1</sup>, Seonghyeon Jeong<sup>1</sup>, Dae Hwan Kim<sup>1</sup>, Jong-Ho Bae<sup>1</sup>, Min-Ho Kang<sup>2</sup>, Dong Myong Kim<sup>3</sup>, and Sung-Jin Choi<sup>1</sup>

<sup>1</sup>School of Electrical Engineering, Kookmin University, <sup>2</sup>Department of Nano-process, National Nanofab Center (NNFC), <sup>3</sup>Department of Advanced Technology, DGIST



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Room H(루비 I), 5층

F. Silicon and Group-IV Devices and Integration Technology 분과

**020\_[TH2-F] Devices for Sensors/Optics/Powers**

좌장: 김경록 교수(울산과학기술원), 안동환 교수(국민대학교)

초청 TH2-F-1 10:55-11:25	<b>Intelligent Multimodal Sensors Integrating Gas, Barometric Pressure, and Temperature Sensing</b> Gyuweon Jung <sup>1,2</sup> , Hyeongsu Kim <sup>1</sup> , Chayoung Lee <sup>1</sup> , Jaehyeon Kim <sup>1</sup> , Kangwook Choi <sup>1</sup> , Woo Young Choi <sup>1</sup> , and Jong-Ho Lee <sup>1</sup> <sup>1</sup> School of ECE and ISRC, Seoul National University, <sup>2</sup> School of Transdisciplinary Innovations, Seoul National University
TH2-F-2 11:25-11:40	<b>Analysis of Breakdown Types in Miniaturized Isolation Structure and Approach to Solutions in 0.11<math>\mu</math>m BCD Process</b> Jae Sung Kim, Jun Woo Song, Jung Hyun Park, Yu Jin Noh, So Young Choi, Tae Gyu Ryu, Jeong Jae Park, Yong Keon Choi, and Sang Gi Lee Process Development Team 2, DB HiTek
TH2-F-3 11:40-11:55	<b>Interlayer Dielectric Engineering in Vertical-Channel ITO Field-Effect Transistors for Bias-Reliable Operation</b> Hyeonho Gu <sup>1</sup> , Minho Park <sup>1</sup> , Hyeonjin Lee <sup>2</sup> , Yongwoo Lee <sup>1</sup> , and Jimin Kwon <sup>1,2</sup> <sup>1</sup> Department of Electrical Engineering, UNIST, <sup>2</sup> Graduate School of Semiconductor Materials and Devices Engineering, UNIST
TH2-F-4 11:55-12:10	<b>Efficiency Enhancement of a Back-Illuminated Single-Photon Avalanche Diode with Increased Active Area</b> Seyoung Yook, Hyun-Seung Choi, Doo Hee Son, Woo-Young Choi, and Myung-Jae Lee Department of Electrical and Electronic Engineering, Yonsei University
TH2-F-5 12:10-12:25	<b>Investigation of Crystallinity and Optical Properties of Ge on Si Prepared by DC and RF Sputtering in Comparison</b> So Won Son, Soomin Kim, and Seongjae Cho Department of Electronic Engineering, Ewha Womans University



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TH2-F-6 12:25-12:40	Analysis on Effects of Ge Content on Intermodal Dispersion in $\text{Si}_{1-x}\text{Ge}_x$ Waveguides for Ultrahigh-Speed Integrated Optical Interconnect Soomin Kim, Sowon Son, Yeji Lee, and Seongjae Cho Department of Electronic and Electrical Engineering, Ewha Womans University
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Room I(스페이드 I), 6층

### I. MEMS & Sensor Systems 분과

#### 021\_[TI2-I] MEMS & Sensor Systems (II)

좌장: 박민수 교수(단국대학교), 원상민 교수(성균관대학교)

TI2-I-1 10:55-11:10	<p>Improving Gas Sensor Detection by Modulation of Conductive Pathways and Schottky Barrier</p> <p>Se Min Hwang<sup>1,2</sup>, Jeongin Song<sup>1,3</sup>, Euna Jung<sup>1,4</sup>, Jae Hyun Lee<sup>4</sup>, Taesung Kim<sup>3</sup>, Min Sup Choi<sup>2</sup>, and Jihun Mun<sup>1</sup></p> <p><sup>1</sup>KRISS, <sup>2</sup>Chungnam National University, <sup>3</sup>Sungkyunkwan University, <sup>4</sup>Ajou University</p>
TI2-I-2 11:10-11:25	<p>Interactive Soft Morphing Metasurface with Real-Time Shape Sensing</p> <p>Gooyoon Chung, Jeongmin Yoo, and Yoonseok Park</p> <p>Kyung Hee University</p>
TI2-I-3 11:25-11:40	<p>Enhanced Sensitivity of Zero-Bias-Operated MXene Chemiresistive Sensor via Lignin Hybridization</p> <p>Windy Ayu Lestari, I Ketut Gary Devara, and Jun Hong Park</p> <p>Department of Materials Engineering and Convergence Technology, Gyeongsang National University</p>
초청 TI2-I-4 11:40-12:10	<p>Implantable and Bioresorbable Radiofrequency Resonators for Magnetic Resonance Imaging</p> <p>Geumbee Lee</p> <p>Kyungpook National University</p>
초청 TI2-I-5 12:10-12:40	<p>Laser Direct Writing of Artificial Thermoreceptor Array</p> <p>Jaeho Shin</p> <p>Center for Advanced Molecular Recognition, KIST</p>



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Room J(스페이드 II+III), 6층

K. Memory (Design & Process Technology) 분과

### 022\_[TJ2-K] Neuromorphic Application

좌장: 정연주 박사(KIST), 곽준영 교수(이화여대)

초청 TJ2-K-1 10:55-11:25	Opportunities and Challenges for Analog Computation in Memory in the AI Era 박상수, 최혜정, 김수길, 이재연, 차선용 RnD division, SK hynix Inc.
TJ2-K-2 11:25-11:40	Development of the Neural Network SPICE Integration Platform (NSIP) Using FeFET-Based Crossbar Arrays Huijun Kim <sup>1</sup> , Juhwan Park <sup>2</sup> , Changho Ra <sup>2</sup> , and Jongwook Jeon <sup>2</sup> <sup>1</sup> Department of Semiconductor Convergence Engineering, Sungkyunkwan University, <sup>2</sup> Department of Electrical and Computer Engineering, Sungkyunkwan University
TJ2-K-3 11:40-11:55	Novel Data-Driven Compact Modeling for RRAM Using Deep Neural Networks Ye Sle Cha <sup>1</sup> , Premkumar Vincent <sup>1</sup> , Juhwan Park <sup>2</sup> , Hyunseok Whang <sup>1</sup> , Jongwook Jeon <sup>2</sup> , and Hyunbo Cho <sup>1</sup> <sup>1</sup> Research & Development Center, Alsemy Inc., <sup>2</sup> Sungkyunkwan University
TJ2-K-4 11:55-12:10	Solving Max-Cut Problem Using Spiking Boltzmann Machine Based on Neuromorphic Hardware with Phase Change Memory Yu Gyeong Kang, Jaeweon Park, and Sangbum Kim Seoul National University
TJ2-K-5 12:10-12:25	IGZO and Pt-based Floating Gate Memory for Synaptic Device with Implementing Various Voltage Schemes Heerak Wi <sup>1</sup> , Eunpyo Park <sup>2</sup> , Ria Choi <sup>1</sup> , Dae Kyu Lee <sup>2</sup> , Min Jee Kim <sup>1</sup> , and Joon Young Kwak <sup>1</sup> <sup>1</sup> Ewha Womans University, <sup>2</sup> KIST
TJ2-K-6 12:25-12:40	Reconfigurable Neuromorphic Device by 2D Semiconductor-Metal Interfacial Engineering for AI Hardware Hyunho Seok <sup>1</sup> , Sihoon Son <sup>1</sup> , Dongyoung Lee <sup>1</sup> , Hyunbin Choi <sup>1</sup> , Jinhyoung Lee <sup>1</sup> , Seyong Oh <sup>2</sup> , Jin-Hong Park <sup>1</sup> , and Taesung Kim <sup>1</sup> <sup>1</sup> Sungkyunkwan University, <sup>2</sup> Hanyang University



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Room K(하트 I), 6층

K. Memory (Design & Process Technology) 분과

### 023\_[TK2-K] Embedded Memory and Computing-in-Memory Application

좌장: 권용우 교수(홍익대학교), 전종욱 교수(성균관대학교)

초청 TK2-K-1 10:55-11:25	State-of-the-Art of High-Density Cross-Point STT-MRAM Technology Soo Man Seo, Soo Gil Kim, Jae Yun Yi, and Seon Yong Cha RnD division, SK hynix Inc.
TK2-K-2 11:25-11:40	Embedded RRAM Technology: An Extremely Cost-Effective eNVM Solution with Full CMOS Logic Compatibility Sooan Kim, Jaehun Lee, Nayan Chandra Das, Yongseok Chung, Sungchan Lim, Hwanho Ma, Youngdong Kim, Daeyun Kang, Kyongsik Yeom, Changmin Jeon, and Kangho Lee Foundry Business, Samsung Electronics Co., Ltd.
TK2-K-3 11:40-11:55	Revealing the Switching Mechanism of ECRAM through an Independently-Contacted WOx Double Layer Seungmin Han, Hyunjeong Kwak, Jinho Byun, Jeonghoon Son, Seungkun Kim, and Seyoung Kim Department of Materials Science and Engineering, POSTECH
TK2-K-4 11:55-12:10	In-Memory Parallel Computing with Variation Tolerant Memristive Majority Logic in a Crossbar Array Moon Gu Choi and Kyung Min Kim Department of Materials Science and Engineering, KAIST
TK2-K-5 12:10-12:25	Experimental Implementation of Programmable Threshold Logic in a Memristor Crossbar Array Sangwook Youn, Jinwoo Park, and Hyungjin Kim Division of Materials Science and Engineering and Department of Semiconductor Engineering, Hanyang University
TK2-K-6 12:25-12:40	Demonstration of Convolution Kernel Operation using Memristor Crossbar Array with Quantized Weights and Binary Activation Jinwoo Park, Sangwook Youn, and Hyungjin Kim Division of Materials Science and Engineering and Department of Semiconductor Engineering, Hanyang University



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Room L(하트II+III), 6층

### B. Patterning (Lithography & Etch Technology) 분과

#### 024\_[TL2-B] Lithography

좌장: 이진균 교수(인하대학교), 김지호 선임연구원(포항공과대학교 포항가속기연구소)

초청 TL2-B-1 10:55-11:25	Challenges and Development Status of Next Generation EUV Patterning Materials Chawon Koh Yonsei University
TL2-B-2 11:25-11:40	Memory Device의 High NA EUV Stitching 고려사항 Dae-Jin Park, Da-Jeong Kang, Jeon-Kyu Lee, and Sung-Woo Ko SK Hynix Inc.
초청 TL2-B-3 11:40-12:10	Enhancing the Patterning Performance of Metal Oxide Resists for High NA EUV Lithography Yejin Ku <sup>1</sup> , Gayoung Kim <sup>1</sup> , Jin-Kyun Lee <sup>1</sup> , Jiho Kim <sup>2</sup> , Sangsul Lee <sup>2</sup> , Seohyeon Lee <sup>3</sup> , Byung Jun Jung <sup>3</sup> , Chawon Koh <sup>4</sup> , Tsunehiro Nishi <sup>5</sup> , and Hyun-Woo Kim <sup>5</sup> <sup>1</sup> Inha University, <sup>2</sup> Pohang Accelerator Laboratory, <sup>3</sup> Korea University of Seoul, <sup>4</sup> Yonsei University, <sup>5</sup> Samsung Electronics Co., Ltd.
TL2-B-4 12:10-12:25	IM-HAPPY: AI-Based Polymer Resist Design for Enhanced Patterning Performance Jihun Ahn <sup>1</sup> , Hyunseok Kim <sup>1</sup> , Vikram Thapar <sup>1</sup> , Gabriella Pasya Irianti <sup>1</sup> , and Su-Mi Hur <sup>1,2</sup> <sup>1</sup> Department of Polymer Engineering, Graduate School, Chonnam National University, <sup>2</sup> School of Polymer Science and Engineering, Chonnam National University
TL2-B-5 12:25-12:40	High-NA EUV 마스크 적용을 위한 차세대 흡수 소재 패터닝 성능 개선 연구 김연수 <sup>1,2</sup> , 정동민 <sup>1,2</sup> , 이승호 <sup>1,2</sup> , 이태호 <sup>2</sup> , 안진호 <sup>1,2</sup> <sup>1</sup> 한양대학교 신소재공학과, <sup>2</sup> Center for Hyperscale, Hyperfunction, Heterogeneous Integration Pioneering Semiconductor Technology





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The 32nd Korean Conference on Semiconductors

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## Future Normal in Semiconductor

2025년 2월 13일(목), 10:55-12:40

Room M(다이아몬드 I), 6층

E. Compound Semiconductors 분과

### 025\_[TM2-E] WBG Semiconductor-II

좌장: 차호영 교수(홍익대학교)

TM2-E-1 10:55-11:10	<b>Sub-100 nm Al<sub>0.4</sub>Ga<sub>0.6</sub>N/GaN HEMTs with <math>f_{\max} = 490</math> GHz</b> Su-Min Choi <sup>1</sup> , Hyeok-Jun Lee <sup>1</sup> , Wan-Soo Park <sup>1</sup> , Hyo-Jin Kim <sup>1</sup> , Young-Hun Han <sup>2</sup> , June-O Song <sup>2</sup> , Jae-Hak Lee <sup>1</sup> , Kyoungheon Yang <sup>3</sup> , and Dae-Hyun Kim <sup>1</sup> <sup>1</sup> School of Electronic and Electrical Engineering, Kyungpook National University, <sup>2</sup> WaveLord, <sup>3</sup> KAIST
TM2-E-2 11:10-11:25	<b>Fabrication and Characterization of GaN FinFETs for Power Devices</b> Hyun Woo Lee <sup>1,2</sup> , Hyeon Tak Kwak <sup>1</sup> , Jae Won Park <sup>1</sup> , Dong Han Kim <sup>1</sup> , Hoe Min Kwak <sup>1</sup> , Sung Bum Bae <sup>1</sup> , Sang Mo Koo <sup>2</sup> , and Hyung Seok Lee <sup>1</sup> <sup>1</sup> ETRI, <sup>2</sup> Department of Electrical Material Engineering, Kwangwoon University
TM2-E-3 11:25-11:40	<b>Enhancement of AlGaIn/GaN HEMTs through N<sub>2</sub> treatment on SiN Passivation</b> Hyo-Jin Kim <sup>1</sup> , Su-Min Choi <sup>1</sup> , Hyeok-Jun Lee <sup>1</sup> , Min-Seo Yoo <sup>1</sup> , Yu-Jeong Lee <sup>1</sup> , Jae-Hak Lee <sup>1</sup> , Kyoungheon Yang <sup>2</sup> and Dae-Hyun Kim <sup>1</sup> <sup>1</sup> Kyungpook National University, <sup>2</sup> KAIST
TM2-E-4 11:40-11:55	<b>E-mode AlGaIn/GaN HEMTs의 드레인 전압에 의한 문턱전압 열화 분석</b> 채명수, 김형탁 홍익대학교 전자전기공학부
TM2-E-5 11:55-12:10	<b>Device Performance Improvement in GaN-based HEMTs Using Extremely Thin h-BN Passivation Layer and Air Spacer</b> S.-J. Chang <sup>1</sup> , S. Moon <sup>2</sup> , D.-S. Kim <sup>3</sup> , H.-Y. Jung <sup>1</sup> , J. Jeong <sup>1</sup> , J. Song <sup>2</sup> , J. Kim <sup>2</sup> , H.-K. Ahn <sup>1</sup> , Y.-S. Noh <sup>1</sup> , J.-W. Lim <sup>1</sup> , J. K. Kim <sup>2</sup> , and D.-M. Kang <sup>1</sup> <sup>1</sup> ETRI, <sup>2</sup> POSTECH, <sup>3</sup> KAERI
TM2-E-6 12:10-12:25	<b>Reducing Thermal Crosstalk in Multi-Finger AlGaIn/GaN HEMTs Through Central Source Length Modulation</b> Chae-Yun Lim, Jae-Hun Lee, Tae-Sung Kim, Yeong-Hyun Won, and Hyun-Seok Kim Division of Electronics and Electrical Engineering, Dongguk University



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TM2-E-7 12:25-12:40	<p>Effect of Al-rich AlGaN Channel Composition Variation on HEMT Performance</p> <p>Joon-Hyuk Lee, Joocheol Jeong, Shyam Mohan, Jooyong Park, Jaejin Heo, and Okhyun Nam</p> <p>Convergence Center for Advanced Nano Semiconductor (CANS), Department of Nano-Semiconductor, Tech University of Korea</p>
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## *Future Normal in Semiconductor*

2025년 2월 13일(목), 10:55-12:40

Room N(다이아몬드 II), 6층

G. Device & Process Modeling, Simulation and Reliability 분과

### 026\_[TN2-G] Device Characterization & Modeling 2

좌장: 장지원 교수(연세대학교), 우지용 교수(경북대학교)

TN2-G-1 10:55-11:10	<b>Electron Trap Distribution in <math>\text{Al}_2\text{O}_3/\text{Si}_3\text{N}_4</math> Gate Insulator Structures</b> Joonhyung Cho <sup>1,2</sup> , Joon Hwang <sup>1</sup> , Min Kyu Park <sup>1</sup> , and Jong Ho Lee <sup>1</sup> <sup>1</sup> Department of Electrical and Computer Engineering Seoul National University, <sup>2</sup> Research and Development Division, SK Hynix Inc.
TN2-G-2 11:10-11:25	<b>Energy Gap and Orbital Mixing in DNTT/PTCDI-C8 Heterostructure</b> Yeo Eun Kim and Hocheon Yoo Gachon University
TN2-G-3 11:25-11:40	<b>Investigating Charge Transport and Recombination Dynamics in OLEDs through Transient Electroluminescence Analysis</b> Al Amin <sup>1,2</sup> and Jeong-Hwan Lee <sup>1,2,3</sup> <sup>1</sup> Department of Materials Science and Engineering, Inha University, <sup>2</sup> Program in Semiconductor Convergence, Inha University, <sup>3</sup> 3D Convergence Center, Inha University
TN2-G-4 11:40-11:55	<b>Exploring the Effect of Continuous-Wave and Pulsed Laser Annealing on Patterned Si Wafer with Reflectors for Selective Annealing</b> Gunryeol Cho, Sanguk Lee, Minchan Kim, Jongseo Park, Bohyun Kang, Jaeseong Pyo, Seunghwan Lee, Junjong Lee, Yonghwan Ahn, and Rock-Hyun Baek Department of Electrical Engineering, POSTECH
TN2-G-5 11:55-12:10	<b>Impact of Non-ideal Characteristics of <math>\text{SiO}_x</math> Threshold Switching Probabilistic Bits on Solving Complex Optimization Problems</b> Jihyun Kim <sup>1</sup> , Hyeonsik Choi <sup>2</sup> , and Jiyong Woo <sup>1,2</sup> <sup>1</sup> School of Electronics Engineering, Kyungpook National University, <sup>2</sup> School of Electronic and Electrical Engineering, Kyungpook National University
TN2-G-6 12:10-12:25	<b>Extraction and Analysis on Source Resistance in <math>\text{In}_{0.8}\text{Ga}_{0.2}\text{As}</math> QW HEMTs Considering Ballistic Transport</b> Se-Hun Kim, Mun-Ho Kim, Min-Kyu Song, Seung-Woo Son, Su-Min Choi, Min-Seo Yu, In-Geun Lee, Jae-Hak Lee, and Dae-Hyun Kim School of Electronic and Electrical Engineering, Kyungpook National University



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<p>TN2-G-7 12:25-12:40</p>	<p>Saturation Current Ratio Method for Extraction of Parasitic Resistances with Dual Configurations in Individual MISFETs</p> <p>Ji Won Park<sup>1</sup>, Seonghyeon Jeong<sup>1</sup>, Seung Hyeop Han<sup>1</sup>, Hanbin Lee<sup>1</sup>, Gyeongsu Min<sup>1</sup>, Hyo-In Yang<sup>1</sup>, So-Jeong Park<sup>1</sup>, Jun-Ho Jang<sup>1</sup>, Jeong Yeon Im<sup>1</sup>, Dae Hwan Kim<sup>1</sup>, Jong-Ho Bae<sup>1</sup>, Dong Myong Kim<sup>2</sup>, and Sung-Jin Choi<sup>1</sup></p> <p><sup>1</sup>School of Electrical Engineering, Kookmin University, <sup>2</sup>Department of Advanced Technology, DGIST</p>
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2025년 2월 13일(목), 15:50-17:20

Room A(그랜드볼룸 I), 4층

K. Memory (Design & Process Technology) 분과

027\_[TA3-K] Charge Trapped Memory Technology - II

좌장: 백승재 마스터(삼성전자), 강명곤 교수(서울시립대학교)

초청 TA3-K-1 15:50-16:20	Development Trend for Cell Structure Having More 500 Layers in 3D NAND Flash Daewoong Kang Seoul National University
TA3-K-2 16:20-16:35	Predictive Modeling of Erase Characteristics in 3D V-NAND Memory through Physical Analysis and Machine Learning In-Je Song <sup>1,2</sup> , Tae-Hyun Park <sup>3</sup> , Ga-Min Gwon <sup>3</sup> , and Ji-Woon Yang <sup>2,3</sup> <sup>1</sup> Global QRA, SK Hynix Inc., <sup>2</sup> Department of Semiconductor Convergence Engineering, Korea University, <sup>3</sup> Department of Electronics & Information Engineering, Korea University
TA3-K-3 16:35-16:50	Effect of Source Underlap on Hot Electron Injection of Charge-Trapping Tunnel Field Effect Transistors Seon Ho Lee, Hyung Jun Noh, Chang Heon Park, Minseok Cha, and Woo Young Choi Department of Electrical and Computer Engineering, Seoul National University
TA3-K-4 16:50-17:05	Analysis of Program Operation Characteristics Induced by Process Variation of Channel Hole Etch in 3D Nand Flash Memory Won-seop Choi <sup>1,3</sup> , In-Je Song <sup>2,3</sup> , Tae-Hyun Park <sup>4</sup> , Chae-Young Kim <sup>4</sup> , Seung-Hyeon Kim <sup>4</sup> , Ga-Min Gwon <sup>4</sup> , and Ji-Woon Yang <sup>3,4</sup> <sup>1</sup> Nand Plug Etch Technology, SK Hynix Inc., <sup>2</sup> Global QRA, SK Hynix Inc., <sup>3</sup> Department of Semiconductor Convergence Engineering, Korea University, <sup>4</sup> Department of Electronics & Information Engineering, Korea University
TA3-K-5 17:05-17:20	Memory Characteristics of Flash Memory Using TiN Metal-Dot Embedded SiN <sub>x</sub> Charge Trap Layer Yun Seo Lim <sup>1</sup> , San Park <sup>1</sup> , Se Hyeon Choi <sup>1</sup> , Bon Cheol Ku <sup>1</sup> , Seong Ho Lee <sup>1</sup> , Hyung Jun Kim <sup>2</sup> , Jae Hyun Yang <sup>2</sup> , Bio Kim <sup>2</sup> , Young Seon Son <sup>2</sup> , Han Mei Choi <sup>2</sup> , and Chang Hwan Choi <sup>1</sup> <sup>1</sup> Division of Materials Science & Engineering, Hanyang University, <sup>2</sup> Memory Process Development Team, Samsung Electronics Co., Ltd.



