2023년 2월 15일(수), 14:00-15:45
하이원 그랜드호텔(컨벤션타워), 컨벤션홀 및 메인로비 (5층)

[WP1] 포스터 세션 2

C. Material Growth & Characterization

심사위원: 백승협 책임연구원(KIST), 최우석 교수 (성균관대학교)

WP1-001	**Ex-situ Strain Profiling of AlGaN/GaN HEMTs Using Surface-plasmon Enhanced Raman Spectroscopy** Jae Sang Kang[1], Jae Sun Kim[1], Jung Ki Park[1], Gyeong Eun Choi[1], Gyu Hwi Jeong[1], Young Boo Moon[2], Deok Gyu Bae[3], and Jung Hoon Song[1] *[1]Department of Physics, Kongju National University, [2]UJL Inc., [3]Hexasolution Co., Ltd.*
WP1-002	**Improved Performance of 620nm-Light Emitting Diodes based on InGaN MQWs for Micro-LED Display** Jae Sun Kim[1], Jae Sang Kang[1], Gyeong Eun Choi[1], Jung Ki Park[1], Gyu Hwi Jeong[1], Sung Min Hwang[2], In Sung Jo[2], Won Taek Lim[2], and Jung Hoon Song[1] *[1]Department of Physics, Kongju National University, [2]Soft-EPi Inc.*
WP1-003	**Low-temperature MOCVD-grown Wafer-scale $SnSe_2$ Thin Films and $SnSe_2$-to-SnSe Phase Transition** Sungyeon Kim[1], Hoyeon Cho[1], Wookhee Lee[1], Seonhwa Jeon[1], Kyungmin Ko[1], Jaewon Kim[1], Sungkyu Kim[2], Feng Ding[1], and Joonki Suh[1,3] *[1]Department of Materials Science and Engineering, UNIST, [2]Department of Nanotechnology and Advanced Materials Engineering, Sejong University, [3]Graduate School of Semiconductor Materials and Devices Engineering, UNIST*
WP1-004	**Chemisorption Inhibition Control for Molybdenum Disulfide Thin Film by Atomic Layer Deposition** Soo Min Yoo[1,2], Dong Hee Han[1,2], Min Kyeong Nam[1,2], Seungwoo Lee[1,2], Yewon Kim[1,2], and Woojin Jeon[1,2] *[1]Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, [2]Integrated Education Program for Frontier Science and Technology (BK21 Four), Kyung Hee University*
WP1-005	**Characterization and Control of Thru-Holes in Reduced Graphene Oxide and Directly Grown Graphene as a Mask for Thru-Hole Epitaxy** Hyunkyu Lee[1], Gyuseock Ko[2], Jae Hun Kim[2], Jong Woo Ha[2], Hyung Beom Kim[2], Hyeonoh Jo[2], Hansol Kim[3], Jieun Yang[3], and Chinkyo Kim[1,2] *[1]Department of Information Display, Kyung Hee University, [2]Department of Physics, Kyung Hee University, [3]Department of Chemistry, Kyung Hee University*
WP1-006	**Study on Diode Characteristics and Solar Cell Application of N-$Nb_xTi_{1-x}O_2$ on P-Si** Woo Il Jeong and Jong Hyun Song *Department of Physics, Chungnam National University*

WP1-007	**EUV 리소그래피 응용을 위한 VAD 공법 활용 Ti-doped 석영 잉곳 제조** U Sik Kim, Sang Yeol Shin, Seung Ho Lee, Jaesun Kim, and Sung Koog Oh *Taihan Fiberoptics Co., Ltd.*
WP1-008	**Self-poled Flexible Piezoelectric Thin Film for Energy Harvesting** Hwan Min Kim[1,2], Do Hyeon Woo[1,2,3], Hyoung-Su Han[4], Chang Won Ahn[1,2], Jong Hoon Jung[5], Tae Heon Kim[1,2], and Ill Won Kim[1,2] *[1]Department of Physics, University of Ulsan, [2]Energy Harvest-Storage Research Center, University of Ulsan, [3]Quintess Co., Ltd., [4]School of Materials Science and Engineering, University of Ulsan, [5]Department of Physics, Inha University*