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Room B(그랜드볼룸III), 4층

D. Thin Film Process Technology 분과

### 028\_[TB3-D] Emerging Films Growth - III

좌장: 오일권 교수(아주대학교), 엄태용 교수(세종대학교)

초청 TB3-D-1 15:50-16:20	Dimensional Scaling of Transition Metal Phosphides for Advanced Interconnect Gangtae Jin Gachon University
TB3-D-2 16:20-16:35	The Novel Microstructure Design with Nanowire-Bundled Grain Boundaries in Thermoelectric Materials via Atomic Layer Deposition Gwang Min Park <sup>1,2</sup> , Seunghyeok Lee <sup>2,3</sup> , Jinseok Hong <sup>4</sup> , Seokho Nahm <sup>4</sup> , Seung-Hyub Baek <sup>2</sup> , Jin-Sang Kim <sup>2</sup> , Seung-Yong Lee <sup>4,5</sup> , and Seong Keun Kim <sup>1,2</sup> <sup>1</sup> KU-KIST Graduate School of Converging Science and Technology, Korea University, <sup>2</sup> Electronic Materials Research Center, KIST, <sup>3</sup> Department of Materials Science and Chemical Engineering, Hanyang University, <sup>4</sup> Division of Materials Science and Engineering, Hanyang University, <sup>5</sup> Department of Battery Engineering, Hanyang University
TB3-D-3 16:35-16:50	Composition-Controlled Hafnium-Based Inorganic/Organic Hybrid Dry Resist for EUV Lithography via Advanced Atomic Layer Deposition Kyungryul Ha, Dong Geun Kim, Hyekyung Kim, Ji-Hoon Ahn, Woo-Hee Kim <sup>1</sup> , and Tae Joo Park <sup>1</sup> Department of Materials Science and Chemical Engineering, Hanyang University
TB3-D-4 16:50-17:05	Molecular Layer Deposition of Tin-Based Organic-Inorganic Hybrid Films as Photoresists Dong Geun Kim, Kyungryul Ha, Hyekyung Kim, Woo-Hee Kim, Tae Joo Park, and Ji-Hoon Ahn Department of Materials Science and Chemical Engineering, Hanyang University
TB3-D-5 17:05-17:20	Interface Engineering for High Thermoelectric Performance via Atomic Layer Deposition of ZnO-TiO <sub>2</sub> Multilayers Su Min Eun, Jin Kyeong Shin, Ye Jin Jeong, and Byung Joon Choi Department of Material Science and Engineering, Seoul National University of Science and Technology



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## *Future Normal in Semiconductor*

2025년 2월 13일(목), 15:50-17:20

Room C(컨벤션홀 L), 5층

D. Thin Film Process Technology 분과

029\_[TC3-D] Emerging Devices - III

좌장: 김건환 교수(연세대학교), 이홍섭 교수(경희대학교)

TC3-D-1 15:50-16:05	Atomic-Layer-Deposited Lithium Titanate-Based Artificial Synaptic Devices for Neuromorphic Computing Min Sub Kim, Hye Rim Kim, and Tae Joo Park Department of Materials Science and Chemical Engineering, Hanyang University
TC3-D-2 16:05-16:20	Synergistic Learning and Forgetting Effects for Optical and Electrical Stimulation in TiO <sub>2</sub> -based Dual-Gate Dielectric Synaptic Transistors Youngbin Yoon <sup>1</sup> , Jaehee Lee <sup>1,2</sup> , and Jung Wook Lim <sup>1,2</sup> <sup>1</sup> ETRI, <sup>2</sup> UST
TC3-D-3 16:20-16:35	Implementation of Vertical-Channel Synapse Transistors Using an IGZO Active Layer with a Channel Length of 40 nm via HfO <sub>2</sub> Spacer Layer Nayoung Jang <sup>1</sup> , Young Ha Kwon <sup>2</sup> , Nak Jin Seong <sup>2</sup> , Kyu Jeong Choi <sup>2</sup> , and Sung Min Yoon <sup>1</sup> <sup>1</sup> Kyung Hee University, <sup>2</sup> NCD Co. Ltd
TC3-D-4 16:35-16:50	Light-Controlled Multi-Wavelength Behavior Synapse Transistor Seungme Kang and Hocheon Yoo Gachon University
TC3-D-5 16:50-17:05	Enhancement of Synaptic Characteristics and Spatiotemporal Processing in Electrolytic-Gated Synapse Transistors via a Gate Offset Geometry Hyunsik Woo and Sung-Min Yoon Kyung Hee University
TC3-D-6 17:05-17:20	All Transition Metal Dichalcogenides Based Wafer Scale 1T1R Array Via Crystallinity Engineering Hyunbin Choi <sup>1</sup> , Hyunho Seok <sup>2</sup> , Sihoon Son <sup>2</sup> , Jinhyoung Lee <sup>3</sup> , and Taesung Kim <sup>1,2,3</sup> <sup>1</sup> Department of Semiconductor Convergence Engineering, Sungkyunkwan University, <sup>2</sup> SKKU Advance Institute of Nano Technology, <sup>3</sup> Department of Mechanical Engineering, Sungkyunkwan University



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2025년 2월 13일(목), 15:50-17:20

Room D(에메랄드 I), 5층

U. Bio-Medical 분과

### 030\_[TD3-U] Advanced Biomedical Devices

좌장: 이정협 교수(DGIST), 송민영 (DGIST)

초청 TD3-U-1 15:50-16:20	Biopotential Amplifier with SNR-Optimizing Technique under Harsh Contact Impedance Conditions Nahm Il Koo Dankook University
초청 TD3-U-2 16:20-16:50	In-vivo Radiation Detector IC for Cancer Radiotherapy Kyoungtae Lee DGIST
TD3-U-3 16:50-17:05	A CMOS Microelectrode Array System with Automatic Electrode-of-Interest Control Scheme Su-Hyun Park <sup>1,3</sup> , Ji-Hyoung Cha <sup>2</sup> , and Seong-Jin Kim <sup>3</sup> <sup>1</sup> UNIST, <sup>2</sup> Korea University, <sup>3</sup> Sogang University
TD3-U-4 17:05-17:20	High Elasticity Human Adhesive Hydrocolloid-QD-OLED Phototherapy Platform In Ho Kim <sup>1,2</sup> , Young Woo Kim <sup>2</sup> , Yeji Shin <sup>2</sup> , Minseong Park <sup>2</sup> , Youjin Cho <sup>2</sup> , Chaeyeong Lee <sup>2</sup> , Seojin Kim <sup>2</sup> , Yuhwa Bak <sup>1</sup> , SeoHyeon Kim <sup>1</sup> , Junpyo Song <sup>2</sup> , Youngjin Song <sup>2</sup> , Eou-Sik Cho <sup>3</sup> , Sang Jik Kwon <sup>3</sup> , and Yongmin Jeon <sup>1,2</sup> <sup>1</sup> Department of Biomedical Engineering, Gachon University, <sup>2</sup> Department of Semiconductor Engineering, Gachon University, <sup>3</sup> Department of Electronic Engineering, Gachon University





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## *Future Normal in Semiconductor*

2025년 2월 13일(목), 15:50-17:20

Room E(에메랄드 II+III), 5층

S. Chip Design Contes 분과

031\_[TE3-S] Chip Design Contest

좌장:

TE3-S-1	
TE3-S-2	
TE3-S-3	
TE3-S-4	
TE3-S-5	



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2025년 2월 13일(목), 15:50-17:20

Room F(사파이어 I), 5층

V. Quantum Technology 분과

### 032\_[TF3-V] Quantum Technology 1

좌장: 문기원 교수(ETRI), 이문주 교수(포항공대)

초청 TF3-V-1 15:50-16:20	국방활용을 위한 국방과학연구소 양자기술 연구개발 인용섭 국방과학연구소
TF3-V-2 16:20-16:35	Buried Defects for Solid-State Quantum Technologies Seong Yun Hong and Yeonghun Lee Department of Electronics Engineering, Incheon National University
TF3-V-3 16:35-16:50	A Computational Study on the Feasibility of Quantum Information Protocols Designed with a Si Quantum Dot Platform Junghee Ryu <sup>1</sup> and Hoon Ryu <sup>2</sup> <sup>1</sup> Center for Quantum Information R&D, KISTI, <sup>2</sup> Department of Artificial Intelligence Engineering, Kumoh National Institute of Technology
초청 TF3-V-4 16:50-17:20	Phonon-Engineered Mechanical Oscillator for Advanced Optomechanics Jinuk Kim KRISS



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Room G(사파이어 II+III), 5층

R. Semiconductor Software 분과

033\_[TG3-R] 차세대 스토리지와 AI

좌장: 강동현 교수(가천대학교), 박정규 교수(대진대학교)

초청 TG3-R-1 15:50-16:20	AI 반도체 환경을 위한 병렬 스토리지 SW 기술 박성준 (주) 글루시스
TG3-R-2 16:20-16:35	하이브리드 매핑 기법을 이용한 ZNS SSD를 위한 디바이스 매퍼 성능 개선 임경민, 안성용 부산대학교
TG3-R-3 16:35-16:50	FTL Optimization with Linear Regression-Based Mapping Management Seokyeon Choi and Dongkun Shin Department of Electrical and Computer Engineering, Sungkyunkwan University
TG3-R-4 16:50-17:05	Implementation of a Python-Based QLC Cell Defect Prediction Model and Study on Reliability Improvement Youn-Hee Hong <sup>1</sup> and Ho-Yong Lim <sup>2</sup> <sup>1</sup> Chungnam National University, <sup>2</sup> Hoyeon Corp. Ltd,
TG3-R-5 17:05-17:20	멀티스트림 SSD를 위한 블록 수준 쓰기 버퍼 관리 기법 김현섭, 김태석 광운대학교 컴퓨터공학과



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2025년 2월 13일(목), 15:50-17:20

Room H(루비 I), 5층

P. Device for Energy (Solar Cell, Power Device, Battery, etc.) 분과

### 034\_[TH3-P] Battery

좌장: 신태호 단장(한국세라믹기술원), 주종훈 교수(광주과학기술원)

초청 TH3-P-1 15:50-16:20	Enhancing Nano-Structured Surface via Ultrasonic Spraying for High-Performed LaGaO <sub>3</sub> Based-Solid Electrochemical Device Xuan Dong Nguyen, Sang Won Lee, Hye Young Kim, and Tae Ho Shin Low carbon & DX R&D Division, KICET
TH3-P-2 16:20-16:35	Lithicone Protection Layer on Ultra-thin Li Metal Anode with In-situ H <sub>2</sub> Plasma Surface Treatment Ha Yeon Kwon <sup>1</sup> , Seung Jeong Oh <sup>2</sup> , Kyu Moon Kwon <sup>1</sup> , Min Jeong Choi <sup>1</sup> , and Tae Joo Park <sup>1</sup> <sup>1</sup> Department of Materials Science and Chemical engineering, Hanyang University, <sup>2</sup> R&D Division, Hyundai Motors
TH3-P-3 16:35-16:50	Low-Temperature Thermal Atomic Layer Deposition of GaN Films Yerim Choi, Okhyeon Kim, Jian Heo, Hye-Lee Kim, and Won-Jun Lee Department of Nanotechnology and Advanced Materials Engineering, Sejong University
TH3-P-4 16:50-17:05	Powder Atomic Layer Deposition of Silver on Amorphous Carbon for Anodeless All-Solid-State Batteries Ji Hyeon An, Kyu Moon Kwon, Ha Yeon Kwon, and Tae Joo Park Department of Materials Science and Chemical Engineering, Hanyang University
TH3-P-5 17:05-17:20	Brand-New Smart Window Technology: Reversible Metal Electrodeposition Type Cheon Woo Moon Department of Display Materials Engineering, Soonchunhyang University



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Room I(스페이드 I), 6층

### I. MEMS & Sensor Systems 분과

#### 035\_[TI3-I] MEMS & Sensor Systems (III)

좌장: 윤홍준 교수(가천대학교), 원상민 교수(성균관대학교)

TI3-I-1 15:50-16:05	이종접합 소재 기반 온디바이스 엠티 트랜지스터 및 보안 소자 Hocheon Yoo <sup>1,2</sup> <sup>1</sup> Department of Electronic Engineering, Gachon University, <sup>2</sup> Department of Semiconductor Engineering, Gachon University
TI3-I-2 16:05-16:20	Performance Analysis of PN Junction Diode with ZnO/SWCNT Sensing Layer Eunji Seo <sup>1</sup> , Hyeongyu Kim <sup>1</sup> , Chan Heo <sup>1</sup> , Jeongmin Son <sup>1</sup> , Hyokyung Kim <sup>2</sup> , and Kihyun Kim <sup>1</sup> <sup>1</sup> Department of Electronics and information Engineering, Jeonbuk National University, <sup>2</sup> Division of Electronics Engineering, Jeonbuk National University
TI3-I-3 16:20-16:35	Reference Electrode Free Junctionless Field-Effect Transistor for Biosensing Jeongmin Son, Chan Heo, Eunji Seo, Inhwa Kim, and Kihyun Kim Department of Electronics and information Engineering, Jeonbuk National University
TI3-I-4 16:35-16:50	실시간 교량 모니터링용 자가 전원 무선 센서 Towoo Lim <sup>1</sup> , Juyong Lee <sup>1</sup> , Hakwoo Lee <sup>2</sup> , Dogyun Kim <sup>2</sup> , and Youngmin Kim <sup>2</sup> <sup>1</sup> Tinywave Co., Ltd., <sup>2</sup> Hongik University
초청 TI3-I-5 16:50-17:20	AI-Assisted Self-Powered Motion Monitoring System Based on Hybridized Triboelectric and Piezoelectric Nanogenerators Using Nanofiller-Embedding Polymer Layers Daewon Kim Kyung Hee University



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Room J(스페이드 II+III), 6층

J. Nano-Science & Technology 분과

036\_[TJ3-J] 2D Devices & Materials

좌장: 권지민 교수(UNIST), 조경준 교수(한국과학기술원)

초청 TJ3-J-1 15:50-16:20	Process Emulation and Device Simulation of Gate-All-Around MoS <sub>2</sub> Nanosheet NMOSFET Sung-Min Hong and In Ki Kim School of Electrical Engineering and Computer Science, GIST
TJ3-J-2 16:20-16:35	Investigation of Optimal Architecture with MoS <sub>2</sub> Channel Gate-All-Around FETs Based on 0.7nm Process Node Junyeol Lee and Jongwook Jeon Department of Electrical and Computer Engineering, Sungkyunkwan University
TJ3-J-3 16:35-16:50	Large-Area Implementation of Double-Gate Vertical Sidewall MoS <sub>2</sub> Field-Effect Transistors for Area-Efficient Integrated Circuit Jiwon Ma <sup>1</sup> and Jiwon Chang <sup>1, 2</sup> <sup>1</sup> Department of Materials Science and Engineering, Yonsei University, <sup>2</sup> Department of System Semiconductor Engineering, Yonsei University
TJ3-J-4 16:50-17:05	Manipulating Thermal Conductivity of Monolayer MoS <sub>2</sub> by All-Scale Hierarchical Phonon Scattering through Multi-Scale Defects Mingyu Jang <sup>1</sup> , Jeongin Yeo <sup>2</sup> , Seonguk Yang <sup>2</sup> , Sungkyu Kim <sup>3</sup> , Lina Yang <sup>4</sup> , and Joonki Suh <sup>1,2</sup> <sup>1</sup> Graduate School of Semiconductor Materials and Devices Engineering, UNIST, <sup>2</sup> Department of Materials Science and Engineering, UNIST, <sup>3</sup> Department of Nanotechnology and Advanced Materials Engineering, Sejong University, <sup>4</sup> School of Aerospace Engineering, Beijing Institute of Technology
TJ3-J-5 17:05-17:20	Explainable AI-Driven Insights into the Correlation of Raman Spectroscopy and Reduction Degree in Graphene Oxide Jaekak Yoo <sup>1</sup> , Youngwoo Cho <sup>2</sup> , Dong Hyeon Kim <sup>1</sup> , Seung Mi Lee <sup>3</sup> , Jaegul Choo <sup>2</sup> , and Mun Seok Jeong <sup>1</sup> <sup>1</sup> Hanyang University, <sup>2</sup> KAIST, <sup>3</sup> KRISS,



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Room K(하트 I), 6층

J. Nano-Science & Technology 분과

**037\_[TK3-J] Emerging Nanomaterials & Applications**

좌장: 김철주 교수(POSTECH), 강기훈 교수(서울대학교)

TK3-J-1 15:50-16:05	<b>Mitigating Substrate Effects of van der Waals Semiconductors using Perfluoropolyether Self-Assembled Monolayers</b> Dae Young Park <sup>1</sup> , Hyeong Chan Suh <sup>1</sup> , Seungho Bang <sup>1</sup> , Ju Chan Lee <sup>2</sup> , Jaekak Yoo <sup>1</sup> , Hayoung Ko <sup>2</sup> , Soo Ho Choi <sup>2</sup> , Ki Kang Kim <sup>2</sup> , Seung Mi Lee <sup>3</sup> , Seong Chu Lim <sup>2</sup> , Tschang Uh Nahm <sup>1</sup> , and Mun Seok Jeong <sup>1</sup> <sup>1</sup> Department of Physics, Hanyang University, <sup>2</sup> Department of Energy Science, Sungkyunkwan University, <sup>3</sup> KRISS
TK3-J-2 16:05-16:20	<b>Facile Repairing Process of Sulfur Vacancy on MoS<sub>2</sub> Surface with Fluorinated Benzenethiol</b> Mingyu Kim <sup>1</sup> , Haksoon Jung <sup>1</sup> , Yongwoo Lee <sup>2</sup> , Taoyu Zou <sup>1</sup> , Jimin Kwon <sup>2</sup> , and Yong-Young Noh <sup>1</sup> <sup>1</sup> Department of Chemical Engineering, POSTECH, <sup>2</sup> Department of Electrical Engineering, UNIST
TK3-J-3 16:20-16:35	<b>Exploring the Piezoresistive Pressure Sensing Range in MOCVD-Grown Hierarchical Three-Dimensional MoS<sub>2</sub></b> Jeongin Song <sup>1,2</sup> , Se Min Hwang <sup>1,3</sup> , Min Sup Choi <sup>3</sup> , Sang Woo Kang <sup>1,4</sup> , Taesung Kim <sup>2</sup> , and Jihun Mun <sup>1</sup> <sup>1</sup> KRISS, <sup>2</sup> Sungkyunkwan University, <sup>3</sup> Chungnam National University, <sup>4</sup> University of Science and Technology
TK3-J-4 16:35-16:50	<b>Influence of Grain size on Amplified Spontaneous Emission in Metal Halide Perovskite</b> Hyeree Kim <sup>1</sup> , Seung-Je Woo <sup>2</sup> , Kyung Yeon Jang <sup>1</sup> , and Tae-Woo Lee <sup>1,3</sup> <sup>1</sup> Department of Material Science and Engineering, Seoul National University, <sup>2</sup> Cavendish Laboratory, University of Cambridge, UK, <sup>3</sup> Research Institute of Advanced Materials, Institute of Engineering Research, Soft Foundary, Interdisciplinary Program in Bioengineering, SN Display Co. Ltd, Seoul National University



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TK3-J-5 16:50-17:05	<b>Enhanced Gating Efficiency in Vertical Mixed Molecular Transistors with Deep Orbital Level</b> Donguk Kim, Hyemin Lee, Minwoo Song, Jongwoo Nam, and Takhee Lee Department of Physics and Astronomy, Seoul National University
TK3-J-6 17:05-17:20	<b>Development of CMOS-Integrated TiO<sub>x</sub> Memristor Array for In-Memory Computing</b> Yeon Seo An <sup>1</sup> , Dowon Kim <sup>3</sup> , Young Ran Park <sup>1</sup> , Jung Sun Eo <sup>1</sup> , Mingyu Kim <sup>1</sup> , Donghyeok Kim <sup>1</sup> , Hyeon Bin Kim <sup>1</sup> , Byunggeun Lee <sup>3</sup> , and Gunuk Wang <sup>1,2</sup> <sup>1</sup> KU-KIST Graduate School of Converging Science and Technology, <sup>2</sup> Department of Integrative Energy Engineering, Korea University, <sup>3</sup> GIST





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Room L(하트II+III), 6층

B. Patterning (Lithography & Etch Technology) 분과

### 038\_[TL3-B] Etching and Lithography

좌장: 김창구 교수(아주대학교), 허수미 교수(전남대학교)