WP1-009	**Dislocation-driven Pinching of Hysteretic Characteristics in $Bi_{1/2}Na_{1/2}TiO_3$-Based Ferroelectric Thin Films** Yong Jin Jo[1,2], Muhammad Sheeraz[1,2], Viet-Dung Tran[2], Gyehyeon Kim[3], Changhee Sohn[3], Ill Won Kim[1,2], Chang Won Ahn[1,2], Young-Han Shin[2], and Tae Heon Kim[1,2] *[1]Energy Harvest-Storage Research Center, University of Ulsan, [2]Department of Physics, University of Ulsan, [3]Department of Physics, UNIST*
WP1-010	**Highly Conformal Ultrathin Sb_2Te_3 Films by Suppressed Growth in Atomic Layer Deposition** Wonho Choi[1,2], Chanyoung Yoo[1,2], Jeong Woo Jeon[1,2], Byongwoo Park[1,2], Gwangsik Jeon[1,2], Sangmin Jeon[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-011	**Morphological Properties of HfS_2 Affected by Ar Flow Rate during Synthesis in Chemical Vapor Deposition** Juchan Hwang and Kwangwook Park *Jeonbuk National University*
WP1-012	**Formation of Ferroelectric Phase in HZO by the 2-Step Process of PLD and RTA for Negative Capacitance FET** Hyun Yeol Rho, Hae Won Cho, Yongin Cho, and Sunkook Kim *Multifunctional Nano Bio Electronics Lab, School of Advanced Materials Science and Engineering, Sungkyunkwan University*
WP1-013	**Reduction of Threshold Voltage of MoS_2-Based FET via Interface Hydroxylation during CVD** Hwi Yoon[1], Jisang Yoo[1], Jaehyeok Kim[1], Yunyong Nam[2], Jun Hyung Lim[2], Seung-min Chung[1], and Hyunjun Kim[1] *[1]School of Electrical and Electronic Engineering, Yonsei University, [2]Samsung Display Co., Ltd.*
WP1-014	**Spectroscopic Ellipsometry Analysis of the Optical Bandgap and Defect State in Amorphous Silicon Nitride Film** Hyun Don Kim[1,2], Minseon Gu[1,2], Xuan Au Nguyen[3], Tae Jung Kim[3], Young Dong Kim[3], Moonsup Han[1,2], E.J. Choi[1,2], and Young Jun Chang[1,2] *[1]Department of Physics, University of Seoul, [2]Department of Smart City, University of Seoul, [3]Kyung Hee University*
WP1-015	**Investigation of Defect States in Silicon Nitrides Using Electron and Optical Spectroscopy** Minseon Gu[1], Hyun Don Kim[1,2], Kyu-Myung Lee[3], Yongsup Park[3], Moonsup Han[1], E.J. Choi[1], and Young Jun Chang[1,2] *[1]Department of Physics, University of Seoul, [2]Department of Smart Cities, University of Seoul, [3]Department of Physics, Kyung Hee University*

WP1-016	**Rotating of Whole Crystals and Structural Characterization of Homoepitaxial β-Ga_2O_3 Epilayers Grown by MOCVD** Raouf Hayyak[1], Taswar Iqbal[1], Trong Si Ngo[1], Nguyen Quoc Vuong[1], Byung Ju Lee[1], Soon-Ku Hong[1], Dae-Woo Jeon[2], and Ji-Hyeon Park[2] *[1]Department of Materials Science and Engineering, Chungnam National University, [2]KICET*
WP1-017	**Homoepitaxial MBE Growth and Characterization of Si doped Ga_2O_3 Epilayers on (001) and (010) β-Ga_2O_3 Substrates** Nguyen Quoc Vuong, Trong Si Ngo, Taswar Iqbal, Raouf Hayyak, Byung Ju Lee, and Soon-Ku Hong *Department of Materials Science and Engineering, Chungnam National University*
WP1-018	**HfO_2 Epitaxy on Si-wafer for Ferroelectric Gate Oxide by Combining Sputtering and Annealing Process** Sung-Jin Jung[1], Hyung-Jin Choi[1], Jun Young Lee[1], Soo Young Jung[1], Min seok Kim[1], Seong Keun Kim[1], and Seung Hyub Baek[1,2,3] *[1]KIST, [2]Yonsei University, [3]Korea University of Science and Technology*
WP1-019	**Defects in PAMBE Grown Homoepitaxial (001) β-Ga_2O_3 Films and Effects of Ga Pre-exposure Prior to Growth** Trong Si Ngo, Taswar Iqbal, Raouf Hayyak, Nguyen Quoc Vuong, Byung Ju Lee, and Soon-Ku Hong *Department of Materials Science and Engineering, Chungnam National University*
WP1-020	**The Study of Intrinsic Piezoelectricity in Sm Doped PMN-PZT Thin Films with Morphotropic Phase Boundary Using In-situ XRD Diffraction Using Synchrotron** Jun Young Lee[1], Min-Seok Kim[1], Ruiguang Ning[1], Soo Young Jung[1], Hyung-Jin Choi[1], Sung-Jin Jung[1], Su Yong Lee[2], and Seung-Hyub Baek[1] *[1]Electronic Materials Research Center, KIST, [2]Pohang Accelerator Laboratory*
WP1-021	**Reduction of Threading Dislocation Density on the Ultra-thin GaAs Buffer on GaP/Si Substrate by Molecular Beam Epitaxy** Tsimafei Laryn[1,2], Rafael Jumar Chu[1,2], and Daehwan Jung[1,2] *[1]Center for Opto-Electronic Materials and Devices, KIST, [2]Division of Nanoscience and Technology, KIST School, University of Science and Technology (UST)*
WP1-022	**Hetero-epitaxial Piezoelectric Film for Fingerprint and Vein Recognition System** Soo Young Jung[1,2], Jin Soo Park[3,4], Byeong-hyeon Lee[5], Sung-Ok Won[5], Byung Chul Lee[3], Ho Won Jang[2], and Seung-Hyub Baek[1,6] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Research Institute of Advanced Materials, Seoul National University, [3]Bionics Research Center, KIST, [4]Department of Electrical Engineering, Korea University, [5]Advanced Analysis Center, KIST, [6]Nanomaterials Science and Engineering, KIST School, University of Science and Technology (UST)*
WP1-023	**Multiphysics Simulation of Growing Processes for CaF_2 Single Crystals Using Double-crucible Czochralski Method** Hae-Jin Jeon[1,2], Yun-Ji Shin[1], Si-Young Bae[1], Won-Jae Lee[2], and Seong-Min Jeong[1] *[1]KICET, [2]Dong-Eui University*
WP1-024	**Anomalous Domain Switching in Ferroelectric Si-doped HfO_2 Thin Film Capacitors** Yoon Ki Kim, Hyo Bin Yoo, and Sang Mo Yang *Sogang University*

WP1-025	**Graphene Capping Effect on InAs/GaAs Quantum Dot Photoluminescence and Its Carrier Transfer Mechanism** Quang Nhat Dang Lung[1,2], Rafael Jumar Chu[1,2], Tsimafei Laryn[1,2], Yeonhwa Kim[1,3], May Angelu Madarang[1,2], and Daehwan Jung[1,2] *[1]Center for Opto-Electronic Materials and Devices, KIST, [2]Division of Nano and Information Technology, KIST School, University of Science and Technology (UST), [3]Department of Materials Science and Engineering, Korea University*