초청 TL3-B-1 15:50-16:20	Developing Novel Low Global Warming Potential Gases for Etching and Chamber Cleaning Processes Towards Carbon Neutrality Jae-Hyun Noh, Young-Lae Kim, and Byeong-Ok Cho Wonik Materials Co., Ltd.
TL3-B-2 16:20-16:35	수소 플라즈마 환경에서의 CNT 펄리클 life-time 향상을 위한 SiN <sub>x</sub> 내화학 피막 연구 강영우 <sup>1,3</sup> , 김하늘 <sup>1,3</sup> , 이인서 <sup>1,3</sup> , 박인성 <sup>2,3</sup> , 안진호 <sup>1,3</sup> <sup>1</sup> 한양대학교 신소재공학과, <sup>2</sup> 한양대학교 나노과학기술연구소, <sup>3</sup> Center for Hyperscale, Hyperfunction, Heterogeneous Integration Pioneering Semiconductor Technology
초청 TL3-B-3 16:35-17:05	Sensitivity Evaluation and Nano-Infrared Analysis for EUV Photoresists Jiho Kim, Geonhwa Kim, Nam Hyeon Kim, Boknam Chae, and Sangsul Lee Pohang Accelerator Laboratory, POSTECH
TL3-B-4 17:05-17:20	EUV Ptychography Microscope를 이용한 마스크 패턴의 고신뢰성 Actinic 검사를 위한 EUV Ptychography Imaging 연구 홍준호 <sup>1,3</sup> , 문승찬 <sup>2,3</sup> , 안진호 <sup>1,2,3</sup> <sup>1</sup> 한양대학교 신소재공학과, <sup>2</sup> 한양대학교 나노반도체공학과, <sup>3</sup> Center for Hyperscale, Hyperfunction, Heterogeneous Integration Pioneering Semiconductor Technology



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Room M(다이아몬드 I), 6층

L. Analog Design 분과

### 039\_[TM3-L] Analog Circuits

좌장: 엄지용 교수(금오공과대학교), 정영호 교수(대구대학교)

초청 TM3-L-1 15:50-16:20	Low-Power Voltage References Youngwoo Ji Hanbat National University
TM3-L-2 16:20-16:35	A 2×48 Gb/s Single-Ended PAM-3 Transmitter with Crosstalk Cancellation Technique Separated from Feed-Forward Equalizer Junsu Park, Dongwoo Kang, and Kwanseo Park Yonsei University
TM3-L-3 16:35-16:50	A Low-Jitter Injection-Locked CDR with Injection Rate Control Junhak Kim, Youngwook Kim, and Kwanseo Park Yonsei University
TM3-L-4 16:50-17:05	A 32-Gb/s 0.52-pJ/b Sub-Baud-Rate Receiver with 1-tap DFE Ho-Joon Shin, Suil Kang, Yoojin Jung, and Kwanseo Park Yonsei University
TM3-L-5 17:05-17:20	A 12-Bit 500-MS/S Ring amp-Based Fully-Differential Pipelined SAR ADC With Dynamic Body Biasing Jisu Kim <sup>1</sup> , Taeho Lee <sup>2</sup> , and Jun-Eun Park <sup>1</sup> <sup>1</sup> Department of Electrical and Computer Engineering Sungkyunkwan University, <sup>2</sup> Department of Semiconductor Convergence Engineering Sungkyunkwan University



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Room N(다이아몬드 II), 6층

E. Compound Semiconductors 분과

040\_[TN3-E] WBG Semiconductor-III

좌장: 이종원 조교수(NNFC), 안호균 박사(ETRI)

TN3-E-1 15:50-16:05	Vertically Integrated Active Power Delivery Network (PDN) with Direct Heat Spreading Layer Bonding Jaeyong Jeong <sup>1</sup> , Chan Jik Lee <sup>1</sup> , Sung Joon Choi <sup>1</sup> , Nahyun Rheem <sup>1</sup> , Minseo Song <sup>1</sup> , Yoon-Je Suh <sup>1</sup> , Bong Ho Kim <sup>1</sup> , Joon Pyo Kim <sup>1</sup> , Joon-sup Shim <sup>1</sup> , Jiseon Lee <sup>2</sup> , Myungsoo Park <sup>2</sup> , Yumin Koh <sup>2</sup> , Donghyun Kim <sup>2</sup> , and Sanghyeon Kim <sup>1</sup> <sup>1</sup> KAIST, <sup>2</sup> Korea Advanced Nano Fab Center
TN3-E-2 16:05-16:20	Physically Unclonable Function using Bismuth Sulfide and Doping of Self-Assembled Monolayer Heebeen Shin, Hocheon Yoo, and Dong Hyun Lee Gachon University
TN3-E-3 16:20-16:35	6/8inch-SiC Single Crystals Obtained with Modification of Crucible Structure and Process Condition in PVT Growth Jung Gyu Kim <sup>1</sup> , and Kap Ryeol Ku <sup>1</sup> , and Won Jae Lee <sup>2</sup> <sup>1</sup> Senic Co. Ltd., <sup>2</sup> Department of Advanced Materials Engineering, Dong-Eui University
TN3-E-4 16:35-16:50	Sn-doped $\alpha$ -Ga <sub>2</sub> O <sub>3</sub> Quasi-vertical Schottky Barrier Diode Fabrication by Mist-CVD Jang Hyeok Park <sup>1</sup> , Ho Jung Jeon <sup>1</sup> , Jung Yeop Hong <sup>3</sup> , Jung Hee Park <sup>3</sup> , Young Kyun Jung <sup>3</sup> , and You Seung Rim <sup>1,2</sup> <sup>1</sup> Department of Semiconductor System Engineering and Intelligent Convergence Drone, Sejong University, <sup>2</sup> Institute of Semiconductor and System IC, Sejong University, <sup>3</sup> Energy Devices Research Team, Research and Development Division, Hyundai Motor Group
TN3-E-5 16:50-17:05	고속 스위칭 환경에서 1.2 kV SiC MOSFET의 전기적 특성 변화 분석 윤효원 <sup>1</sup> , 김상엽 <sup>2</sup> , 백두산 <sup>1</sup> , 강규혁 <sup>2</sup> , 박수민 <sup>1</sup> , 박가영 <sup>1</sup> , 석오균 <sup>1</sup> <sup>1</sup> 부산대학교, <sup>2</sup> 국립금오공과대학교



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TN3-E-6

17:05-17:20

Physically Driven Curve Modulation of Gaussian Transistor Based on DNTT/IGZO Heterostructure Anti-ambipolar Operation

Jisoo Park<sup>1</sup> and Hocheon Yoo<sup>1,2</sup>

<sup>1</sup>Department of Semiconductor Engineering, Gachon University, <sup>2</sup>Department of Electronic Engineering, Gachon University



2025년 2월 14일(금), 09:00-10:45

Room A(그랜드볼룸 I), 4층

K. Memory (Design & Process Technology) 분과

**041\_[FA1-K] Security Applications and Reliability of Emerging Memory**

좌장: 김형진 교수(한양대학교), 김경민 교수(KAIST)

FA1-K-1 09:00-09:15	<b>Designing Memristive Baffle Systems via Material and Simulation Co-Design and Their Implementation for Enhancing Synaptic Linearity Characteristics</b> Eun Young Kim, Juseong Park, Sumin Ju, Woojoon Park, Woon Hyung Cheong, Myeongchan Ko, and Kyung Min Kim KAIST
FA1-K-2 09:15-09:30	<b>Leakage Current Estimation of CVD-grown MoS<sub>2</sub> Based 2T0C DRAM and Retention Limitation by Read Transistor Degradation</b> Changjun Lee <sup>1,3</sup> , Jisoo Seok <sup>2</sup> , and Jiwon Chang <sup>1,2,3</sup> <sup>1</sup> Department of System Semiconductor Engineering, Yonsei University, <sup>2</sup> Department of Materials Science and Engineering, Yonsei University, <sup>3</sup> BK21 Graduate Program in Intelligent Semiconductor Technology
FA1-K-3 09:30-09:45	<b>In-Series Phase-Change Memory Pair for Enhanced Data Retention and Large Window in Automotive Application</b> Sejeung Choi <sup>1</sup> and Sangbum Kim <sup>1,2,3</sup> <sup>1</sup> Department of Materials Science and Engineering, College of Engineering, Seoul National University, <sup>2</sup> Research Institute of Advanced Materials, Seoul National University, <sup>3</sup> Inter-university Semiconductor Research Center, Seoul National University
FA1-K-4 09:45-10:00	<b>True Random Number Generator using Random Telegraph Noise Signal of Memristor with Tolerance</b> Dayeon Yu and Hyungjin Kim Division of Materials Science and Engineering and Department of Semiconductor Engineering, Hanyang University
FA1-K-5 10:00-10:15	<b>Heterogeneous Data Clustering and Outlier Detection with Multifunctional Memristive Array</b> Dong Hoon Shin, Sunwoo Cheong, Néstor Ghenzi, and Cheol Seong Hwang Department of Materials Science and Engineering and Inter-University Semiconductor Research Center, Seoul National University



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FA1-K-6 10:15-10:30	True Random Number Generator using Memcapacitor based on Flash Cell Hwiho Hwang, Sangwook Youn, and Hyungjin Kim Division of Materials Science and Engineering and Department of Semiconductor Engineering, Hanyang University
FA1-K-7 10:30-10:45	Enhanced Cryogenic Stability and Endurance of CMOS-Compatible HfZrO <sub>2</sub> FeCAPs with Optimized WO Buffer layer Eunjin Kim and Jiyong Woo School of Electronic and Electrical Engineering, Kyungpook National University



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Room B(그랜드볼룸III), 4층

K. Memory (Design & Process Technology) 분과

**042\_[FB1-K] Ferroelectric Memory Technology**

좌장: 김윤 교수(서울시립대학교), 심원보 교수(서울과학기술대학교)

FB1-K-1 09:00-09:15	<b>Vertical Self-Rectifying Ferroelectric Tunnel Junction-based 3D Content Addressable Memory for Data-Centric Computing</b> Chaeheon Kim, Junghyeon Hwang, Yongsu Kim, and Sanghun Jeon School of Electrical Engineering, KAIST
FB1-K-2 09:15-09:30	<b>Enhanced Non-Volatile Memory Performance in CNT-FeFETs with Zr-Doped HfO<sub>2</sub> Ferroelectric Layer</b> So-Jeong Park <sup>1</sup> , Hanbin Lee <sup>1</sup> , Hyo-In Yang <sup>1</sup> , Gyeongsu Min <sup>1</sup> , Jun-Ho Jang <sup>1</sup> , Jeong Yeon Im <sup>1</sup> , Ji Won Park <sup>1</sup> , Seonghyeon Jeong <sup>1</sup> , Dae Hwan Kim <sup>1</sup> , Jong-Ho Bae <sup>1</sup> , Min-Ho Kang <sup>2</sup> , Dong Myong Kim <sup>3</sup> , and Sung-Jin Choi <sup>1</sup> <sup>1</sup> School of Electrical Engineering, Kookmin University, <sup>2</sup> Department of Nano-process, NNFC, <sup>3</sup> Department of Advanced Technology, DGIST
FB1-K-3 09:30-09:45	<b>Analysis of Leakage-Current-Assisted Polarization Mechanism for Memory Window Expansion in Ferroelectric a-InGaZnO<sub>x</sub> Thin Film Transistor</b> Sujong Kim <sup>1</sup> , Ha-Neul Lee <sup>1</sup> , Hyojin Yang <sup>1</sup> , Hwan Jin Kim <sup>1</sup> , Hyunwook Jeong <sup>1</sup> , Yubin Choi <sup>1</sup> , Sung-Jin Choi <sup>1</sup> , Dong Myong Kim <sup>2</sup> , Dae Hwan Kim <sup>1</sup> , Sung Yun Woo <sup>3</sup> , and Jong-Ho Bae <sup>1</sup> <sup>1</sup> School of Electrical Engineering, Kookmin University, <sup>2</sup> Department of Advanced Technology, DGIST, <sup>3</sup> School of Electronic and Electrical Engineering, Kyungpook National University
FB1-K-4 09:45-10:00	<b>Investigation of Memory Operations in InGaAs MFMIS Tunnel FET</b> Kyuil Ko <sup>1,2</sup> , Dae-Hwan Ahn <sup>1</sup> , Jai-Youn Jeong <sup>1</sup> , Byeong-Kwon Ju <sup>2</sup> , and Jae-Hoon Han <sup>1</sup> <sup>1</sup> KIST, <sup>2</sup> Korea University



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FB1-K-5 10:00-10:15	<p>Low EOT &amp; Leakage HZO Capacitor (EOT:3.6Å&amp;J<sub>leak</sub>:<math>7\times 10^{-8}</math>A/cm<sup>2</sup>@0.8V) Enabled by Low-Temperature &amp; Dielectric-Selective Microwave Annealing</p> <p>Hunbeom Shin, Giuk Kim, Sujeong Lee, Geonhyeong Kang, Hyojun Choi, Taeseung Jung, Sangho Lee, and Sanghun Jeon</p> <p>School of Electrical Engineering, KAIST</p>
FB1-K-6 10:15-10:30	<p>Low-Voltage and QLC NAND Flash Device Enabled by Hafnia Ferroelectric Layer: Experimental Validation and Modeling</p> <p>Giuk Kim, Hyojun Choi, and Sanghun Jeon</p> <p>School of Electrical Engineering, KAIST</p>
FB1-K-7 10:30-10:45	<p>Impact of the Starting Layer on the Electrical Properties of Superlattice HZO</p> <p>Jaemin Yeom<sup>1</sup>, Jun bum Lee<sup>1,2</sup>, and Woo Young Choi<sup>1</sup></p> <p><sup>1</sup>Department of Electrical and Computer Engineering, Seoul National University, <sup>2</sup>DRAM Technology Development, Semiconductor R&amp;D Center, Samsung Electronics Co., Ltd.</p>





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Room C(컨벤션홀 L), 5층

D. Thin Film Process Technology 분과

**043\_[FC1-D] Atomic Layer Deposition - I**

좌장: 김우희 교수(한양대학교), 이응규 교수(송실대학교)

FC1-D-1 09:00-09:15	<b>Catalyst-Assisted Low-Temperature Atomic Layer Deposition of SiO<sub>2</sub> Films and Enhanced Film Quality via <i>In-situ</i> Ozone treatment</b> Hyekyung Kim, Seo-Hyun Lee, and Woo-Hee Kim Department of Materials Science and Chemical Engineering, Hanyang University
FC1-D-2 09:15-09:30	<b>Effects of TDMAZ Impurity in CpTDMAZ Precursor for ZrO<sub>2</sub> ALD Films</b> Seongmoo Oh <sup>1</sup> , Sang-Min Lee <sup>1</sup> , Hye-Lee Kim <sup>1</sup> , Won-Jun Lee <sup>1</sup> , Kwan Hyun Park <sup>2</sup> , Hyun Ki Kim <sup>2</sup> , Kyung Sik Lee <sup>2</sup> , Jung Woo Park <sup>2</sup> , and Jongwan Jung <sup>1</sup> <sup>1</sup> Sejong University, <sup>2</sup> Hansol Chemicals Co., Ltd.
FC1-D-3 09:30-09:45	<b>Comparative Study on Lateral and Vertical Mixing of Atomic Arrangement in Multielement Oxides Grown by Atomic Layer Deposition; a Case Study of Dy-Doped HfO<sub>2</sub></b> Byung-ha Kwak <sup>1</sup> , Ngoc Le Trinh <sup>2</sup> , Wonjoong Kim <sup>2</sup> , Han-Bo Ram Lee <sup>2</sup> , and Il-kwon Oh <sup>1,3</sup> <sup>1</sup> Department of Intelligence Semiconductor Engineering, Ajou University, <sup>2</sup> Department of Materials Science and Engineering, Incheon National University, <sup>3</sup> Department of Electrical and Computer Engineering, Ajou University
FC1-D-4 09:45-10:00	<b>Role of a Cyclopentadienyl Ligand in Hf Precursors Using H<sub>2</sub>O or O<sub>3</sub> as Oxidant in Atomic Layer Deposition</b> Youngmin Song <sup>1</sup> , Hui-Jin Kim <sup>2</sup> , Su-Jin Kwon <sup>3</sup> , Soo Hyun Lee <sup>3</sup> , Bonggeun Shong <sup>3</sup> , and Il-Kwon Oh <sup>1,2</sup> <sup>1</sup> Department of Intelligence Semiconductor Engineering, Ajou University, <sup>2</sup> Department of Electrical and Computer Engineering, Ajou University, <sup>3</sup> Department of Chemical Engineering, Hongik University
FC1-D-5 10:00-10:15	<b>Advanced Atomic Layer Deposition: Metal Oxide Thin Film Growth Using Electric Potential</b> Jae Chan Park <sup>1</sup> , Chang Ik Choi <sup>1</sup> , Sang Gil Lee <sup>2</sup> , Seung Jo Yoo <sup>2</sup> , Ji Hyun Lee <sup>2</sup> , Kyun Seong Dae <sup>2</sup> , Jae Hyuck Jang <sup>2</sup> , Woo Hee Kim <sup>1</sup> , Ji Hoon Ahn <sup>1</sup> , and Tae Joo Park <sup>1</sup> <sup>1</sup> Department of Materials Science and Chemical Engineering, Hanyang University, <sup>2</sup> Center for Research Equipment, KBSI



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FC1-D-6 10:15-10:30	<p>Influence of Oxidants on the Characteristics of Atomic Layer Deposited TiO<sub>2</sub> Thin Film</p> <p>Jae Hun Hwang<sup>1,2</sup>, Youngkwon Kim<sup>1</sup>, Gun Hwan Kim<sup>2,3</sup>, and Taeyong Eom<sup>4</sup></p> <p><sup>1</sup>Thin Film Materials Research Center, KRICT, <sup>2</sup>Department of Materials Science and Engineering, Yonsei University, <sup>3</sup>Department of System Semiconductor Engineering, Yonsei University, <sup>4</sup>Department of Semiconductor System Engineering, Sejong University</p>
FC1-D-7 10:30-10:45	<p>Enhanced Growth Behavior and Electrical Properties of Atomic-Layer-Deposited La<sub>2</sub>O<sub>3</sub> film at High Temperature Using Novel Precursor with Discrete Feeding Method</p> <p>Min Soo Shin<sup>1</sup>, Jae chan Park<sup>1</sup>, Yong min Go<sup>2</sup>, Woo-Hee kim<sup>1</sup>, Ji-Hoon Ahn<sup>1</sup>, Bo Keun Park<sup>2</sup>, and Tae Joo Park<sup>1</sup></p> <p><sup>1</sup>Department of Materials Science and Chemical Engineering, Hanyang University, <sup>2</sup>Division of Advanced Materials, KRICT</p>



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2025년 2월 14일(금), 09:00-10:45

Room D(에메랄드 I), 5층

Q. Metrology, Inspection, Analysis, and Yield Enhancement 분과

### 044\_[FD1-Q] Metrology, Inspection, Analysis, and Yield Enhancement I

좌장: 강상우 소장(한국표준과학연구원), 정용우 TL(SK 하이닉스)

초청 FD1-Q-1 09:00-09:30	Thickness Measurement of Metal Layers via Photoacoustic Waves Induced by Femtosecond Pulses Woojeong Lee, Seung-Yu Jeong, Yeo-Jun Park, and Joohyung Lee Department of Mechanical System Design Engineering, Seoul National University of Science and Technology
초청 FD1-Q-2 09:30-10:00	반도체 FEB에서의 공정 기준에 대한 고찰 부제 : In Line SEM의 Application별 필요 기준이 무엇이며 어떤 문제점이 있는지 알아보자. 양경모 하이케이엠 주식회사
초청 FD1-Q-3 10:00-10:30	Predicting Embedded Silicon-Germane(eSiGe) Defects in Foundry PMOSFET Devices Using Machine Learning Techniques Caused by Outdoor Nanoparticles Jongmin Lee <sup>1,2</sup> , Jungtae Park <sup>1,2</sup> , Il-Jin Kim <sup>2</sup> , Haeun Lee <sup>2</sup> , and Sehoon Park <sup>2</sup> <sup>1</sup> Department of Materials Science and Engineering, Yonsei University, <sup>2</sup> Samsung Electronics Co., Ltd.
FD1-Q-4 10:30-10:45	A High Density Full Wafer Structure Measurement Method based on Imaging Ellipsometry for Process Uniformity Control Jinwoo Ahn <sup>1</sup> , Hyukjoon Cho <sup>1</sup> , Jaehyun Son <sup>1</sup> , Changhyeong Yoon <sup>1</sup> , Ji Yong Shin <sup>1</sup> , Juntaek Oh <sup>1</sup> , Donggun Lee <sup>1</sup> , Seunga Lim <sup>1</sup> , Eunsoo Hwang <sup>1</sup> , Jinsoo Lee <sup>1</sup> , Jaewon Lee <sup>1</sup> , Taeyong Jo <sup>1</sup> , Jihye Lee <sup>2</sup> , Younghoon Sohn <sup>3</sup> , and Myungjun Lee <sup>1</sup> <sup>1</sup> Advanced Process Development Team <sup>4</sup> , Semiconductor R&D Center, Samsung Electronics Co., Ltd, <sup>2</sup> DRAM Process Architecture Team, DRAM Product & Technology Technology, Samsung Electronics Co., Ltd, <sup>3</sup> Metrology & Inspection Technology Team, Common Tech Center, Samsung Electronics Co., Ltd,



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2025년 2월 14일(금), 09:00-10:45

Room E(에메랄드 II+III), 5층

D. Thin Film Process Technology 분과

045\_[FE1-D] Thin Film Transistors - I

좌장: 백인환 교수(인하대학교), 유찬영 교수(홍익대학교)

FE1-D-1 09:00-09:15	<p>Innovative Design of Vertically-Stacked IGZO Thin-Film Transistors with Distinctive Planar and Vertical Channels Using a Single Active Layer</p> <p>Ji-Won Kang<sup>1</sup>, Yeong-Ha Kwon<sup>2</sup>, Nak-Jin Seong<sup>2</sup>, Kyu-Jeong Choi<sup>2</sup>, Chi-Sun Hwang<sup>3</sup>, Jong-Heon Yang<sup>3</sup>, and Sung-Min Yoon<sup>1</sup></p> <p><sup>1</sup>Kyung Hee University, <sup>2</sup>NCD Co. Ltd, <sup>3</sup>ETRI</p>
FE1-D-2 09:15-09:30	<p>Design Strategies to Implement a Highly-Reliable In<sub>2</sub>O<sub>3</sub> Vertical Channel Transistor for 3-Dimensional Device Applications</p> <p>Chae-Eun Oh<sup>1</sup>, Jong-Heon Yang<sup>2</sup>, Chi-Sun Hwang<sup>2</sup>, and Sung-Min Yoon<sup>1</sup></p> <p><sup>1</sup>Kyung Hee University, <sup>2</sup>ETRI</p>
FE1-D-3 09:30-09:45	<p>Surface Treatment for High Performance, High Reliability In<sub>2</sub>O<sub>3</sub> Thin-Film Transistors</p> <p>Jeong Eun Oh<sup>1</sup>, Jae Young Lee<sup>2</sup>, Nahyen Kim<sup>2</sup>, and Jae Kyeong Jeong<sup>1,2</sup></p> <p><sup>1</sup>Department of Electronics Engineering, Hanyang University, <sup>2</sup>Department of Artificial Intelligence Semiconductor Engineering, Hanyang University</p>
FE1-D-4 09:45-10:00	<p>SPICE-Compatible I-V Compact Model Considering Channel Length Effect in IGZO FETs</p> <p>Su Han Noh, Seung Joo Myoung, Dong Hyeop Shin, Sae Him Jung, Donguk Kim, Changwook Kim, Sung-Jin Choi, Jong-Ho Bae, Dong Myong Kim, and Dae Hwan Kim</p> <p>School of Electrical Engineering, Kookmin University</p>
FE1-D-5 10:00-10:15	<p>Electrical Performance and Hydrogen Permeability of Nitrogen-Doped PEALD-SiO<sub>x</sub> Insulators Using N<sub>2</sub>O Plasma in ALD-Oxide Semiconductor TFTs</p> <p>Tae-Heon Kim, Dong-Gyu Kim, and Jin-Seong Park</p> <p>Division of Materials Science and Engineering, Hanyang University</p>



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E1-D-6 10:15-10:30	Strategical Dynamic Modulation of Turn-On Voltage for 2T0C DRAM Cell Introducing Charge-Trap Layer into Write Transistor Using IGZO Channel Kyung-Min Kim, Sang-Han Ko, and Sung-Min Yoon Kyung Hee University
FE1-D-7 10:30-10:45	Accurate Analysis of Halide Perovskite Field Effect Transistor Properties with Mobility Attenuation Effect Youngmin Song, Yeeun Kim, Sunggyu Ryoo, Jaeyong Woo, and Takhee Lee Department of Physics and Astronomy, Seoul National University



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2025년 2월 14일(금), 09:00-10:45

Room F(사파이어 I), 5층

### V. Quantum Technology 분과

#### 046\_[FF1-V] Quantum Technology 2

좌장: 김진욱 박사(한국표준과학연구원), 인용섭 박사(ADD)

초청 FF1-V-1 09:00-09:30	Thin-File Lithium Niobate Photonic Integrated Circuit for Quantum Technology Kiwon Moon, Guhwan Kim, Tetiana Slusar, Hong-Seok Kim, Jaegy Park, Jinwoo Kim, Jiho Park, Jin Tae Kim, Min-su Kim, and Jung Jin Ju Quantum Sensing Research Section, ETRI
FF1-V-2 09:30-09:45	Effects of Light-Induced Charging to Trapped Ions at Cryogenic Temperatures Junhee Cho, Sangsoo Han, Keumhyun Kim, Sehyeon Gwon, Hyegoo Lee, Yongha Shin, Myunghun Kim, and Moonjoo Lee Department of Electrical Engineering, POSTECH
FF1-V-3 09:45-10:00	Construction of an Optical Conveyor Belt and Optical Lattices in Atom-Cavity System Dowon Lee, Donggeon Kim, Uijin Kim, Taegy Ha, Eunchul Jeong, and Moonjoo Lee Department of Electrical Engineering, POSTECH
초청 FF1-V-4 10:00-10:30	Optomechanical Manipulation of Mechanical Fluctuations Mungyeong Jeong and Junho Suh Department of Physics, POSTECH
FF1-V-5 10:30-10:45	Thermodynamic Modelling of Energy Dissipation in Superconducting Qubits based on Multi-Physics Analysis Sung-Hyun Oh <sup>1</sup> , Chang-Hyun Kim <sup>1</sup> , Hyun-Woo Jung <sup>2</sup> , and Eun-Ho Lee <sup>1,2</sup> <sup>1</sup> Department of Mechanical Engineering, Sungkyunkwan University, <sup>2</sup> Department of Smart Fab. Technology, Sungkyunkwan University



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Room G(사파이어 II+III), 5층

J. Nano-Science & Technology 분과

**047\_[FG1-J] Neuromorphic Electronics based on Nanomaterials**

좌장: 조병진 교수(충북대학교), 이철호 교수(서울대학교)

초청 FG1-J-1 09:00-09:30	A Wide Reservoir Computing based on a 3D Stacked WO <sub>x</sub> Memristor Array for Multiple Time Series Information Processing Gunuk Wang <sup>1,2</sup> <sup>1</sup> KU-KIST Graduate School of Converging Science and Technology, Korea University, <sup>2</sup> Department of Integrative Energy Engineering, Korea University
FG1-J-2 09:30-09:45	Application of Flexible Paper Substrate for Neuromorphic and Security Devices using SnO <sub>2</sub> /PVK Heterojunctions Wangmyung Choi <sup>1</sup> and Hocheon Yoo <sup>1,2</sup> <sup>1</sup> Department of Semiconductor Engineering, Gachon University, <sup>2</sup> Department of Electronic Engineering, Gachon University
FG1-J-3 09:45-10:00	Optimizing the Molecular Weight of Living-Polymerized Polythiophenes for Neuromorphic Electronics Hyun-Haeng Lee <sup>1</sup> , Min-Jun Sung <sup>1</sup> , Gyeong-Tak Go <sup>1</sup> , Jaeho Lee <sup>4</sup> , Hyunwoo Park <sup>4,5</sup> , Tae-Lim Choi <sup>4,5</sup> , and Tae-Woo Lee <sup>1,2,3</sup> <sup>1</sup> Department of Materials Science and Engineering, Seoul National University, <sup>2</sup> Soft Foundry, Seoul National University, <sup>3</sup> School of Chemical and Biological Engineering, Institute of Engineering Research, Seoul National University, <sup>4</sup> Department of Chemistry, Seoul National University, <sup>5</sup> Department of Materials, ETH Zürich, Switzerland
FG1-J-4 10:00-10:15	Multimode Synaptic Functionality in Al <sub>2</sub> O <sub>3</sub> /HfO <sub>2</sub> High-k based IGZO Transistors: A Frequency-Dependent Trade-Off Between Charge Trapping and Ferroelectric Effects Ojun Kwon <sup>1,2</sup> , Hanseul Kim <sup>1,2</sup> , and Byungjin Cho <sup>1,2</sup> <sup>1</sup> Department of Advanced Materials Engineering, Chungbuk National University, <sup>2</sup> Department of Urban, Energy, and Environmental Engineering, Chungbuk National University



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FG1-J-5 10:15-10:30	<b>Reconfigurable VO<sub>2</sub> Mott Memristor for Neuromorphic Electronics</b> Gwanyeong Park <sup>1</sup> and Gunuk Wang <sup>1,2</sup> <sup>1</sup> KU-KIST Graduate School of Converging Science & Technology, Korea University, <sup>2</sup> Department of Integrative Energy Engineering, Korea University
FG1-J-6 10:30-10:45	<b>Photonically Enabled Bio-Organic Composites for Trainable Bilingual Synaptic Transistors</b> Moon Jong Han Department of Semiconductor and Electronic Engineering, Gachon University





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Room H(루비 I), 5층

F. Silicon and Group-IV Devices and Integration Technology 분과

### 048\_[FH1-F] 3D GAA/CFET Technology

좌장: 정규원 교수(서울대학교), 김시현 교수(서강대학교)

FH1-F-1 09:00-09:15	<b>Low-Temperature Fabrication of Silicon Nanowire GAAFETs with Excimer Laser Recrystallization for M3D Integration</b> Jeong Yeon Im <sup>1</sup> , Hanbin Lee <sup>1</sup> , Gyeongsu Min <sup>1</sup> , Hyo-In Yang <sup>1</sup> , So Jeong Park <sup>1</sup> , Jun-Ho Jang <sup>1</sup> , Ji Won Park <sup>1</sup> , Seonghyeon Jeong <sup>1</sup> , Dae Hwan Kim <sup>1</sup> , Jong-Ho Bae <sup>1</sup> , Dong Myong Kim <sup>3</sup> , Min-Ho Kang <sup>2</sup> , and Sung-Jin Choi <sup>1</sup> <sup>1</sup> School of Electrical Engineering, Kookmin University, <sup>2</sup> Department of Nano-process, National Nanofab Center, <sup>3</sup> Department of Advanced Technology, DGIST
FH1-F-2 09:15-09:30	<b>Strained Ge/Si Heterogeneous 3D Sequential CFET Featuring First Strain Engineered Ge Top Channel</b> Hyeonrak Lim <sup>1</sup> , Seong Kwang Kim <sup>1</sup> , Seung Woo Lee <sup>1</sup> , Youngkeun Park <sup>1</sup> , Jaejoong Jeong <sup>1</sup> , Hojin Jeong <sup>1</sup> , Jinha Lim <sup>1</sup> , Dae-Myeong Geum <sup>2</sup> , Jaehoon Han <sup>3</sup> , Younhyun Kim <sup>4</sup> , Jaeyong Jeong <sup>1</sup> , Byung Jin Cho <sup>1</sup> , and Sanghyeon Kim <sup>1</sup> <sup>1</sup> KAIST, <sup>2</sup> Inha University, <sup>3</sup> KIST, <sup>4</sup> Hanyang University
FH1-F-3 09:30-09:45	<b>Photoresponsive GIDL Characterization for Simultaneous Extraction of Donor- and Acceptor-like Interface Trap States in Vertically Stacked Si-NW GAA FETs</b> Seohyeon Park <sup>1</sup> , Donghyeon Lee <sup>1</sup> , Jaewook Yoo <sup>1</sup> , Minah Park <sup>1</sup> , Hongseung Lee <sup>1</sup> , Hyeonjun Song <sup>1</sup> , Soyeon Kim <sup>1</sup> , Seongbin Lim <sup>1</sup> , Sojin Jung <sup>1</sup> , TaeWan Kim <sup>3</sup> , Yang Kyu Choi <sup>2</sup> , and Hagyoul Bae <sup>1</sup> <sup>1</sup> Jeonbuk National University, <sup>2</sup> KAIST, <sup>3</sup> University of Seoul
FH1-F-4 09:45-10:00	<b>Transient Analysis of CFET Inverter with Backside Interconnections : Buried Power Rails, Bottom Contacts</b> Seung-Woo Jung and Sung-Min Hong School of Electrical Engineering and Computer Science, GIST



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FH1-F-5 10:00-10:15	<p><b>Implementation of a Stress Calculation Module in an In-House Process Emulator for Monolithic CFET</b></p> <p>Min-Seo Jang<sup>1</sup>, In Ki Kim<sup>1</sup>, Seung-Woo Jung<sup>1</sup>, Jeong Hyeon Yun<sup>2</sup>, Myoung Jin Lee<sup>2</sup>, and Sung-Min Hong<sup>1</sup></p> <p><sup>1</sup>School of Electrical Engineering and Computer Science, GIST, <sup>2</sup>Department of Electronic Engineering, Chonnam National University</p>
FH1-F-6 10:15-10:30	<p><b>A Novel 3D-SRAM Architecture based on VGAA Transistors for Advanced AI and Edge Computing Applications</b></p> <p>Changwoo Han and Changhwan Shin</p> <p>School of Electrical Engineering, College of Engineering, Korea University</p>
FH1-F-7 10:30-10:45	<p><b>Multi-<math>V_{th}</math> Through Different Inner Gates Work Functions</b></p> <p>Seungjoon Jeong, Haevin Choi, and Changhwan Shin</p> <p>School of Electrical Engineering, Korea University</p>



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2025년 2월 14일(금), 09:00-10:45

Room I(스페이드 I), 6층

P. Device for Energy (Solar Cell, Power Device, Battery, etc.) 분과

### 049\_[FI1-P] Power Device

좌장: 차호영 교수(홍익대학교), 홍영준 교수(성균관대학교)

초청 FI1-P-1 09:00-09:30	Gallium Nitride Power Semiconductor Devices Ho-Young Cha <sup>1,2</sup> <sup>1</sup> Hongik University, <sup>2</sup> CHIPSK
FI1-P-2 09:30-09:45	Enhancing BeO Electric Properties on 4H-SiC with SiO <sub>2</sub> Interlayer for Power Device Applications Sangoh Han <sup>1,2</sup> , Juyoung chae <sup>1,2</sup> , Jonghyun Bae <sup>1,2</sup> , Dohwan Jung <sup>1</sup> , Siwon Lee <sup>3</sup> , and Jungwoo Oh <sup>1,2</sup> <sup>1</sup> School of Integrated Technology, Yonsei University, <sup>2</sup> BK21 Graduate Program in Intelligent Semiconductor Technology, Yonsei University, <sup>3</sup> Nano Science and Engineering, Yonsei University
FI1-P-3 09:45-10:00	Self-Aligned 플라즈마 처리를 통한 NiO/ $\beta$ -Ga <sub>2</sub> O <sub>3</sub> 이중 접합 파워다이오드의 질소 도핑 김동빈 <sup>1</sup> , 백종수 <sup>1</sup> , 최윤희 <sup>1</sup> , 김형우 <sup>2</sup> , 조병진 <sup>1</sup> <sup>1</sup> 한국과학기술원 전기및전자공학부, <sup>2</sup> 한국전기연구원 전력반도체연구단
FI1-P-4 10:00-10:15	Eco-Friendly Power Sources for Interactive Sensor-Embedded Displays Using Transient Battery Technology Hyeonbin Jo, Mukurala Nagaraju, Geun Lee, Hyeon Hong Lee, Hanmin Kim, and Sung Hun Jin Incheon National University
FI1-P-5 10:15-10:30	Transferred Graphene Monolayer for $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Based Power Devices Applications Madani Labe <sup>1,2</sup> , Bo-In Park <sup>3,4</sup> , Jekyung Kim <sup>3,4</sup> , Jang Hyeok Park <sup>1,2</sup> , Jeehwan Kim <sup>3,4</sup> , and You Seung Rim <sup>1,2</sup> <sup>1</sup> Department of Semiconductor Systems Engineering and Convergence Engineering for Intelligent Drone, Sejong University, <sup>2</sup> Institute of Semiconductor and System IC, Sejong University, <sup>3</sup> Department of Mechanical Engineering, Massachusetts Institute of Technology, USA, <sup>4</sup> Research Laboratory of Electronics, Massachusetts Institute of Technology, USA



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## *Future Normal in Semiconductor*

FI1-P-6 10:30-10:45	이온 주입 공정을 활용한 다이아몬드 기반 쇼트키 장벽 다이오드 김인화 <sup>1</sup> , 김효경 <sup>2</sup> , 김기현 <sup>1</sup> <sup>1</sup> 전북대학교 전자정보공학부, <sup>2</sup> 전북대학교 전자공학부
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2025년 2월 14일(금), 09:00-10:45

Room J(스페이드 II+III), 6층

G. Device & Process Modeling, Simulation and Reliability 분과

### 050\_[FJ1-G] Compact Modeling

좌장: 김성호 교수(이화여자대학교), 김현우 교수(건국대학교)

FJ1-G-1 09:00-09:15	<b>Vertical Channel IGZO-TFT Model for Neuromorphic Application</b> Hyoungsoo Kim <sup>1</sup> , Daewoong Kwon <sup>2</sup> , and Hyunwoo Kim <sup>1</sup> <sup>1</sup> Department of Electrical and Electronics Engineering, Konkuk University, <sup>2</sup> Department of Electronic Engineering, Hanyang University
FJ1-G-2 09:15-09:30	<b>Deterministic-Precession MTJ Device Utilizing VCMA Effect</b> Stanislav Sin and Saeroonter Oh Sungkyunkwan University
FJ1-G-3 09:30-09:45	<b>Large Physics Model-Driven SPICE Model Generation of Ultra-Low Power GAA-MOSFET for Efficient DTCO in Semiconductor Design</b> Premkumar Vincent <sup>1</sup> , Johyeon Kim <sup>2</sup> , Gunhee Choi <sup>2</sup> , Yeongwoo Nam <sup>1</sup> , Kyungmin Kim <sup>1</sup> , Ye Sle Cha <sup>1</sup> , Hyunseok Whang <sup>1</sup> , Donghyun Jin <sup>1</sup> , Jongwook Jeon <sup>2</sup> , and Hyunbo Cho <sup>1</sup> <sup>1</sup> Alsemy Inc., <sup>2</sup> Sungkyunkwan University
FJ1-G-4 09:45-10:00	<b>Fully Analytical SPICE-Compatible Compact I-V Model and Parameter Extraction Procedure Considering the Density of States and Transport Mechanism in Amorphous InGaZnO Thin-Film Transistors</b> Sae Him Jung, Seung Joo Myoung, Dong Hyeop Shin, Su Han Noh, Donguk Kim, Changwook Kim, Sung-Jin Choi, Jong-Ho Bae, Dong Myong Kim, and Dae Hwan Kim School of Electrical Engineering, Kookmin University
FJ1-G-5 10:00-10:15	<b>Short-Channel Effects Model of Channel-All-Around MOSFETs as Cell Array Transistors for 3-Dimensional DRAM</b> Chae-Young Kim and Ji-Woon Yang Department of Electronics and Information Engineering, Korea University
FJ1-G-6 10:15-10:30	<b>Design of a Python-SPICE Integrated Platform for FeFET-Based VMM Circuit Simulation in Neuromorphic Computing</b> Juhwan Park <sup>1</sup> , Huijun Kim <sup>2</sup> , and Jongwook Jeon <sup>1</sup> <sup>1</sup> Department of Electrical and Computer Engineering, Sungkyunkwan University, <sup>2</sup> Department of Semiconductor Convergence Engineering, Sungkyunkwan University



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FJ1-G-7 10:30-10:45	Accelerated Device Simulation of CFET Inverter by Using Quasi-1D Model Kwang-Woon Lee and Sung-Min Hong School of Electrical Engineering and Computer Science, GIST
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2025년 2월 14일(금), 09:00-10:45

Room K(하트 I), 6층

G. Device & Process Modeling, Simulation and Reliability 분과

### 051\_[FK1-G] Reliability & Packaging Simulation

좌장: 신흥식 수석(DB하이텍), 우지용 교수(경북대학교)

FK1-G-1 09:00-09:15	<p><b>Insertion of Protective Layer for Enhancing Effect of N<sub>2</sub>O Plasma Treatment on NBS Stability in IGZO TFTs</b></p> <p>Seungyoon Shin, Jinkyu Lee, Hyunjin Choi, Seong-In Cho, and Soo-Yeon Lee</p> <p>Department of Electrical and Computer Engineering, Inter-university Semiconductor Research Center, Seoul National University</p>
FK1-G-2 09:15-09:30	<p><b>Degradation Modeling of Positive Bias Stress Reliability in a-IGZO TFTs Considering the Effects of Oxygen and Hydrogen</b></p> <p>Do Hun Kim<sup>1</sup>, Seung Joo Myoung<sup>1</sup>, Dong Hyeop Shin<sup>1</sup>, Jung Rae Cho<sup>1</sup>, Donguk Kim<sup>1</sup>, Changwook Kim<sup>1</sup>, Narae Han<sup>2</sup>, Jee-Eun Yang<sup>2</sup>, Younjin Jang<sup>2</sup>, Sangwook Kim<sup>2</sup>, and Dae Hwan Kim<sup>1</sup></p> <p><sup>1</sup>School of Electrical Engineering, Kookmin University, <sup>2</sup>Samsung Advanced Institute of Technology (SAIT), Samsung Electronics Co., Ltd.</p>
FK1-G-3 09:30-09:45	<p><b>Comprehensive Analysis of Proton Collision Effects in SOI MOSFETs using Transient and Steady-State Responses</b></p> <p>Hwan Jin Kim<sup>1</sup>, Haesung Kim<sup>1</sup>, Hyojin Yang<sup>1</sup>, Yubin Choi<sup>1</sup>, Sujong Kim<sup>1</sup>, Hyunwook Jeong<sup>1</sup>, Sung-Jin Choi<sup>1</sup>, Dae Hwan Kim<sup>1</sup>, Dong Myong Kim<sup>2</sup>, Sung Yun Woo<sup>3</sup>, and Jong-Ho Bae<sup>1</sup></p> <p><sup>1</sup>School of the Electronic Engineering, Kookmin University, <sup>2</sup>Department of Advanced Technology, DGIST, <sup>3</sup>School of Electronic and Electrical Engineering, Kyungpook National University</p>
FK1-G-4 09:45-10:00	<p><b>Uncovering Novel Time Exponent Variations in PBTI of a-IGZO Transistors via a 1 μs Ultrafast On-the-Fly Technique</b></p> <p>Sangwook Jung<sup>1</sup>, Taewon Seo<sup>2</sup>, Changeon Jin<sup>2</sup>, and Yoonyoung Chung<sup>1,2,3,4</sup></p> <p><sup>1</sup>Graduate School of Semiconductor Technology, POSTECH, <sup>2</sup>Department of Electrical Engineering, POSTECH, <sup>3</sup>Department of Semiconductor Engineering, POSTECH, <sup>4</sup>Center for Semiconductor Technology Convergence, POSTECH</p>