WP1-026	**The Growth Behaviors and Electrical Properties of TiO_2 Thin Films Using Discrete Feeding Method Atomic Layer Deposition** Jonghyun Kim[1], Daeun Lim[2], Yeji Lee[1], Hyeong Jun Kim[1], Yumi Wang[3], Hongseok Jang[3], Suhyong Yun[3], Eun A Kim[1], Seong-Yong Cho[1], and Woongkyu Lee[2] *[1]Myongji University, [2]Soongsil University, [3]Oceanbridge Co., Ltd.*
WP1-027	**Physical Surface Reaction Modeling Using Monte-Carlo Simulation in Atomic Layer Deposition** 구본욱, Chi Thang Nguyen, Trinh Ngoc Le, 이한보람 *인천대학교 신소재공학과*
WP1-028	**Growth of Gallium Oxide Thin Films on c-, a-, m-, r-Plane Sapphire Substrates Using Mist Chemical Vapor Deposition** Gi-Ryeo Seong[1,2], Seong-Ho Cho[1,2], Kyoung-Ho Kim[1,2], Yun-Ji Shin[1], Seong-Min Jeong[1], Tae-Gyu Kim[2], and Si-Young Bae[1] *[1]KICET, [2]Pusan National University*
WP1-029	**Investigation of Dislocation in (100) β-Ga_2O_3 Single Crystal Grown by EFG Method** Mee-Hi Choi[1], Woon-Hyeon Jeong[1,2], Seong-Ho Cho[1,2], Seong-Min Jeong[1], Yun-Ji Shin[1], and Si-Young Bae[1] *[1]KICET, [2]Pusan National University*
WP1-030	**Heteroepitaxial Growth of κ-$(Al_xGa_{1-x})_2O_3$ Alloy Films on 4H-SiC Substrates Using Mist Chemical Vapor Deposition** Seong-Ho Cho[1,2], Yun-Ji Shin[1], Seong-Min Jeong[1], Se-Hun Kwon[2], and Si-Young Bae[1] *[1]KICET, [2]Pusan National University*
WP1-031	**Non-Solution Predeposition Process for Enhancing Two-dimensional Growth of Transition Metal Dichalcogenides** Minkyun Son[1,2], Minsu Kim[1], Dong-Bum Seo[1], Jin Kim[1], Moonjeong Jang[1], Dong In Kim[1], Seunghun Lee[1], Soonmin Yim[1], Wooseok Song[1], Sung Myung[1], Jung-Woo Yoo[2], Sun Sook Lee[1], and Ki-Seok An[1] *[1]KRICT, [2]UNIST*
WP1-032	**Laser Crystallization of Ge Layers Grown on MgO Substrates** Jonghwa Baek, Jongyeon Baek, Manh-Cuong Nguyen, An Hoang-Thuy Nguyen, Anh-Duy Nguyen, and Rino Choi *3D Convergence Center and Department of Materials Science and Engineering, Inha University*
WP1-033	**Epitaxial Growth of Ga_2O_3 Films with Different Ligand Structures by Mist Chemical Vapor Deposition** Jang Hyeok Park and You Seung Rim *Department of Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone, Sejong University*

WP1-034	**Meniscus Control of Ga_2O_3 Single Crystal Growth in EFG Method** Woon-Hyeon Jeong[1,2], A-Ran Shin[1,2], Tae-Hun Gu[1,2], Se-Hun Kwon[2], Yun-Ji Shin[1], Seong-Min Jeong[1], and Si-Young Bae[1] *[1]KICET, [2]Pusan National University*
WP1-035	**Characteristics of p-NiO/n-Ga_2O_3 Heterojunction Thin Film Grown by Mist Chemical Vapor Deposition** Min-Seong Kong[1,2], Seong-Ho Cho[1], Kyoung-Ho Kim[1], Min-Su Park[2], and Si-Young Bae[1] *[1]KICET, [2]Department of Electronics Engineering, Dong-A University*