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FK1-G-5 10:00-10:15	<p><b>Analysis of Proton-Induced Electrical Degradation in a-IGZO TFTs under Aerospace Environments</b></p> <p>Yubin Choi<sup>1</sup>, Haesung Kim<sup>1</sup>, Hyojin Yang<sup>1</sup>, Junseong Park<sup>1</sup>, Hyunwook Jeong<sup>1</sup>, Sujong Kim<sup>1</sup>, Hwan Jin Kim<sup>1</sup>, Sung-Jin Choi<sup>1</sup>, Dae Hwan Kim<sup>1</sup>, Dong Myong Kim<sup>2</sup>, Sung Yun Woo<sup>3</sup>, and Jong-Ho Bae<sup>1</sup></p> <p><sup>1</sup>School of the Electronic Engineering, Kookmin University, <sup>2</sup>Department of Advanced Technology, DGIST, <sup>3</sup>School of Electronic and Electrical Engineering, Kyungpook National University</p>
FK1-G-6 10:15-10:30	<p><b>Data-driven Method for Predicting Thermo-mechanical Property Maps of Patterned Semiconductor Packages Using Machine Learning</b></p> <p>Jeong-Hyeon Park, Sung Jun Kang, and Eun-Ho Lee</p> <p>Sungkyunkwan University</p>
FK1-G-7 10:30-10:45	<p><b>Development of an In-House Finite Element Method Simulator for Static Structural Analysis of a Warped Wafer</b></p> <p>Sung-Min Hong</p> <p>School of Electrical Engineering and Computer Science, GIST</p>





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2025년 2월 13일(목), 09:00-10:45

Room L(하트II+III), 6층

E. Compound Semiconductors 분과

052\_[FL1-E] III-V Semiconductor

좌장:

초청 FL1-E-1 09:00-09:30	Accurate Measurement of Wide Bandgap Power Devices' Switching Hyemin Kang Department of Energy Engineering, KENTECH
FL1-E-2 09:30-09:45	$L_g = 50$ nm $\text{In}_{0.65}\text{Ga}_{0.35}\text{As}$ HEMTs with Record Noise-Figure Performance Min-Seo Yu <sup>1</sup> , Seung-Woo Son <sup>1</sup> , Sang-Ki Yun <sup>1</sup> , Sang-Pyeong Son <sup>1</sup> , Ji-Hoon Yoo <sup>1</sup> , Kyounghoon Yang <sup>2</sup> , Jae-Hak Lee <sup>1</sup> , and Dae-Hyun Kim <sup>1</sup> <sup>1</sup> School of Electronic and Electrical Engineering, Kyungpook National University, <sup>2</sup> KAIST
FL1-E-3 09:45-10:00	M3D InGaAs MOSHEMT on Si Substrate with Low Gate Leakage Current Yoon-Je Suh, Jaeyong Jeong, Nahyun Rheem, Chan Jik Lee, and Sanghyeon Kim KAIST
FL1-E-4 10:00-10:15	$L_g = 50$ nm Gate-All-Around $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}$ Nanosheet MOSFETs J.-H. Yoo <sup>1</sup> , H.-B. Jo <sup>1, 2</sup> , I.-G. Lee <sup>1</sup> , S.-M. Choi <sup>1</sup> , H.-J. Kim <sup>1</sup> , W.-S. Park <sup>1</sup> , H. Jang <sup>3</sup> , C.-S. Shin <sup>3</sup> , K.-S. Seo <sup>3</sup> , SK. Kim <sup>4</sup> , JG. Kim <sup>4</sup> , J. Yun <sup>4</sup> , T. Kim <sup>4</sup> , J.-H. Lee <sup>1</sup> , and D.-H. Kim <sup>1</sup> <sup>1</sup> Kyungpook National University, <sup>2</sup> KETI, <sup>3</sup> KANC, <sup>4</sup> QSI
FL1-E-5 10:15-10:30	Study of 1.65 eV $\text{Al}_{0.18}\text{Ga}_{0.82}\text{As}$ Tunnel Junction with Hybrid Delta-Doped n-GaAs Quantum Well for Monolithic III-V/Si Tandem Solar Cells Eunkyo Ju <sup>1,2</sup> , May Angelu Madarang <sup>1,3</sup> , Yeonhwa Kim <sup>1,2</sup> , Rafael Jumar Chu <sup>1,3</sup> , Tsimafei Laryn <sup>1,3</sup> , In-Hwan Lee <sup>2</sup> , Won Jun Choi <sup>1</sup> , and Daehwan Jung <sup>1,3</sup> <sup>1</sup> Center for Quantum Technology, KIST, <sup>2</sup> Department of Materials Science and Engineering, Korea University, <sup>3</sup> Division of Nanoscience and Technology, University of Science and Technology



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FL1-E-6 10:30-10:45	Integration of InGaAs/InP Heterojunction Phototransistor on Si CMOS Platform by Wafer Bonding Kyunghwan Kim, Dae-Hwan Ahn, and Jae-Hoon Han Center for Quantum Technology, KIST
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## *Future Normal in Semiconductor*

2025년 2월 14일(금), 09:00-10:45

Room M(다이아몬드 I), 6층

H. Display and Imaging Technologies 분과

### 053\_[FM1-H] Display and Imaging Technologies III (phototectores)

좌장: 하만륜 상무(DB하이텍), 김영훈 교수(한양대학교)

초청 FM1-H-1 09:00-09:30	Advanced Nanocrystalline Perovskites for Future Vivid Display Technologies Tae-Woo Lee Department of Materials Science and Engineering, Research Institute of Advanced Materials, Soft Foundry, Interdisciplinary Program in Bioengineering, Institute of Engineering Research, Seoul National University
FM1-H-2 09:30-09:45	Color Separatable Pinned Photodiode for CMOS Image Sensor Jae-Hyeok Hwang, Minhyun Jin, and Jiwon Lee Department of Semiconductor Engineering, POSTECH
FM1-H-3 09:45-10:00	Negative Photo-Conductance Effects on CuI/SWNT Thin Film Transistors for Light Sensitive Optoelectronic Application Hyeon Jong Lee , Seung Il Baek, In Hyeok Hong, Gyu Been Kim, and Sung Hun Jin Department of Electronic Engineering, and I-Nanofab Center, Incheon National University
FM1-H-4 10:00-10:15	Process Parameter Effects on the Electrical Characteristics of Bottom-gated IGZO TFT Integrated Monolithically on CMOS Circuit Seo Yong Chi <sup>1,2</sup> Jong Wan Park <sup>1</sup> , Hi-Deok Lee <sup>2</sup> , and Wan-Gyu Lee <sup>1</sup> <sup>1</sup> NNFC, <sup>2</sup> Chungnam National University
FM1-H-5 10:15-10:30	Van der Waals Thin Film Transistor for Skin-electronics Seongmin Heo, Taoyu Zou, Gwon Byeon, Gi-Seong Ryu, and Yong-Young Noh POSTECH



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## *Future Normal in Semiconductor*

FM1-H-6

10:30-10:45

Wearable Textile Based Wavelength-tunable Organic Light Emitting Diode  
for Photo-medical and Display Applications

Youjin Cho<sup>1</sup> Eou-Sik Cho<sup>2</sup>, Sang Jik Kwon<sup>2</sup> and Yongmin Jeon<sup>1,3</sup>

<sup>1</sup>School of Semiconductor Engineering, Gachon University, <sup>2</sup>School of Electronic Engineering, Gachon University, <sup>3</sup>school of Biomedical Engineering, Gachon University



2025년 2월 14일(금), 09:00-10:45

Room N(다이아몬드 II), 6층

H. Display and Imaging Technologies 분과

**054\_[FN1-H] Display and Imaging Technologies V**

좌장: 최창순 박사(KIST), 김혁 교수(서울시립대)

초청 FN1-H-1 09:00-09:30	IT OLED향 채널 결정화를 통한 고성능, 고신뢰성 산화물 TFT 소자 개발 Development of High Performance, High Reliability Oxide TFTs for IT OLED 정재경 Department of Electronics Engineering, Hanyang University
FN1-H-2 09:30-09:45	A Novel Analysis Method and Mitigation Strategy for Hot Carrier Degradation in a-IGZO Transistor Changeon Jin <sup>1</sup> , Taewon Seo <sup>1</sup> , and Yoonyoung Chung <sup>1,2,3</sup> <sup>1</sup> Department of Electrical Engineering, POSTECH, <sup>2</sup> Department of Semiconductor Engineering, POSTECH, <sup>3</sup> Center for Semiconductor Technology Convergence, POSTECH
FN1-H-3 09:45-10:00	Contact Engineering Utilizing Ultrathin Dielectric Interlayer for Nanoscale IGZO Transistor without Short-Channel Effects Juyoung Yun <sup>1</sup> , Dowan Kang <sup>1</sup> , and Yoonyoung Chung <sup>1,2,3</sup> <sup>1</sup> Department of Electrical Engineering, POSTECH, <sup>2</sup> Department of Semiconductor Engineering, POSTECH, <sup>3</sup> Center for Semiconductor Technology Convergence, POSTECH
FN1-H-4 10:00-10:15	Reconfigurable Logic Gate Enabled by Dual-Gating of Silicon Nanomembrane Field-Effect Transistors Changsoon Choi <sup>1</sup> , Joonha Hwang <sup>1,2</sup> , and Jong Ik Kwon <sup>1,3</sup> <sup>1</sup> KIST, <sup>2</sup> Korea University, <sup>3</sup> UNIST
FN1-H-5 10:15-10:30	Study on Pixel Design Optimization for Indirect Time-of-Flight Sensor with High Demodulation Contrast and Good Depth Accuracy Jaehyung Jang, Hoon-moo Choi, Jongchae Kim, Minseok Shin, Kyung-do Kim, Hoon-sang Oh, and Chang-rock Song CIS Development, SK hynix Inc.



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FN1-H-6 10:30-10:45	<p>Demonstration of Vertically Stacked Full-Color Micro-LED Using CMOS Compatible Oxide Wafer-bonding Technology</p> <p>Hyun Soo Kim<sup>1</sup>, Juhyuk Park<sup>1</sup>, Woo Jin Baek<sup>1</sup>, Dae-Myeong Geum<sup>2</sup>, and SangHyeon Kim<sup>1</sup></p> <p><sup>1</sup>School of Electrical Engineering, KAIST, <sup>2</sup>School of Electronics Engineering, Inha University</p>
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2025년 2월 14일(금), 10:55-12:40

Room C(컨벤션홀 L), 5층

D. Thin Film Process Technology 분과

### 055\_[FC2-D] Atomic Layer Deposition - II

좌장: 최병준 교수(서울과학기술대학교), 문태환 교수(아주대학교)

초청 FC2-D-1 10:55-11:25	Challenges and Advancements in ALD of Chalcogenide Materials for Next-Generation Microelectronics Taeyong Eom Department of Semiconductor System Engineering, Sejong University
FC2-D-2 11:25-11:40	Atomic Layer Deposition of Ge-Sb-Se Ternary Alloy for 3D Vertical Selector-Only Memory Jeongwoo Seo <sup>1</sup> , Minu Cho <sup>1</sup> , Inkyu Sohn <sup>1</sup> , Youngjae Kang <sup>2</sup> , Jong-bong Park <sup>2</sup> , Kiyeon Yang <sup>2</sup> , Wooyoung Yang <sup>2</sup> , and Hyungjun Kim <sup>1</sup> <sup>1</sup> School of Electrical and Electronic Engineering, Yonsei University, <sup>2</sup> Device Research Center, SAIT
FC2-D-3 11:40-11:55	Unraveling the Influence of Substrate Surface and Temperature on Microstructural Evolution of Crystalline MoS <sub>2</sub> in Atomic Layer Deposition Seung Ho Ryu <sup>1,2</sup> and Seong Keun Kim <sup>1,2</sup> <sup>1</sup> KU-KIST Graduate School of Converging Science and Technology, Korea University, <sup>2</sup> Electronic Materials Research Center, KIST
FC2-D-4 11:55-12:10	Atomic Layer Deposition of Low Work Function Metallic Films via Composition Control Using Discrete Feeding ALD Ji Won Han <sup>1</sup> , Kyun Seong Dae <sup>2</sup> , Yoon Jeong Kim <sup>1</sup> , Ji Sun Heo <sup>1</sup> , Woo-Hee Kim <sup>1</sup> , Ji-Hoon Ahn <sup>1</sup> , Jae Hyuck Jang <sup>2</sup> , Deok-Yong Cho <sup>3,4</sup> , and Tae Joo Park <sup>1</sup> <sup>1</sup> Department of Materials Science and Chemical Engineering, Hanyang University, <sup>2</sup> Center for Research Equipment, KBSI, <sup>3</sup> Institute of Photonics, Electronics and Information Technology, Jeonbuk National University, <sup>4</sup> Department of Physics, Jeonbuk National University
FC2-D-5 12:10-12:25	Atomic Layer Deposition for Molybdenum Interconnects Hyun Jin Lim <sup>1</sup> , Sang-Kuk Han <sup>1</sup> , Hyo Jin Ahn <sup>1</sup> , Young Seo Na <sup>2</sup> , Yeh Been Im <sup>1</sup> , Won Jae Choi <sup>2</sup> , and Changhwan Choi <sup>1,2</sup> <sup>1</sup> Division of Materials Science and Engineering, Hanyang University, <sup>2</sup> Department of Semiconductor Engineering, Hanyang University



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FC2-D-6 12:25-12:40	Growth of Metallic Ru Thin Film by Oxidant-free Atomic Layer Deposition Below 100 °C 민경민, 이한보람 Department of Materials Science and Engineering, Incheon National University
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2025년 2월 14일(금), 10:55-12:40

Room D(에메랄드 I), 5층

### A. Interconnect & Package 분과

#### 056\_[FD2-A] Advanced Package 1

좌장: 최광문 박사(ETRI), 김민수 교수(경기대학교)

FD2-A-1 10:55-11:10	<b>Study on Novel Corrosion Inhibitors in Molybdenum CMP</b> Hyeonjeong Lee, Pengzhan Liu, and Taesung Kim Department of Mechanical Engineering, Sungkyunkwan University
FD2-A-2 11:10-11:25	<b>Plasma Treatment and Electrical Characterization for Enhanced RDL Adhesion on PSPI in Advanced Packaging</b> Sunbum Kim <sup>1</sup> , Gyulee Kim <sup>1</sup> , Kyoungyeon Min <sup>2</sup> , Dugkyu Han <sup>1</sup> , and Changhwan Choi <sup>1,2</sup> <sup>1</sup> Division of Materials Science and Engineering, Hanyang University, <sup>2</sup> Department of Semiconductor Engineering, Hanyang University
FD2-A-3 11:25-11:40	<b>Ultrastable 3D Heterogeneous Integration via N-Heterocyclic Carbene Self-Assembled Nanolayers</b> Jinhyoung Lee and Taesung Kim Sungkyunkwan University
FD2-A-4 11:40-11:55	<b>3D-Printed Organic Substrates for Low-Cost, Re-Distribution-Layer-Less Fanout Interposers</b> Haksoon Jung <sup>1</sup> , Nahyeon Kim <sup>1</sup> , and Jimin Kwon <sup>1,2</sup> <sup>1</sup> Department of Electrical Engineering, UNIST, <sup>2</sup> Graduate School of Semiconductor Materials and Devices Engineering, UNIST
FD2-A-5 11:55-12:10	<b>Enhancing HBM3E KGSD Quality Competitiveness through the Implementation of Gray AI-Based Technology</b> Sung Hyun Yoon and Sang Yup Lee <sup>1</sup> SK hynix, <sup>2</sup> Yonsei University
초청 FD2-A-6 12:10-12:40	<b>Bonding Mechanism at the Cu-Cu Interface in Hybrid Bonding: Crystal Plasticity Theory and Experimental Validation</b> Eun-Ho Lee <sup>1,2</sup> <sup>1</sup> School of mechanical Engineering, Sungkyunkwan University, <sup>2</sup> Department of Smart Fab. technology, Sungkyunkwan University



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Room E(에메랄드 II+III), 5층

D. Thin Film Process Technology 분과

**057\_[FE2-D] Thin Film Transistors - II**

좌장: 안지훈 교수(한양대학교), 한정환 교수(서울과학기술대학교)

FE2-D-1 10:55-11:10	<b>A Study of CMOS Compatible Anti-Ambipolar Transistor based on Sputtered n-Type In-Based Oxide and p-Type Metalloid Channel</b> Chanwoo Jung <sup>1</sup> , Seok Hyun Hwang <sup>2</sup> , and Jae Kyeong Jeong <sup>1,2</sup> <sup>1</sup> Department of Display Science and Engineering, Hanyang University, <sup>2</sup> Department of Electronic Engineering, Hanyang University,
FE2-D-2 11:10-11:25	<b>Effect of Device Geometry Variation on Memory Performance of 2T0C DRAM Cells Using Double-Layered InGaZnO Active Channel Structures</b> Sang Han Ko, Kyung Min Kim, and Sung Min Yoon Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University
FE2-D-3 11:25-11:40	<b>Influence of Oxygen Content in IGZO on the Memory Window of FeTFT</b> He Young Kang, Seung Hee Cha, and Jae Kyeong Jeong Department of Electronic Engineering, Hanyang University
FE2-D-4 11:40-11:55	<b>Reduction of Contact Resistance in MoS<sub>2</sub> Devices Using a Sb-Based Semimetal Contact Structure</b> Ha Yeon Choi, Hye Seong Park, Joon Soo Byeon, Ju Yong Shin, Seung Ri Jeong, Shivam Kumar Gautam, and Hi-Deok Lee Department of Electronics Engineering, Chungnam National University
FE2-D-5 11:55-12:10	<b>Enhancing Contact Properties of MoS<sub>2</sub> Based FETs by Al<sub>2</sub>O<sub>3</sub> Interlayer Engineering Via Atomic Layer Deposition</b> Jihoon Park, Hwi Yoon, Sanghun Lee, Seonyeong Park, Inkyu Sohn, and Hyungjun Kim School of Electrical and Electronic Engineering, Yonsei University



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FE2-D-6 12:10-12:25	<p>Atomic Layer Deposition of Semimetallic <math>\text{TiS}_2</math> Contact Layer for Contact Resistance Engineering</p> <p>Minu Cho<sup>1</sup>, Jeongwoo Seo<sup>1</sup>, Hwi Yoon<sup>1</sup>, Inkyu Sohn<sup>1</sup>, Jun Hyung Lim<sup>2</sup>, Yunyong Nam<sup>2</sup>, and Hyungjun Kim<sup>1</sup></p> <p><sup>1</sup>School of Electrical and Electronic Engineering, Yonsei University, <sup>2</sup>Samsung Display Co., Ltd</p>
FE2-D-7 12:25-12:40	<p>Ternary Logic Transistors Using Multi-Stacked 2DEG Channels in Ultrathin <math>\text{Al}_2\text{O}_3/\text{ZnO}</math> Heterostructures</p> <p>Ji Hyeon Choi<sup>1</sup>, Tae Jun Seok<sup>1</sup>, Sang June Kim<sup>1</sup>, Kyun Seong Dae<sup>2</sup>, Jae Hyuck Jang<sup>2</sup>, Deok-Yong Cho<sup>3</sup>, Sang Woon Lee<sup>4,5</sup>, and Tae Joo Park<sup>1</sup></p> <p><sup>1</sup>Department of Materials Science and Chemical Engineering, Hanyang University, <sup>2</sup>Electron Microscopy Research Group, KBSI, <sup>3</sup>Department of Physics, Jeonbuk University, <sup>4</sup>Department of Energy Systems Research, Ajou University, <sup>5</sup>Department of Physics, Ajou University</p>



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Room F(사파이어 I), 5층

### C. Material Growth & Characterization 분과

#### 058\_[FF2-C] Advanced Devices in Oxide Heterostructures

좌장: 이정우 교수(홍익대학교), 엄기태 교수(가천대학교)

초청 FF2-C-1 10:55-11:25	Spintronic Security Devices based on Magnetic Random -Access Memory Soogil Lee <sup>1</sup> , Jaimin Kang <sup>2</sup> , and Byong-Guk Park <sup>2</sup> <sup>1</sup> Department of Semiconductor Engineering, Gachon University, <sup>2</sup> Department of Materials Science and Engineering, KAIST
FF2-C-2 11:25-11:40	Depletion-mode and Enhancement-mode Diamond MOSFETs Simultaneously Fabricated on Heteroepitaxial Diamond Substrates Taemyung Kwak <sup>1</sup> , Yoonseok Nam <sup>1</sup> , Yeonghwa Kwon <sup>1</sup> , Geunho Yoo <sup>1</sup> , Seong-woo Kim <sup>2</sup> , and Okhyun Nam <sup>1</sup> <sup>1</sup> Tech University of Korea, <sup>2</sup> Orbray Co., Ltd, Japan
FF2-C-3 11:40-11:55	Monolithic Integration of Quantum Dot Light Emitting Diodes on In <sub>0.1</sub> Ga <sub>0.9</sub> As/AlAs Distributed Bragg Reflectors on Si Tsimafei Laryn <sup>1,2</sup> , Yeonhwa Kim <sup>1,3</sup> , Eunkyo Ju <sup>1,3</sup> , Won Jun Choi <sup>1</sup> , and Daehwan Jung <sup>1</sup> <sup>1</sup> Center for Quantum Technology, KIST, <sup>2</sup> Division of Nanoscience and Technology, KIST School at University of Science and Technology, <sup>3</sup> Department of Materials Science and Engineering, Korea University
FF2-C-4 11:55-12:10	Monolithic Integration of Freestanding Ferroelectric Oxide Membranes for Electrically Tunable Energy Storage Performance Min-Seok Kim <sup>1,2</sup> , Ho Won Jang <sup>2</sup> , Tae Heon Kim <sup>1</sup> , and Seung-Hyub Baek <sup>1</sup> <sup>1</sup> KIST, <sup>2</sup> Seoul National University
FF2-C-5 12:10-12:25	Wafer-scale Single-crystal Hexagonal Boron Nitride Integrated Hybrid Dielectric for Two-dimensional Transistor Arrays Jaewon Wang <sup>1</sup> , Hyeonwoo Lee <sup>1</sup> , Jaemin Kim <sup>1,2</sup> , Haeng Un Yeo <sup>1</sup> , Cheol Hwan Yoon <sup>1</sup> , Min Seok Yoo <sup>3</sup> , Junseop Noh <sup>1</sup> , Kitae Park <sup>1</sup> , Joonki Suh <sup>1</sup> , Tae-Sik Yoon <sup>1</sup> , Minsu Seol <sup>3</sup> , Chanyong Hwang <sup>4</sup> , Hyung-Joon Shin <sup>1,2</sup> , Zonghoon Lee <sup>1,2</sup> , Changwook Jeong <sup>1</sup> , and Soon-Yong Kwon <sup>1</sup> <sup>1</sup> UNIST, <sup>2</sup> CMCM, IBS, <sup>3</sup> 2D Device Laboratory, SAIT, <sup>4</sup> Quantum Technology Institute, KRISS



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FF2-C-6 12:25-12:40	<p>High-performance Flash Memory with 1T-MoS2 Floating Gate</p> <p>Hyelim Shin<sup>1</sup>, Gunhoo Woo<sup>2</sup>, and Taesung Kim<sup>1,2,3</sup></p> <p><sup>1</sup>School of Semiconductor Convergence Engineering, Sungkyunkwan University, <sup>2</sup>SKKU Advanced Institute of Nanotechnology, Sungkyunkwan University, <sup>3</sup>School of Mechanical Engineering, Sungkyunkwan University</p>
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Room G(사파이어 II+III), 5층

J. Nano-Science & Technology 분과

**059\_[FG2-J] Nano Energy & Photonics**

좌장: 배수강 책임연구원(한국과학기술원), 전대영 교수(경상국립대학교)

초청 FG2-J-1 10:55-11:25	Plasma Polymer Thin Film for High Performance Triboelectric Nanogenerator Sang-Jin Lee School of Semiconductor Engineering, Chungbuk National University
FG2-J-2 11:25-11:40	Highly Conformable 3D-printed Soft Thermoelectric Devices for Wearable Applications Woojin Kim <sup>1</sup> and Seungjun Chung <sup>2</sup> <sup>1</sup> KU-KIST Graduate School of Converging Science and Technology, Korea University, <sup>2</sup> School of Electrical and Engineering, Korea University
FG2-J-3 11:40-11:55	Crystallinity and Thickness Modulation of Atomic Layer Deposited RuO <sub>2</sub> for Efficient Oxygen Evolution Reaction Catalyst Namkyu Yoo <sup>1</sup> , Jaehwan Lee <sup>1</sup> , Sanghun Lee <sup>1</sup> , Youngjun Kim <sup>1</sup> , Yongju Kwon <sup>2</sup> , Woo-Hee Kim <sup>2</sup> , Seung-min Chung <sup>1</sup> , Donghyun Kim <sup>1</sup> , and Hyungjun Kim <sup>1</sup> <sup>1</sup> School of Electrical and Electronic Engineering, Yonsei University, <sup>2</sup> Department of Materials Science and Chemical Engineering, Hanyang University
FG2-J-4 11:55-12:10	Investigation of Ni(OH) <sub>2</sub> /MoTe <sub>2</sub> Heterostructures as Efficient Electrocatalyst for Oxygen Evolution Reaction Myeong Kyun Nam, Iaan Cho, Junhwi Han, Seunghun Shin, Ho Tae Jeon, Sun Kyung Han, Won-Kyu Lee, and Bonggeun Shong Hongik University
FG2-J-5 12:10-12:25	Harnessing Persistent Photocurrent in a 2D Semiconductor-Polymer Hybrid Structure: Electron Trapping and Fermi Level Modulation for Optoelectronic Memory Seungho Bang <sup>1</sup> , Wooyoung Kang <sup>1</sup> , Dohyeong Kim <sup>1</sup> , Hyeongchan Suh <sup>1</sup> , Dong Hyeon Kim <sup>1,2</sup> , Chan Kwon <sup>1</sup> , JiEun Jo <sup>1</sup> , Ji-hong Kim <sup>1</sup> , Hayoung Ko <sup>2</sup> , Ki Kang Kim <sup>2</sup> , Jinho Ahn <sup>3</sup> , and Mun Seok Jeong <sup>1</sup> <sup>1</sup> Department of Physics, Hanyang University, <sup>2</sup> Department of Energy Science, Sungkyunkwan University, <sup>3</sup> Division of Materials Science and Engineering, Hanyang University



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FG2-J-6 12:25-12:40	Diffraction-Based Metasurfaces and Photovoltaic Applications Yeong Hwan Ko <sup>1</sup> and Jae Su Yu <sup>2</sup> <sup>1</sup> Kongju National University, <sup>2</sup> Kyung Hee University,
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Room H(루비 I), 5층

F. Silicon and Group-IV Devices and Integration Technology 분과

### **060\_[FH2-F] Process-Device Characterization**

좌장: 백명현 교수(강릉원주대학교), 정규원 교수(서울대학교)

FH2-F-1 10:55-11:10	<b>Low-Temperature Deuterium Annealing for Improved Immunity Against Hot-Carrier Injection in HKMG MOSFETs</b> Ju-Won Yeon, Hyo-Jun Park, Tae-Hyun Kil, Moon-Kwon Lee, Eui-Cheol Yun, Min-Woo Kim, Su-Jin Jeon, DoI Sohn, A-Young Kim, Sang-Min Kang, Da-Eun Bang, and Jun-Young Park Chungbuk National University
FH2-F-2 11:10-11:25	<b>Comprehensive Understanding of Polarization Mechanism and Low Operating Voltage by <math>\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2</math> Thickness Scaling on Ge Channel</b> Jai-Youn Jeong <sup>1,2</sup> , Kyul Ko <sup>1</sup> , Changhwan Shin <sup>2</sup> , and Jae-Hoon Han <sup>1</sup> <sup>1</sup> Center for Opto-electronic Materials and Devices, KIST, <sup>2</sup> Device and Circuit Laboratory, Korea University
FH2-F-3 11:25-11:40	<b>Accurate Modeling of NCFET-Based Ring Oscillators</b> Jung Su Kim and Changhwan Shin School of Electrical Engineering, Korea University
FH2-F-4 11:40-11:55	<b>Improvement of Current Drivability Through Current Limiter Towards Bulk DTMOS with Low-Power High-Performance Operation Versatility</b> Yeji Lim and Seongjae Cho Department of Electronic and Electrical Engineering, Ewha Womans University
FH2-F-5 11:55-12:10	<b>Multi-Vt Engineering for Logic Devices Using Rare Earth Oxide-Based Dipole-First Approach with Various Interfacial Layer Formation</b> Sang Kuk Han <sup>1</sup> , Hyun Jin Lim <sup>1</sup> , Ki Sub Kim <sup>1</sup> , Hyo Jin Ahn <sup>1</sup> , Yeh Been Im <sup>1</sup> , Won Jae Choi <sup>2</sup> , Young Seo Na <sup>2</sup> , and Changhwan Choi <sup>1,2</sup> <sup>1</sup> Division of Materials Science and Engineering, Hanyang University, <sup>2</sup> Department of Semiconductor Engineering, Hanyang University





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FH2-F-6 12:10-12:25	<p>Effects of Thermal Annealing Conditions on IGZO-Based MFMS Ferroelectric TFTs</p> <p>Hyeonjung Park<sup>1</sup> and Changhwan Shin<sup>2</sup></p> <p><sup>1</sup>Department of Electrical and Computer Engineering, Sungkyunkwan University, <sup>2</sup>School of Electrical Engineering, Korea University</p>
FH2-F-7 12:25-12:40	<p>Atomic Layer Deposition for High-Mobility and Reliable ITZO Thin Film Transistors</p> <p>Hyeonjin Lee<sup>1</sup>, Hyeonho Gu<sup>2</sup>, Minho Park<sup>2</sup>, Yongwoo Lee<sup>2</sup>, and Jimin Kwon<sup>1,2</sup></p> <p><sup>1</sup>Graduate School of Semiconductor Materials and Devices Engineering, UNIST, <sup>2</sup>Department of Electrical Engineering, UNIST</p>



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Room I(스페이드 I), 6층

N. VLSI CAD 분과

### 061\_[FI2-N] Pioneering VLSI CAD: from AI to Quantum

좌장: 현대준 교수(세종대학교), 박희천 교수(UNIST)

초청 FI2-N-1 10:55-11:25	Standard Cells, Simple Yet Powerful Design Enablements Suwan Kim SAIT
FI2-N-2 11:25-11:40	Machine Learning Platform for a Complete LC-VCO Design with Physical Layout Hyunsoo Lee <sup>1</sup> , Sungjin Kim <sup>2</sup> , Taigon Song <sup>1</sup> , and Heein Yoon <sup>1</sup> Kyungpook National University, <sup>2</sup> UNIST
FI2-N-3 11:40-11:55	회로 유사도 기반 논리 합성 톨 파라미터 최적화 이준빈, 안진일, 현대준 Sejong University
FI2-N-4 11:55-12:10	Realistic Test Case Generation for Power State Coverage Yunseok Jung, Hyeonwoo Park, and Seokhyeong Kang Department of Electrical Engineering, POSTECH
FI2-N-5 12:10-12:25	Design Method for Multi-Digit Converters Between Binary and Ternary Logic Seunghyun Son <sup>1</sup> , Seunghan Baek <sup>2</sup> , and Sunmean Kim <sup>1</sup> <sup>1</sup> School of Electronic and Electrical Engineering, Kyungpook National University, <sup>2</sup> Department of Electrical Engineering, POSTECH
FI2-N-6 12:25-12:40	효율적인 Surface Code 통신을 위한 타일 아키텍처 강영중 <sup>1,3</sup> , 양준성 <sup>1,2,3</sup> <sup>1</sup> 연세대학교 시스템반도체공학과, <sup>2</sup> 연세대학교 전기전자공학과, <sup>3</sup> 연세대학교 지능형반도체 IT 융합전공



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Room J(스페이드 II+III), 6층

K. Memory (Design & Process Technology) 분과

**062\_[FJ2-K] Oxide Channel based Memory Technology**

좌장: 권민우 교수(강릉원주대학교), 이성태 교수(홍익대학교)

FJ2-K-1 10:55-11:10	<b>Photoprogrammable OFET Memory Devices based on IGZO Floating Gate</b> Gyeongho Lee <sup>1,2</sup> , Dong Hyun Lee <sup>3</sup> , and Hocheon Yoo <sup>3,4</sup> <sup>1</sup> Department of Semiconductor Total Solution Center, KICET, <sup>2</sup> Department of Materials Science and Engineering, Korea University, <sup>3</sup> Department of Electronic Engineering, Gachon University, <sup>4</sup> Department of Semiconductor Engineering, Gachon University
FJ2-K-2 11:10-11:25	<b>Oxide Channel-Based Ferroelectric NAND Device with Enhanced Memory Window Using a Source-Tied Metal Cover Structure</b> Hongrae Joh, Giuk Kim, Jihye Ock, Seungyeob Kim, Sangmok Lee, Sangho Lee, and Sanghun Jeon School of Electrical Engineering, KAIST
FJ2-K-3 11:25-11:40	<b>Comparative Evaluation of the Impact of WL Off Voltage on BL Disturbance in SOI and IGZO Cell Transistors for 4F<sup>2</sup> DRAM Application</b> Seong Hoon Jeon, Wonjung Kim, Seungki Kim, Soohong Eo, Sae Him Jung, Jong-Ho Bae, Sung-Jin Choi, Dong Myong Kim, and Dae Hwan Kim School of Electrical Engineering, Kookmin University
FJ2-K-4 11:40-11:55	<b>Demonstration of Amorphous InGaZnOx 2T-DRAM Array and Analog Operation Capability for Processing-In-Memory Application</b> Hyunwook Jeong <sup>1</sup> , Junseong Park <sup>1</sup> , Haesung Kim <sup>1</sup> , Hyojin Yang <sup>1</sup> , Yubin Choi <sup>1</sup> , Hwan Jin Kim <sup>1</sup> , Sujong Kim <sup>1</sup> , Sung-Jin Choi <sup>1</sup> , Dae Hwan Kim <sup>1</sup> , Dong Myong Kim <sup>2</sup> , Seongjae Cho <sup>3</sup> , and Jong-Ho Bae <sup>1</sup> <sup>1</sup> School of the Electronic Engineering, Kookmin University, <sup>2</sup> Department of Advanced Technology, DGIST, <sup>3</sup> Department of Electronic and Electrical Engineering, Ewha Womans University
FJ2-K-5 11:55-12:10	<b>Comparative Optimization of Synaptic Characteristics in IGZO-Based Memristors Through Interface Engineering With Metal Electrode</b> Jae Woo Lee, Dong Hyeop Shin, Wonjung Kim, Seung Joo Myoung, Changwook Kim, Jong-Ho Bae, Sung-Jin Choi, Dong Myong Kim, and Dae Hwan Kim School of Electrical Engineering, Kookmin University



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FJ2-K-6 12:10-12:25	<p><b>Highly Linear and Symmetric Multilevel IGZO 2T Synaptic Device Utilizing Identical Potentiation and Depression Pulses</b></p> <p>Suwon Seong<sup>1</sup>, Taejun Ha<sup>1</sup>, Sangwook Jung<sup>2</sup>, Sunwoong Ham<sup>2</sup>, and Yoonyoung Chung<sup>1,2,3,4</sup></p> <p><sup>1</sup>Department of Electrical Engineering, POSTECH, <sup>2</sup>Graduate School of Semiconductor Technology, POSTECH, <sup>3</sup>Department of Semiconductor Engineering, POSTECH, <sup>4</sup>Center for Semiconductor Technology Convergence, POSTECH</p>
FJ2-K-7 12:25-12:40	<p><b>Disturbance-Free Parallel Programming for Multilevel IGZO 2T Synapse</b></p> <p>Taejun Ha<sup>1</sup>, Suwon Seong<sup>1</sup>, and Yoonyoung Chung<sup>1,2,3</sup></p> <p><sup>1</sup>Department of Electrical Engineering, <sup>2</sup>Department of Semiconductor Engineering, <sup>3</sup>Center for Semiconductor Technology Convergence, POSTECH</p>



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Room K(하트 I), 6층

K. Memory (Design & Process Technology) 분과

### 063\_[FK2-K] Ferroelectric and Oxide Channel based Memory Technology

좌장: 김성준 교수(동국대학교), 양승열 마스터(SAIT)

FK2-K-1 10:55-11:10	<p>Application-Dependent Bias Scheme Optimization for Ferroelectric-Tunnel-FET-Based One-Transistor Ternary Content-Addressable Memory</p> <p>Minjeong Ryu<sup>1,2</sup>, Jae Seung Woo<sup>1,2</sup>, Yeonwoo Kim<sup>1,2</sup>, and Woo Young Choi<sup>1,2</sup></p> <p><sup>1</sup>Department Electrical and Computer Engineering, Seoul National University, <sup>2</sup>Inter-university Semiconductor Research Center, Seoul National University</p>
FK2-K-2 11:10-11:25	<p>Achieving Low-Voltage Operation of 1T-nC FRAM Via Precise Engineering of Polarization Switching Kinetics in Hafnia Ferroelectrics</p> <p>Sangho Lee, Giuk Kim, Chaeheon Kim, Yunseok Nam, Junghyeon Hwang, Hunbeom Shin, Seokjoong Shin, and Sanghun Jeon</p> <p>School of Electrical Engineering, KAIST</p>
FK2-K-3 11:25-11:40	<p>The Opportunity of Anti -ferroelectrics in FeFET for the Emerging Non-volatile Memory Applications</p> <p>School of Electrical Engineering, KAIST</p>
FK2-K-4 11:40-11:55	<p>Comparison of Bi-Layer and Tri-Layer Structures in ZrO<sub>2</sub>/ZnO/HfO<sub>2</sub> Synaptic Devices for Improved Neuromorphic Performance</p> <p>Dong-Min Kim<sup>1</sup>, Yu-Bin Kim<sup>1</sup>, Sung-Ho Kim<sup>1</sup>, Chae-Min Yeom<sup>1</sup>, Shivam Kumar Gautam<sup>1</sup>, Hyuk-Min Kwon<sup>2</sup>, Yong-Goo Kim<sup>3</sup>, and Hi-Deok Lee<sup>1</sup></p> <p><sup>1</sup>Department of Electronics Engineering, Chungnam National University, <sup>2</sup>School of Electronic &amp; Electrical Engineering, Hankyong National university, <sup>3</sup>Department of Green Semiconductor System, Korea Polytechnics</p>
FK2-K-5 11:55-12:10	<p>Study of IGZO-Based CTF Memory With State Updates In Array</p> <p>Ria Choi<sup>1</sup>, Eunpyo Park<sup>2</sup>, Heerak Wi<sup>1</sup>, Dae Kyu Lee<sup>2</sup>, Min Jee Kim<sup>2</sup>, and Joon Young Kwak<sup>1</sup></p> <p><sup>1</sup>Ewha Womans University, <sup>2</sup>KIST</p>



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## *Future Normal in Semiconductor*

FK2-K-6 12:10-12:25	Electrically Erasable Oxide-Semiconductor-Channel Charge Trap Flash Memory with Unipolar Operation Chanyeong Go <sup>1</sup> , Seongmin Park <sup>1</sup> , and Yoonyoung Chung <sup>1,2,3</sup> <sup>1</sup> Department of Electrical Engineering, POSTECH, <sup>2</sup> Department of Semiconductor Engineering, POSTECH, <sup>3</sup> Center for Semiconductor Technology, POSTECH
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2025년 2월 14일(금), 10:55-12:40

Room L(하트II+III), 6층

M. RF and Wireless Design 분과

### 064\_[FL2-M] RF Circuit Design

좌장: 권구덕 교수(강원대학교), 한정환 교수(충남대학교)

<b>초청</b> FL2-M-1 10:55-11:25	A CMOS Beamforming Front-End IC for 6G Low Earth Orbit Satellite Communication Jinseok Park <sup>2</sup> , Seong-Mo Moon <sup>1</sup> , Junhan Lim <sup>1</sup> , Wonseob Lee <sup>2</sup> , and Dongphil Jang <sup>1</sup> <sup>1</sup> Electronics and Telecommunications Research Institute, Chonnam National University, <sup>2</sup> Department of Intelligent Electronics and Computer Engineering, Chonnam National University
FL2-M-2 11:25-11:40	비대칭 월킨슨 분배기를 이용하여 전력 이득 압축을 개선한 부하 변조 평형증폭기 이윤정 <sup>1</sup> , 김상엽 <sup>1</sup> , 전형진 <sup>1,2</sup> , 양영구 <sup>1,2</sup> <sup>1</sup> 성균관대학교 전자전기컴퓨터공학과, <sup>2</sup> para-PA Inc.
FL2-M-3 11:40-11:55	이종 결합 방식을 사용한 밀리미터파 3-way 도허티 전력증폭기 설계 빈수현 <sup>1</sup> , 양영구 <sup>1,2</sup> <sup>1</sup> 성균관대학교 전자전기컴퓨터공학과, <sup>2</sup> 파라피에이(주)
FL2-M-4 11:55-12:10	56Gbps 아날로그 기반 데이터 복원을 위한 사인-사인 월러-월러 기법이 적용된 PAM4 수신기 설계 박민수, 전정훈 Department of Electrical and Computer Engineering, Sungkyunkwan University
FL2-M-5 12:10-12:25	저전력 IoT 디바이스를 위한 Edge Combine Envelope Generator 기반 UWB transmitter 김민성, 권익진 아주대학교 전자공학과



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Room M(다이아몬드 I), 6층

E. Compound Semiconductors 분과

065\_[FM2-E] Optoelectronics

좌장: 이기원 교수(원광대학교), 이인근 교수(경북대학교)

FM2-E-1 10:55-11:10	<p>Quantum Efficiency Enhancement of LWIR Type-II Superlattice Detectors Using Guided-Mode Resonance</p> <p>SEUNG-YEOP AHN<sup>1</sup>, JINHA LIM<sup>1</sup>, DAE-MYEONG GEUM<sup>1,2</sup>, DONGHO GWAK<sup>1</sup>, KANG KO-KU<sup>3</sup>, JUN HO EOM<sup>3</sup>, YOUNG HO KIM<sup>3</sup>, and SANGHYEON KIM<sup>1</sup></p> <p><sup>1</sup>School of Electrical Engineering, KAIST, <sup>2</sup>Department of Electronic Engineering, Inha University, <sup>3</sup>i3system, Inc.</p>
FM2-E-2 11:10-11:25	<p>중적외선 검출을 위한 표면 압전류 저감 T2SL 광검출기 array 제작</p> <p>한재훈<sup>1</sup>, 김상현<sup>2</sup>, 송진동<sup>1</sup>, 강준현<sup>3</sup>, 한일기<sup>3</sup></p> <p><sup>1</sup>한국과학기술연구원, 양자기술연구단, <sup>2</sup>한국과학기술원, <sup>3</sup>한국과학기술연구원, 나노포토닉스 연구센터</p>
FM2-E-3 11:25-11:40	<p>Short-Wave Infrared Detection Using Quantum-Well Photo-HEMTs</p> <p>Yuna Lee<sup>1,2</sup>, DaeHwan Ahn<sup>1</sup>, Kyunghwan Kim<sup>1</sup>, Kyul Ko<sup>1</sup>, SungHan Jeon<sup>1</sup>, Juwon Seo<sup>3</sup>, JoonHyun Kang<sup>3</sup>, Woo-Young Choi<sup>2</sup>, and Jae-Hoon Han<sup>1</sup></p> <p><sup>1</sup>Center for Quantum Technology, KIST, <sup>2</sup>Department of Electrical and Electronic Engineering, Yonsei University, <sup>3</sup>Nanophotonics Research Center, KIST</p>
FM2-E-4 11:40-11:55	<p>Demonstration of ~1W High-output Power SWIR Laser Diodes Using an Optimized Sb-Based Laser Structure</p> <p>Eungbeom Yeon<sup>1,2</sup>, Seungwan Woo<sup>1,3</sup>, In-Hwan Lee<sup>2</sup>, Daehwan Jung<sup>1</sup>, and Won Jun Choi<sup>1</sup></p> <p><sup>1</sup>Center for Quantum Technology, KIST, <sup>2</sup>Department of Materials Science and Engineering, Korea University, <sup>3</sup>Department of Materials Science and Engineering, Seoul National University</p>
FM2-E-5 11:55-12:10	<p>Monolithically Integrated SWIR/MWIR Dual-band Infrared Thin-film Photodetector</p> <p>Seungwan Woo<sup>1,2</sup>, Eungbeom Yeon<sup>1</sup>, Ho Won Jang<sup>2</sup>, Daehwan Jung<sup>1</sup>, and Won Jun Choi<sup>1</sup></p> <p><sup>1</sup>Center for Quantum Technology, KIST, <sup>2</sup>Department of Materials Science and Engineering, Seoul National University</p>





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FM2-E-6 12:10-12:25	자외선 이중대역내 선택적 검출을 위한 이중접합 GaN/Ga <sub>2</sub> O <sub>3</sub> 기반 광 검출기 연구 김선재 <sup>1,2</sup> , 김형윤 <sup>2</sup> , 박지현 <sup>2</sup> , 전대우 <sup>2</sup> , 황완식 <sup>1</sup> <sup>1</sup> 한국항공대학교 신소재공학과, <sup>2</sup> 한국세라믹기술원 디스플레이소재센터
FM2-E-7 12:25-12:40	Optoelectronic Logic Operations based on the Poling Effect of CuO/BaTiO <sub>3</sub> Heterojunction Photodetectors with Ultra-Low Power Consumption Junhyung Cho <sup>1</sup> , Wangmyung Choi <sup>1</sup> , Taehyun Park <sup>1,2</sup> , and Hocheon Yoo <sup>1,2</sup> <sup>1</sup> Department of Semiconductor Engineering, Gachon University, <sup>2</sup> Department of Electronic Engineering, Gachon University



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Room N(다이아몬드 II), 6층

H. Display and Imaging Technologies 분과

### 066\_[FN2-H] Display and Imaging Technologies IV

좌장: 김윤 교수(서울시립대학교), 이지원 교수(포항공대)

초청 FN2-H-1 10:55-11:25	Colloidal Quantum Dot Light-Emitting Diodes for High-Resolution Full-Color Displays Jeonghun Kwak, Geun Woo Baek, and Hansol Seo Seoul National University
FN2-H-2 11:25-11:40	A Study on The Structure Optimization for Digital Pixels Including Pixel-parallel ADC and In-pixel Memory You-Na Lee, B. Kim, H. Sugihara, Y. Shim, J. Jeong, S. Lee, Y. Choi, G.H. Cho, M. Ito, M.-W. Seo, H. Shim, J.-K. Lee, and C.-R. Moon Semiconductor R&D Center, Samsung Electronics Co., Ltd.
FN2-H-3 11:40-11:55	Pulse Frequency Modulation Pixels With Gamma Correction For Ultra-wide Dynamic Range Image Sensors Hyuna Lim, Soo Youn Kim Department of System Semiconductor, Dongguk University
FN2-H-4 11:55-12:10	Study on Photon Detection Probability Characteristic According to SPAD Pitch Chulwoo Hwang, Juhwan Jung, Sanghwan Kim, Hyun Yu, Harin Kang, Dohee Kim, and Manlyun Ha DB Hitek
FN2-H-5 12:10-12:25	Improvement through Segmentation of Dark Current in Global Shutter CMOS Image Sensor Suji Hwang, Yoonjay Han, Hoonil Yang, Sanghoon Song, Jonghyeon Noh, Tae-Min Kim, Tae-Yon Lee, Hongki Kim, Jae-Kyu Lee, and Chang-Rok Moon Semiconductor R&D Center, Samsung Electronics Co., Ltd.
FN2-H-6 12:25-12:40	Physical-Isolation through Backside Trench for Pixel Shrink of 3-Layer Stacked Digital Pixel Sensor Ga-Young Kim, Surim Lee, Kyungtae Lim, Sang-Su Park, Jong-hyun Yoo, KuanSik Kim, Wonoh Ryu, Juyeong Oh, Seung-Sik Kim, Jae-Kyu Lee, and Chang-Rok Moon Semiconductor R&D Center, Samsung Electronics Co., Ltd.