WP1-036	**Improvement of Electrical Properties of Sn-doped α-Ga_2O_3 Thin Film Using Heat-Treated Buffer Layers** Kyoung-Ho Kim[1,2], Heesoo Lee[2], Yun-Ji Shin[1], Seong-Min Jeong[1], and Si-Young Bae[1] *[1]KICET, [2]Pusan National University*
WP1-037	**Stabilization of Memristive Switching based on Highly Polycrystalline Two-dimensional Molybdenum Ditelluride** Jihoon Yang[1,2], Aram Yoon[1,2,3], Donghyun Lee[1,2], Il-John Jung[1,2], Dong-Hyeok Lim[1,2], Hongsik Jeong[1,2], Zonghoon Lee[1,2,3], and Soon-Yong Kwon[1,2] *[1]Department of Materials Science and Engineering, UNIST, [2]Graduate School of Semiconductor Materials and Devices Engineering, UNIST, [3]Center for Multidimensional Carbon Materials, IBS*
WP1-038	**Defect Characterizations of β-Ga_2O_3 Single Crystals Using X-ray Topography** Tae-Hun Gu[1,2], Woon-Hyeon Jeong[1,2], A-Ran Shin[1,2], Sung Sik Lee[2], Yun-Ji Shin[1], Seong-Min Jeong[1], and Si-Young Bae[1] *[1]KICET, [2]Pusan National University*
WP1-039	**High Rate and Large Capacity Supercapacitors by Three-dimensional Shape Engineering, Interfacial Gelation of Reduced Graphene Oxide** S. J. Cha, U. N. Maiti, and S. O. Kim *KAIST*
WP1-040	**Material Properties of Ga_2O_3 Single Crystal Properties depending on Powder Purity** A-Ran Shin[1,2], Tae-Hun Gu[1,2], Woon-Hyeon Jeong[1,2], Heesoo Lee[2], Yun-Ji Shin[1], Seong-Min Jeong[1], and Si-Young Bae[1] *[1]KICET, [2]Pusan National University*
WP1-041	**Pre-Treatment Effect on the InAs Nanowire Growth on Si(111) and Ge(111) Substrates** Chang-Hun Song[1,2], Hyunchul Jang[1], Keun Man Song[1], Yongsu Choi[1], Donghyun Kim[1], Dae-Hong Ko[2], and Chan-Soo Shin[1] *[1]KANC, [2]Yonsei University*
WP1-042	**Ultra-thin Ge Single-junction Solar Cells Transferred onto a Flexible Substrate for Thin-film InGaP/(In)GaAs/Ge Tandem Solar Cells** Sunghyun Moon[1], Yeojun Yun[1], Sujong Kim[1], Doyoung Yuk[1], Younghan Yook[1], Sangwon Yoon[1], Haoyan Rong[1], Ho Kwan Kang[2], Kyung-Ho Park[2], and Jaejin Lee[1] *[1]Department of Electrical and Computer Engineering, Ajou University, [2]KANC*

WP1-043	**Optimization of MOCVD Epitaxy Process for the High Quality InP HEMT Devices** Hyunchul Jang[1], Jaephil Shim[1], Chang-Hun Song[1,2], Keun Man Song[1], Yongsu Choi[1], Donghyun Kim[1], and Chan-Soo Shin[1] *[1]KANC, [2]Yonsei University*
WP1-044	**Epitaxial Growth of HfO_2-Based Thin Films by Sputtering for Ferroelectric Devices** Hyung-Jin Choi[1], Sung-Jin Jung[1], Jun Young Lee[1], Haneul Choi[2], Byeong-hyeon Lee[2], Sung Ok Won[2], Hye Jung Chang[2], and Seung-Hyub Baek[1,3,4,5] *[1]Electronic Materials Research Center, KIST, [2]Advanced Analysis Center, KIST, [3]Division of Nano and Information Technology, KIST School, University of Science and Technology (UST), [4]Department of Materials Science and Engineering, Yonsei University, [5]Yonsei-KIST Convergence Research Institute, KIST*