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Room A(그랜드볼룸 I), 4층

K. Memory (Design & Process Technology) 분과

### 067\_[FA3-K] Material, Process, Structures, Modeling for Advanced Memory Applications

좌장: 박하민 교수(광운대학교), 전종욱 교수(성균관대학교)

초청 FA3-K-1 15:10-15:40	Flexible Synaptic Memristors for Wearable Neuro-Inspired Applications Sin-Hyung Lee <sup>1,2</sup> <sup>1</sup> School of Advanced Fusion Studies, University of Seoul, <sup>2</sup> Department of Intelligent Semiconductor Engineering, University of Seoul
FA3-K-2 15:40-15:55	Wafer Bonding Process와 수율 향상을 위한 계측 김해리, 최별, 안채영, 한경식, 김연수 R&D, SK Hynix
FA3-K-3 15:55-16:10	Enhanced Resistive Switching Stability In a Memristor Array Utilizing Highly Polycrystalline Two-dimensional material Jihoon Yang <sup>1,2</sup> Aram Yoon <sup>1,2,3</sup> , Donghyun Lee <sup>1,2</sup> , IL-John Jung <sup>1,2</sup> , Dong-Hyeok Lim <sup>1,2</sup> , Hongsik Jeong <sup>1,2</sup> , Zonghoon Lee <sup>1,2,3</sup> , and Soon-Yong Kwon <sup>1,2</sup> <sup>1</sup> Department of Materials Science and Engineering, UNIST, <sup>2</sup> Graduate School of Semiconductor Materials and Devices Engineering, UNIST, <sup>3</sup> CMCM, IBS
FA3-K-4 16:10-16:25	Engineering Thermal Diffusion Control in Phase Change Heterostructures for High-Performance, High-Density Phase Change Memory Jun Young Choi <sup>1</sup> , Dong Hyun Kim <sup>2</sup> Jin Suk Oh <sup>2</sup> , Jong Min Joo <sup>2</sup> , Min Su Kang <sup>2</sup> , Ji Eun Park <sup>2</sup> , and Tae Geun Kim <sup>1,2</sup> <sup>1</sup> Department of Semiconductor System Engineering, Korea University, <sup>2</sup> School of Electrical Engineering, Korea University
FA3-K-5 16:25-16:40	Sub 1% of Variance in Two-Dimensional Memristor with Confined Active Electrode Sihoon Son <sup>1</sup> , Hyunho Seok <sup>1</sup> , Hyunbin Choi <sup>2</sup> , Jinhyoung Lee <sup>3</sup> , and Taesung Kim <sup>1,2,3</sup> <sup>1</sup> SKKU Advance Institute of Nano Technology, Sungkyunkwan University, <sup>2</sup> Department of Semiconductor Convergence Engineering, Sungkyunkwan University, <sup>3</sup> Department of Mechanical Engineering, Sungkyunkwan University



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FA3-K-6 16:40-16:55	<b>Contact Area Size-Dependent Schottky Barrier Height of Memory Device</b> Yoojin Seol, Hyeongyu Kim, Haecheol Hwang, Hyogyung Kim, and Kihyun Kim Department of Electronics and Information Engineering, Jeonbuk National University
FA3-K-7 16:55-17:10	<b>Fully-Coupled Simulation of Bipolar Filamentary Resistive Switching by Phase-field and Electrothermal Models</b> Jinwoo Oh, Dongmyung Jung, and Yongwoo Kwon Department of Materials Science and Engineering, Hongik University



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Room B(그랜드볼룸III), 4층

G. Device & Process Modeling, Simulation and Reliability 분과

### 068\_[FB3-G] Carrier Transport & Quantum Simulation

좌장: 홍성민 교수(GIST), 신희식 수석(DB하이텍)

초청 FB3-G-1 15:10-15:40	Advances in Understanding Chemical Bonding in Amorphous and Crystalline Chalcogenide Semiconductors Tae Hoon Lee <sup>1</sup> and Stephen R. Elliott <sup>2</sup> <sup>1</sup> Kyungpook National University, <sup>2</sup> University of Oxford, UK
FB3-G-2 15:40-15:55	Tackling Multi-dimensional Poisson Equations with Mixed Boundary Conditions Using Variational Quantum Algorithm Minjin Choi <sup>1</sup> and Hoon Ryu <sup>2</sup> <sup>1</sup> Center for Quantum Information R&D, KISTI, <sup>2</sup> Department of Artificial Intelligence Engineering, Kumoh National Institute of Technology
FB3-G-3 15:55-16:10	First-Principles Modeling of Non-Equilibrium Behavior in Oxide Ferroelectric Tunnel Junctions Kaptan Rajput, Ryong Gyu Lee, Tae Hyung Kim, Hyeonwoo Yeo, Juho Lee, and Yong-Hoon Kim School of Electrical Engineering, KAIST
FB3-G-4 16:10-16:25	Quantum Transport Simulation for the Nanosheet FET Including Surface Roughness Scattering Phil-Hun Ahn and Sung-Min Hong School of Electrical Engineering and Computer Science, GIST
FB3-G-5 16:25-16:40	Evaluation of the Effect of Metal Contact Geometry on S/D Junction Resistance in Si/InGaAs FinFETs Using Semi-Classical Monte Carlo Carrier Transport Simulation Jae Yeon Kim <sup>1,3</sup> , Dong Hyeok Lee <sup>2</sup> , Suk Hyeong Youn <sup>2</sup> , and Jiwon Chang <sup>1,3</sup> <sup>1</sup> Department of System Semiconductor Engineering, Yonsei University, <sup>2</sup> Department of Materials Science and Engineering, Yonsei University, <sup>3</sup> BK21 Graduate Program in Intelligent Semiconductor Technology, Yonsei University



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FB3-G-6 16:40-16:55	Four-coupled Multi-physics Simulations of Multi-layer Ferroelectric Field Effect Transistors with Polar Topological States Yangjin Jung, Seokwon Lee, and Mincheol Shin Department of Electrical Engineering, KAIST
FB3-G-7 16:55-17:10	Extremely Low-Power Topological Transistors Yosep Park <sup>1</sup> , Yungyeong Park <sup>2</sup> , Subeen Lim <sup>2</sup> , and Yeonghun Lee <sup>1,2</sup> <sup>1</sup> Department of Intelligent Semiconductor Engineering, Incheon National University, <sup>2</sup> Department of Electronics Engineering, Incheon National University



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Room C(컨벤션홀 L), 5층

D. Thin Film Process Technology 분과

**069\_[FC3-D] Atomic Layer Deposition - III**

좌장: 한정환 교수(서울과학기술대학교), 엄태용 교수(세종대학교)

FC3-D-1 15:10-15:25	Area-selective Atomic Layer Deposition of Ruthenium Thin Films via Atmospheric Pressure Plasma Technology Dahui Jeon <sup>1,2</sup> and In-Hwan Baek <sup>1,2</sup> <sup>1</sup> Department of Chemical Engineering, Inha University, <sup>2</sup> Program in Semiconductor Convergence, Inha University
FC3-D-2 15:25-15:40	Inherent Area-Selective Deposition of Low-resistivity Molybdenum Carbide Films by Thermal Atomic Layer Deposition Ji Sang Ahn and Jeong Hwan Han Department of Materials Science and Engineering, Seoul National University of Science and Technology
FC3-D-3 15:40-15:55	Theoretical Development of Area-Selective Atomic Layer Deposition Process of Ruthenium via Reduction of Interfacial Oxidation Iaen Cho <sup>1,2</sup> , Eun-Hyoung Cho <sup>3</sup> , Dabin Kong <sup>4</sup> , Youngchul Leem <sup>3</sup> , Young Min Lee <sup>3</sup> , Miso Kim <sup>1</sup> , Chi Thang Nguyen <sup>4</sup> , Jeong Yub Lee <sup>3</sup> , Han-Bo-Ram Lee <sup>4</sup> , and Bonggeun Shong <sup>1</sup> <sup>1</sup> Hongik University, <sup>2</sup> Yonsei University, <sup>3</sup> SAIT, <sup>4</sup> Incheon National University
FC3-D-4 15:55-16:10	In-Situ Hydrogen Gas Annealing in ALD Reactor for Improved Quality of Cobalt Thin Film Jaeseong Pyo, Giryun Hong, Jongseo Park, Bohyeon Kang, Jehyun An, Beomjoo Ham, Sung-Min Ahn, and Rock-Hyun Baek Department of Electrical Engineering, POSTECH
FC3-D-5 16:10-16:25	Development of Atomic Layer Etching of ZrO <sub>2</sub> Thin Films Using NF <sub>3</sub> Plasma and TiCl <sub>4</sub> Haram Yang <sup>1</sup> , Hyeongjun Kim <sup>2</sup> , and Woongkyu Lee <sup>1,2</sup> <sup>1</sup> Department of Materials Science and Engineering, Soongsil University, <sup>2</sup> Department of Green Chemistry and Materials Engineering, Soongsil University



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FC3-D-6 16:25-16:40	<p>Growth Characteristics of <math>\text{ZrO}_2</math>, <math>\text{HfO}_2</math>, and <math>\text{In}_2\text{O}_3</math> Deposited by Liquid Injection Atomic Layer Deposition</p> <p>Soon-Kyeong Park<sup>1</sup>, JunHee Cha<sup>2</sup>, and Il-Kwon Oh<sup>1,2</sup></p> <p><sup>1</sup>Department of Intelligence Semiconductor Engineering, Ajou University, <sup>2</sup>Department of Electrical and Computer Engineering, Ajou University</p>
FC3-D-7 16:40-16:55	<p>High Temperature TiN Atomic Layer Deposition Using N-containing Reactants</p> <p>Hyewon Park, Yoonseo Choi, and Han-Bo-Ram Lee</p> <p>Department of Materials Science and Engineering, Incheon National University</p>
FC3-D-8 16:55-17:10	<p>Advanced Atomic Layer Deposition: Enhanced Oxidation Resistance and Film Properties of <math>\text{SiN}_x</math> Films by Using Highly Reactive N Sources and Discrete Feeding Method</p> <p>Ui Hyeon You, Jae Chan Park, and Tae Joo Park</p> <p>Department of Materials Science and Chemical Engineering, Hanyang University</p>





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2025년 2월 14일(금), 15:10-17:10

Room D(에메랄드 I), 5층

### A. Interconnect & Package 분과

#### 070\_[FD3-A] Advanced Package 2

좌장: 주지호 책임(한국전자통신연구원), 이소연 교수(금오공과대학교)

FD3-A-1 15:10-15:25	대기압 기화 플라스마를 이용한 웨이퍼 본딩 기술 Wonyoung Choi, Bumki Moon, Jungshin Lee, Yongjoo Lee, Byeongtak Park, Seung ho Han, Nungpyo Hong, and Kyeongbin Lim Semiconductor R&D Center, Samsung Electronics Co., Ltd.
FD3-A-2 15:25-15:40	TEOS SiO <sub>2</sub> Film Deposition Optimization for Increasing Capability and Securing TSV Robustness of HBM Intae Whoang <sup>1</sup> , Byung Yoon Lim <sup>2</sup> , Kijun Bang <sup>2</sup> , and Sang Un Lee <sup>2</sup> SK hynix
FD3-A-3 15:40-15:55	Crystal Plasticity-Based Modeling of the Influence of Microstructures and Grain Boundary Junction Types on the Cu-Cu Bonding Interface. Jae-Uk Lee <sup>1</sup> , Hyun-Dong Lee <sup>1</sup> , Sung-Hyun Oh <sup>1</sup> , Jihun Kim <sup>1</sup> , Ki-Beom Kim <sup>2</sup> , Ho-Jin Lee <sup>3</sup> , Yeon-Su Kim <sup>2</sup> , Gyeong-Bim Lim <sup>3</sup> , Sarah-Eunkyoung Kim <sup>4</sup> , Hoo-Jeong Lee <sup>1</sup> , and Eun-Ho Lee <sup>1</sup> <sup>1</sup> Sungkyunkwan University, <sup>2</sup> Sk Hynix, <sup>3</sup> Samsung Electronics, <sup>4</sup> Seoul National University of Science of Technology
FD3-A-4 15:55-16:10	Drive Circuit for Semiconductor Die Testing and Applications Youngwoo Yoo and Young-Joon Kim Gachon University
FD3-A-5 16:10-16:25	An Efficient Standardized Simulation Model for Evaluation of Board Level Reliability in Semiconductor Applications Jaehee An <sup>1</sup> , Wan-Kyu Choi <sup>2</sup> , and Sangyul Ha <sup>1</sup> <sup>1</sup> Department of Semiconductor Engineering, MyongJi University, <sup>2</sup> DRAM Module Solution, SK hynix



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## *Future Normal in Semiconductor*

FD3-A-6 16:25-16:40	Advanced Cu/Polymer Hybrid bonding for 3D Multi-chip Stacking Process Jihun Kim and Jong Kyoung Park Department of Semiconductor Engineering, Seoul National University of Science and Technology
FD3-A-7 16:40-16:55	Digital Design and DOE-Based Analysis for Optimal Wire Configuration in Diode Modules Na-Yeon Choi <sup>1,2</sup> and Sung-Uk Zhang <sup>1,2</sup> <sup>1</sup> Digital Twin Laboratory, Dong-Eui University, <sup>2</sup> Center for Brain Busan 21 Plus Program



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2025년 2월 14일(금), 15:10-17:10

Room E(에메랄드 II+III), 5층

D. Thin Film Process Technology 분과

071\_[FE3-D] TFT/Memory

좌장: 윤성민 교수(경희대학교), 전우진 교수(경희대학교)

FE3-D-1 15:10-15:25	Composition-Dependent Threshold Voltage Variation in GeSeTe-Based Selector-Only Memory Device Young Yun Mun and Gun Hwan Kim Department of System Semiconductor Engineering, Yonsei University
FE3-D-2 15:25-15:40	Exploring TiO <sub>2</sub> Interlayer Impact on H <sub>x</sub> Z <sub>1-x</sub> O <sub>2</sub> Ferroelectric Stability and Performance in Cryogenic Memory Applications So-Yeong Park, Woon-San Ko, Do-Yeon Lee, So-Yeon Kwon, Hye-Ri Hong, Seong-Jo Jo, and Ga-Won Lee Department of Electronics Engineering, Chungnam National University
FE3-D-3 15:40-15:55	A New Structure for High-Performance Operation of Oxide and Organic Semiconductor Heterojunction Transistors: Spatially Separating Layer Sandwiched Anti-Ambipolar Transistor Youngmin Han <sup>1</sup> and Hocheon Yoo <sup>1,2</sup> <sup>1</sup> Department of Semiconductor Engineering, Gachon University, <sup>2</sup> Department of Electronic Engineering, Gachon University
FE3-D-4 15:55-16:10	Study on the Enhancement of HfO <sub>2</sub> Dielectric Properties Using SiCN Capping Layer Hye-Ri Hong, Woon-San Ko, Do-Yeon Lee, So-Yeon Kwon, So-Yeong Park, Seong-Jo Jo, and Ga-Won Lee Chungnam National University
FE3-D-5 16:10-16:25	Determination of Subgap DOS over the Wide Energy Range Using Multi-Wavelength Light in PEALD Cu <sub>2</sub> O TFTs Soyeon Kim <sup>1</sup> , Jaewook Yoo <sup>1</sup> , Seongbin Lim <sup>1</sup> , Hyeonjun Song <sup>1</sup> , Hongseung Lee <sup>1</sup> , Seohyeon Park <sup>1</sup> , Minah Park <sup>1</sup> , Sojin Jeong <sup>1</sup> , Peide D. Ye <sup>2</sup> , and Hagyoul Bae <sup>1</sup> <sup>1</sup> Jeonbuk National University, <sup>2</sup> Purdue University, USA



***Future Normal in Semiconductor***

FE3-D-6 16:25-16:40	<b>Multimode Operation of Light-Gated Transistors based on Millimeter-Scale Transition-Metal Dichalcogenide Grown by Chemical Vapor Deposition</b> Wonbeom Kim <sup>1</sup> , Somnath S. Kundale <sup>3</sup> , Hyeongtae Kim <sup>1</sup> , Su-Yeon Cho <sup>1</sup> , Mi Ji Kwon <sup>1</sup> , Soobin Shim <sup>1</sup> , and Jun Hong Park <sup>2</sup> <sup>1</sup> Department of Materials Engineering and Convergence Technology, Gyeongsang National University, <sup>2</sup> Department of Materials Engineering and Convergence Technology and School of Materials Science and Engineering, Gyeongsang National University, <sup>3</sup> Research Institute for Green Energy Convergence Technology, Gyeongsang National University
FE3-D-7 16:40-16:55	<b>Defect-selective Platinum Nanoparticle Functionalization of 2D WS<sub>2</sub> by Atomic Layer Deposition for Enhancing Gas Sensing Properties</b> Minji Kim, Inkyu Sohn, Dain Shin, Jaehyeok Kim, Tatsuya Nakazawa, Seung-min Chung and Hyungjun Kim School of Electrical and Electronic Engineering, Yonsei University
FE3-D-8 16:55-17:10	<b>High-Performance p-Type Tin Halide Perovskite Transistor with Non-Volatile Methylammonium Chloride</b> Hansol Park <sup>1,2</sup> , Jongmin Lee <sup>1,2</sup> , Cheong Beom Lee <sup>3</sup> , Kyeounghak Kim <sup>4</sup> , and Hui Joon Park <sup>1,2,5</sup> <sup>1</sup> Department of Organic and Nano Engineering, Hanyang University, <sup>2</sup> Human-Tech Convergence Program, Hanyang University, <sup>3</sup> Department of Chemistry, Hanyang University, <sup>4</sup> Department of Chemical Engineering, Hanyang University, <sup>5</sup> Department of Semiconductor Engineering, Hanyang University



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Room F(사파이어 I), 5층

### C. Material Growth & Characterization 분과

#### 072\_[FF3-C] Neuromorphic and Functional Oxide Materials

좌장: 이정우 교수(홍익대학교), 송승욱 교수(성균관대학교)

초청 FF3-C-1 15:10-15:40	멤리스터용 가능성 박막 소재 장호원 서울대학교 재료공학부
FF3-C-2 15:40-15:55	Investigating Epitaxially Fabricated Crystallographic Shear Phase In Tungsten Sub-oxides Kyeong Jun Lee <sup>1</sup> , Hyowon Seo <sup>2</sup> , Yeong Gwang Khim <sup>2</sup> , Yong-Jun Kwon <sup>3</sup> , Bongju Kim <sup>1</sup> , Minu Kim <sup>1</sup> , Chan Ho Yang <sup>3</sup> , Gyungtae Kim <sup>4</sup> , Jung-ho Kim <sup>5</sup> , Young Jun Chang <sup>2</sup> and Seo Hyoung Chang <sup>1</sup> <sup>1</sup> Department of Physics, Chung-Ang University, <sup>2</sup> Department of Physics, University of Seoul, <sup>3</sup> Department of Physics, KAIST, <sup>4</sup> National NanoFab Center, <sup>5</sup> Advanced Photon Source, Argonne National Laboratory
FF3-C-3 15:55-16:10	Inhibitor 특성을 가지는 Si 전구체를 활용한 Ru의 선택적 ALD (Area-selective atomic layer deposition) 증착 구본욱 <sup>1</sup> , Sumaira Yasmeen <sup>1</sup> , 오근하 <sup>2</sup> , 오일권 <sup>2</sup> , 강영호 <sup>1</sup> , 이한보람 <sup>1</sup> <sup>1</sup> 인천대학교 신소재공학과, <sup>2</sup> 아주대학교 지능형반도체공학과
초청 FF3-C-4 16:10-16:40	Piezoelectric DC Power Generator Using a Sequential Polarization Change Hyun-Cheol Song <sup>1,2</sup> and Hyunsoo Kim <sup>1</sup> <sup>1</sup> Electronic Materials Research Center, KIST, <sup>2</sup> KIST-SKKU Carbon-Neutral Research Center, Sungkyunkwan University
FF3-C-5 16:40-16:55	Epitaxial Growth of Stacking Faults-free Bilayer MoS <sub>2</sub> GunWoo Yoo <sup>1,2</sup> , TaeJoon Mo <sup>1,2</sup> , Yong-Sung Kim <sup>3</sup> , Woo-Ju Lee <sup>1,2</sup> , Min-Yeong Choi <sup>1,2</sup> , Si-Yong Choi <sup>1,4</sup> , Moon-Ho Jo <sup>1,2</sup> , and Cheol-Joo Kim <sup>1,2</sup> <sup>1</sup> Center for Van der Waals Quantum Solids, IBS, <sup>2</sup> Department of Chemical Engineering, POSTECH, <sup>3</sup> KRISS, <sup>4</sup> Department of Materials Science and Engineering, POSTECH



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FF3-C-6 16:55-17:10	<b>Chiral Photonic Synapses based on Chiral Perovskites</b> In-Kook Hwang <sup>1,2</sup> , Min Gu Lee <sup>2</sup> , Young-Hoon Kim <sup>3</sup> , Kyung Min Kim <sup>2</sup> , Byong-Guk Park <sup>2</sup> , and Seung-Heon Chris Baek <sup>1</sup> <sup>1</sup> Center for Semiconductor Technology, KIST, <sup>2</sup> Department of Materials Science and Engineering, KAIST, <sup>3</sup> Department of Energy Engineering, Hanyang University
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Room G(사파이어 II+III), 5층

V. Quantum Technology 분과

### 073\_[FG3-V] Quantum Technology 3

좌장: 이문주 교수(포항공대), 김진욱 박사(한국표준과학연구원)

초청 FG3-V-1 15:10-15:40	양자 플랫폼을 통한 양자 알고리즘 활용 사례 정현철 노르마
초청 FG3-V-2 15:40-16:10	Single Photon Sources for Quantum Computers Donghan Lee <sup>1</sup> , Yudong Jang <sup>1</sup> , Daehyun Ahn <sup>2</sup> , Hyunju Ahn <sup>3</sup> , and Jindong Song <sup>4</sup> <sup>1</sup> Bright Quantum Inc., <sup>2</sup> NIST, <sup>3</sup> Department of Electrical Engineering, Penn State University, <sup>4</sup> Center for Quantum Technology, KIST
초청 FG3-V-3 16:10-16:40	광집적회로 기반 양자암호통신의 새로운 기회 노광석 주식회사 큐심폴러스
FG3-V-4 16:40-16:55	Design of Focusing Grating Coupler for Ion Trap Quantum Computing Chip Jaewoo Kim <sup>1</sup> , Chiyoon Kim <sup>2</sup> , Youngmin Kim <sup>1</sup> , Taehyun Kim <sup>2</sup> , and Donghwan Ahn <sup>1</sup> <sup>1</sup> Kookmin University, <sup>2</sup> Seoul National University
FG3-V-5 16:55-17:10	Development of a Near-Concentric Cavity for an Ion-based Quantum Network Node WON Jongcheol, MOON Youngil, Lee Hyunjoon, KIM Donggeon, HA Taegyu, LEE Dowon, JEONG Eunchul, KIM Uji, and LEE Moonjoo Department of Electrical Engineering, POSTECH



2025년 2월 14일(금), 15:10-17:10

Room H(루비 I), 5층

Q. Metrology, Inspection, Analysis, and Yield Enhancement 분과

**074\_[FH3-Q] Metrology, Inspection, Analysis, and Yield Enhancement II**

좌장: 강상우 소장(한국표준과학연구원), 정용우 TL(SK 하이닉스)

초청 FH3-Q-1 15:10-15:40	A Study on Improving Accuracy of Optical 3-D Profile Measurement Using in-Wafer Gradient of Dimensionally Reduced Ellipsometry Spectrum Hyeong-Jun Jeong <sup>1</sup> , Minkyu Kim <sup>2</sup> , Sungyoon Ryu <sup>1</sup> , Taejin Kim <sup>1</sup> , Gwanghun Jung <sup>1</sup> , Young-Seok Kim <sup>1</sup> , and Younghoon Sohn <sup>1</sup> <sup>1</sup> Metrology & Inspection Technology Team, Samsung Electronics, Ltd., <sup>2</sup> CSE Team, Samsung Electronics Ltd
초청 FH3-Q-2 15:40-16:10	Matching Technology of Metrology Tools for FAB Process Yong Woo Jung, Yu Seong Gim, and Hee Ju Park SK hynix
초청 FH3-Q-3 16:10-16:40	Development of Various EUV Sources for Application in Actinic Tools for EUV Masks Dong Gun Lee ESOL. Inc.
FH3-Q-4 16:40-16:55	Development of Stack Die MI Measurement Methodology for the Unrivaled HBM Memory Hye Yun Seong, Young Hoon Lee, and Sung Hyun Yoon SK hynix Inc.
FH3-Q-5 16:55-17:10	The Industry's First Study on Inline Mass Measurement Methods for Chip-Level Warpage to Yield Improvement of HBM Sang-Yeop Lee <sup>1</sup> , Sang yup Lee <sup>2</sup> , In Tae Whoang <sup>1</sup> , Jung Hwi Kim <sup>1</sup> , Min Yeop Lee <sup>1</sup> , and Young Hoon Lee <sup>1</sup> <sup>1</sup> SK Hynix Inc., <sup>2</sup> Georgia Institute of Technology





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Room I(스페이드 I), 6층

P. Device for Energy (Solar Cell, Power Device, Battery, etc.) 분과

### 075\_[FI3-P] Solar Cell

좌장: 김동희 교수(고려대학교), 홍영준 교수(성균관대학교)

초청 FI3-P-1 15:10-15:40	Buried Interface Study for Sn-Pb Perovskite Solar Cells for Tandem Applications Dong Hoe Kim Department of Materials Science and Engineering, Korea University
FI3-P-2 15:40-15:55	Interface Modification for Enhanced Charge Transport under Low-Light Conditions in Perovskite Indoor Photovoltaics Seok Beom Kang <sup>1</sup> , Jae Ryoung Lee <sup>1</sup> , Joo Woong Yoon <sup>1</sup> , Jung Jun Kim <sup>1</sup> , and Dong Hoe Kim <sup>2</sup> Korea University
FI3-P-3 15:55-16:10	3Inch InGaP/GaAs Thin-film Solar Cell For Space Application Sukkyu Hong <sup>1,2</sup> , Seungwan Woo <sup>1</sup> , Sung-min Lee <sup>2</sup> , and Won Jun Choi <sup>1</sup> <sup>1</sup> Center for Quantum Technology, KIST, <sup>2</sup> Department of Electrical Engineering, Hanyang University
FI3-P-4 16:10-16:25	15.2% Efficient InGaP/GaAs/Si Triple-junction Solar Cell with Direct Growth of n-GaAs Buffer on GaP/Si Yeonhwa Kim <sup>1,2</sup> , Hyunbeom Shin <sup>3</sup> , Eunkyo Ju <sup>1,2</sup> , Tsimafei Laryn <sup>1,4</sup> , In-Hwan Lee <sup>2</sup> , Ho Kwan Kang <sup>3</sup> , Won Jun Choi <sup>1</sup> , Daehwan Jung <sup>1,4</sup> <sup>1</sup> Center for Quantum Technology, KIST, <sup>2</sup> Department of Materials Science and Engineering, Korea University, <sup>3</sup> KANC, <sup>4</sup> Division of Nanoscience and Technology, KIST School at Korea National University of Science and Technology
FI3-P-5 16:25-16:40	p-CuAlO <sub>2</sub> /β-Ga <sub>2</sub> O <sub>3</sub> Interfaces: Self-Powered Photodetector with Improved Linear Dynamic Range and Stability Chowdam Venkata Prasad <sup>1,2</sup> , Madani Labed <sup>1,2</sup> , and You Seung Rim <sup>1,2</sup> <sup>1</sup> Department of Semiconductor Systems Engineering and Convergence Engineering for Intelligent Drone, Sejong University, <sup>2</sup> Institute of Semiconductor and System IC, Sejong University



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<b>FI3-P-6</b> <b>16:40-16:55</b>	<b>Buried Interface Modulation via PEDOT:PSS Ionic Exchange for Sn-Pb Mixed Perovskite Based Solar Cells</b> Sangheon Lee, Changyong Kim, Hyemin Lee, Seok Beom Kang, Joo Woong Yoon, Ayoung Lee, Jae Ryoung Lee, Sang Jun Park, Min Hyeok Park, Jung Jun Kim, and Dong Hoe Kim Department of Materials Science and Engineering, Korea University
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Room J(스페이드 II+III), 6층

H. Display and Imaging Technologies 분과

### 076\_[FJ3-H] Display and Imaging Technologies VI

좌장: 진성훈 교수(인천대학교), 정예환 교수(한양대학교)

초청 FJ3-H-1 15:10-15:40	Understanding and Controlling the Morphology of Organic Thin Films Jongchan Kim Department of Integrated Display Engineering, Yonsei University
초청 FJ3-H-2 15:40-16:10	Meta-Elastomer for Biaxially Stretchable Displays Without Image Distortion Seungjun Chung Korea University
FJ3-H-3 16:10-16:25	Feline eye-inspired Artificial Vision for Enhanced Camouflage Breaking under Diverse Light Conditions Min Su Kim <sup>1,2,3</sup> , Changsoon Choi <sup>3</sup> , and Dae-Hyeong Kim <sup>1,2</sup> <sup>1</sup> Center for Nanoparticle Research, IBS, <sup>2</sup> Department of Chemical and Biological Engineering, Seoul National University, <sup>3</sup> KIST
FJ3-H-4 16:25-16:40	Stretchable Transparent Heater-OLED with Kirigami Design for Wearable Healthcare Applications Seojin Kim <sup>1</sup> , Yuhwa Bak <sup>1,2</sup> , Ye Ji Shin <sup>1</sup> , Young Woo Kim <sup>1</sup> , Eou-Sik Cho <sup>3</sup> , Sang Jik Kwon <sup>3</sup> , and Yongmin Jeon <sup>1,2</sup> <sup>1</sup> Department of Semiconductor Engineering, Gachon University, <sup>2</sup> Department of Biomedical Engineering, Gachon University, <sup>3</sup> Department of Electronic Engineering, Gachon University
FJ3-H-5 16:40-16:55	Pixel Source Follower Having Dual Gate Oxide Thickness for Better Image Temporal Noise Performance 하만륜, 유낙원, 김상환, 이강훈, 전익수, 최우성, 윤상원, 정주영, 박홍범, 김성진, 여인근, 한창훈, 이상기 CIS Process Dev. Team, TCAD Part, DB HiTek



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FJ3-H-6 16:55-17:10	<p>Textile Based Body Attachable, Multi Wavelength Wrinkled Stretchable OLED &amp; Bio Medical Application</p> <p>Kyeong Sik Ko<sup>1</sup>, Ye Ji Shin<sup>3</sup>, YouJin Cho<sup>3</sup>, EOU-Sik Cho<sup>2</sup>, Sang Jik Kwon<sup>2</sup>, and Youngmin Jeon<sup>1,3</sup></p> <p><sup>1</sup>Department of Biomedical Engineering, Gachon University, <sup>2</sup>Department of Electronic Engineering, Gachon University, <sup>3</sup>Department of Semiconductor Engineering, Gachon University</p>
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Room K(하트 I), 6층

### O. System LSI Design 분과

#### 077\_[FK3-0] System LSI Design

좌장: 유호영 교수(충남대학교), 김수창 교수(충북대학교)

초청 FK3-O-1 15:10-15:40	Neural Network Compression Methods and AI Acceleration Systems Suchang Kim Chungbuk National University
FK3-O-2 15:40-15:55	FPGA 기반 초기 지연 가변 TDC 전압 센서 구현 노윤진, 엄유진, 양희훈, 유호영 충남대학교 전자공학과
FK3-O-3 15:55-16:10	Xilinx FPGA를 활용한 FPGA-PC Ethernet 시스템 구현 박지호, 손정훈, 유호영 충남대학교 전자공학과
초청 FK3-O-4 16:10-16:40	Recent Advances in VLSI Architectures for IDMA Systems Byeong Yong Kong Kongju National University
FK3-O-5 16:40-16:55	Design of a High-Speed Face Detection Circuit for Always-on Image Sensors Yuchan Yun and Soo Youn Kim Department of System Semiconductor, Dongguk University
FK3-O-6 16:55-17:10	Delta Rule-based Weight Calibration Method for Low Power SNN System Seungjoon Lee and Soo Youn Kim Department of System Semiconductor, Dongguk University



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Room L(하트II+III), 6층

### B. Patterning (Lithography & Etch Technology) 분과

#### 078\_[FL3-B] Etch

좌장: 채희엽 교수(성균관대학교), 이상현 교수(이화여자대학교)

초청 FL3-B-1 15:10-15:40	Semiconductor Equipment Technology: What's Next? Dougyoung Sung Mechatronics Research, Samsung Electronics Co., Ltd.
FL3-B-2 15:40-15:55	Low-temperature SiO <sub>2</sub> Contact Hole Etching Using C <sub>4</sub> F <sub>8</sub> Plasmas 유상현 <sup>1,2</sup> , 김창구 <sup>1,2</sup> <sup>1</sup> Department of Chemical Engineering, Ajou University, <sup>2</sup> Department of Energy Systems Research, Ajou University
FL3-B-3 15:55-16:10	High-throughput Isotropic Atomic Layer Etching of Hafnia Films Using F Radicals and Al Precursors Gyejun Cho, Jehwan Hong, Hye-Lee Kim, and Won-Jun Lee Department of Nanotechnology and Advanced Materials Engineering, Sejong University
초청 FL3-B-4 16:10-16:40	Technical Challenge and Development of HARC Etching Sang Wook Park, Jae Won Lee, Sang Heon Song, Kyung Tae Kim, Ki Jun Yun, Hoo Woong Lee, Woo June Kwon, Chung Won Seo, and Hyun Min Lee SK hynix Inc.
FL3-B-5 16:40-16:55	Investigation on the Effect of Tailored Waveform Bias on the Formation of SiO <sub>2</sub> /Si Trench Etch Profile in SF <sub>6</sub> /O <sub>2</sub> /Ar Plasma Taejun Park <sup>1</sup> , Jihoon Park <sup>1</sup> , Ingyu Lee <sup>1</sup> , Namkyun Kim <sup>2</sup> , and Gon-Ho Kim <sup>1</sup> <sup>1</sup> Seoul National University, <sup>2</sup> Samsung Electronics Co., Ltd.
FL3-B-6 16:55-17:10	Ultrathin Ni Catalyst for CMOS-compatible Metal-assisted Chemical Etching of Si Kyunghwan Kim <sup>1,2</sup> , Haekyun Bong <sup>1,3</sup> , and Jungwoo Oh <sup>1,3</sup> <sup>1</sup> School of Integrated Technology, Yonsei University, <sup>2</sup> Center for Quantum Technology, KIST, <sup>3</sup> BK21 Graduate Program in Intelligent Semiconductor Technology, Yonsei University



# 제 32회 한국반도체학술대회

The 32nd Korean Conference on Semiconductors

2025년 2월 12일(수)-14일(금) | 강원도 하이원리조트

## Future Normal in Semiconductor

2025년 2월 14일(금), 15:10-17:10

Room M(다이아몬드 I), 6층

T. AI 분과

### 079\_[FM3-T] Artificial Intelligence

좌장: 전동석 교수(서울대학교)

초청 FM3-T-1 15:10-15:40	Zero Injection Technique for Enhancing Stability and PSR Performance in Analog LDOs Dongjoo Shin Mobilint, Inc.
FM3-T-2 15:40-15:55	Analog Matrix-Vector Multiplication Accelerator Using Capacitive Coupling-based Compute-In Memory Technology Jung Nam Kim <sup>1</sup> , Yong Woo Kim <sup>1</sup> , Minsuk Koo <sup>2,3</sup> , and Yoon Kim <sup>1,3</sup> <sup>1</sup> Department of Electrical and Computer Engineering, University of Seoul, <sup>2</sup> School of Advanced Fusion Studies and AI Semiconductor, University of Seoul, <sup>3</sup> IM Electronics Co., Ltd.
FM3-T-3 15:55-16:10	DRAM 기반 스토리지를 활용한 RAG 기반 LLM 추론 가속화 연구 KiHyun Kim <sup>1</sup> , Jongman Kim <sup>2</sup> , and Youngjae Kim <sup>1</sup> <sup>1</sup> Sogang University, <sup>2</sup> Soteria Inc.
초청 FM3-T-4 16:10-16:40	Hardware-Algorithm Co-Design for Low-Power Deep Learning Training Processors Jeongwoo Park Department of Semiconductor Systems Engineering, Sungkyunkwan University
FM3-T-5 16:40-16:55	Analysis of Numeric Formats in Artificial Intelligence: Balancing Accuracy and Resource Usage in Depth-Wise Convolutions Dayoung Lee, Jaeseong Kim, Chaebin Lee, Joungmin Park, Raehyeong Kim, and Seung Eun Lee Department of Electronic Engineering, Seoul National University of Science and Technology
FM3-T-6 16:55-17:10	Data-driven Deep Neural Operators for Solution of Gas Dynamic Conservation Equations in Non-equilibrium Plasma Reactors Sangjun Ahn, Jinkyu Bae, Suyoung Yoo, and Sang Ki Nam Core Technology R&D Team, Samsung Electronics Co., Ltd.



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2025년 2월 14일(금), 15:10-17:10

Room N(다이아몬드 II), 6층

E. Compound Semiconductors 분과

080\_[FN3-E] WBG Semiconductor-I

좌장:

초청 FN3-E-1 15:10-15:40	MOCVD-based AlGaIn/GaN HEMT Epitaxy Technology for RF and Power Semiconductors Young-Hun Han <sup>1</sup> , June-O Song <sup>1</sup> , Ji-Hyung Moon <sup>1</sup> , Hyung Sun Yun <sup>1</sup> , Tae-Kyung Kim <sup>1</sup> , Byoung-Cgul Jun <sup>2</sup> , Jae-Hak Lee <sup>3</sup> , and Dae-Hyun Kim <sup>1</sup> WaveLord. Inc, <sup>2</sup> Wavice. Inc, <sup>3</sup> School of Electronic and Electrical Engineering, Kyungpook National University
FN3-E-2 15:40-15:55	Improved $f_{\max}$ in Short- $L_g$ Al <sub>0.4</sub> Ga <sub>0.6</sub> N/GaN HEMTs with Al <sub>0.08</sub> Ga <sub>0.92</sub> N Back-barrier Wan-Soo Park <sup>1</sup> , Hyeok-Jun Lee <sup>1</sup> , Su-Min Choi <sup>1</sup> , Sang-Kuk Kim <sup>2</sup> , Jae-Hak Lee <sup>1</sup> , Tae-Woo Kim <sup>3</sup> , Kyounghoon Yang <sup>4</sup> , and Dae-Hyun Kim <sup>1</sup> <sup>1</sup> Kyungpook National University, <sup>2</sup> QSI, <sup>3</sup> Texas Tech University, <sup>4</sup> KAIST
FN3-E-3 15:55-16:10	Impact of Gate Field Plate on Kink Phenomenon in S22 of AlGaIn/GaN HEMTs for RF Applications: A Comparative Study Xuejing Yang <sup>1</sup> , Yongsik Jeong <sup>1</sup> , Wan-Soo Park <sup>2</sup> , Su-Min Choi <sup>2</sup> , Dae-Hyun Kim <sup>2</sup> , and Kyounghoon Yang <sup>1</sup> <sup>1</sup> KAIST, <sup>2</sup> Kyungpook National University
FN3-E-4 16:10-16:25	Positive-Bias-Stress Instability (PBTI) and Fast Trap Generation in AlGaIn/GaN HEMTs during On-State Condition Kevin Samways and Tae-Woo Kim Department of Electrical and Computer Engineering, TTU, Texas
FN3-E-5 16:25-16:40	$L_g = 50$ nm In <sub>0.17</sub> Al <sub>0.83</sub> N/GaN HEMTs with $f_T = 120$ GHz and $f_{\max} = 300$ GHz Hyeok-Jun Lee <sup>1</sup> , Su-Min Choi <sup>1</sup> , Wan-Soo Park <sup>1</sup> , Hyo-Jin Kim <sup>1</sup> , Jae-Hak Lee <sup>1</sup> , Kyounghoon Yang <sup>2</sup> , and Dae-Hyun Kim <sup>1</sup> <sup>1</sup> School of Electronic and Electrical Engineering, Kyungpook National University, <sup>2</sup> KAIST





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FN3-E-6 16:40-16:55	Device-Level Thermal Management of GaN HEMTs through Electro-Thermal Modeling Changhwan Song, Jisu Kim, and Jungwan Cho School of Mechanical Engineering, Sungkyunkwan University
FN3-E-7 16:55-17:10	Evaluation of Al-rich AlGaIn Channel Layers in HEMTs Grown by Conventional and Pulsed Flow MOCVD Techniques Shyam Mohan, Joocheol Jeong, Jooyong Park, Joonhyuk Lee, Jaejin Heo, and Okhyun Nam Convergence Center for Advanced Nano Semiconductor, Department of Nano Semiconductor, Tech University of Korea