WP1-045	**Large-sized Diamond with Ensemble NV Center Using Nitrogen In-situ Doping for Wide-field Quantum Sensor** Seongmin Kang[1], Taemyong Kwak[1], Seolyoung Oh[1], Sanghun Han[1], Seongwoo Kim[2], and Okhyun Nam[1] *[1]Department of Nano-Semiconductor Engineering, Tech University of Korea, [2]Orbray Co., Ltd.*
WP1-046	**양방향 사전 인장 기술을 적용한 신축성 구리 전극의 제작 및 인장 특성 분석** Jonghyun Jeong, Jinyeong Lee, and Jaewook Jeong *School of Information and Communication Engineering, Chungbuk National University*
WP1-047	**Ferroelectricity in Epitaxial $Zn_{1-x}Mg_xO$ Thin Films** Dong Hun Han[1,2], Hyung Jin Choi[1], Jun Young Lee[1], Soo Young Jung[1,2], Min Seok Kim[1,2], Ho Won Jang[2], and Seung Hyub Baek[1,3,4,5] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Research Institute of Advanced Materials, Seoul National University, [3]Division of Nano and Information Technology, KIST School, University of Science and Technology (UST), [4]Department of Materials Science and Engineering, Yonsei University, [5]Yonsei-KIST Convergence Research Institute, KIST*
WP1-048	**Heteroepitaxy of Twin-free Single Crystal (111) Diamond on a Sapphire Substrate** Hyeonu Kang[1], Uiho Choi[1], Jongbeom Lee[1], Yeonghwa Kwon[1], Taemyung Kwak[1], Joocheol Jeong[1], Geunho Yoo[1], Seong-Woo Kim[2], and Okhyun Nam[1] *[1]Department of Nano and Semiconductor, Tech University of Korea, [2]Orbray Co., Ltd.*
WP1-049	**Studies of Nitrogen Delta-doped CVD Diamond Using UVH-MPCVD for Quantum Sensor** Seolyoung Oh, Taemyong Kwak, Seongmin Kang, Sanghun Han, and Okhyun Nam *Convergence Center for Advanced Nano Semiconductor, Department of Nano-Semiconductor, Tech University of Korea*
WP1-050	**Kinetic Modeling of Atomic Layer Deposition of HfO_2 Using Tris(Dimethylamino) Cyclopentadienyl Hafnium as the Hf Source** Nhat-Minh Phung[1,2], Min-Seong Kong[1,3], Si-Young Bae[1], Soonil Lee[2], and Seong-Min Jeong[1] *[1]KICET, [2]Changwon National University, [3]Dong-A University*

WP1-051	**Quality Improvement of Heteroepitaxial Diamond Using Silicon-on-Insulator Substrate** Jongbeom Lee[1], Uiho Choi[1], Hyeonu Kang[1], Yeonghwa Kwon[1], Taemyung Kwak[1], Joocheol Jeong[1], Geunho Yoo[1], Seong-Woo Kim[2], and Okhyun Nam[1] *[1]Department of Nano and Semiconductor Engineering, Tech University of Korea, [2]Orbray Co., Ltd.*
WP1-052	**Evolution of Temperature Distribution at the Growth Front of Ga_2O_3 Single Crystal via Edge-defined Film-fed Growth** Su-Min Lim[1], Nhat-Minh Phung[1,2], Yu-Ji Shin[1], Si-Young Bae[1], and Seong-Min Jeong[1] *[1]KICET, [2]Changwon National University*
WP1-053	**Evaluation of SiC Residual Sources after Growing SiC Single Crystals via Physical Vapor Transport Method** Seong-Min Jeong[1], Jae-Hyeon Park[1,2], Ju-Hyeong Sun[1], Si-Young Bae[1], Yun-Ji Shin[1], Chang-Min Kim[3], and Won-Jae Lee[4] *[1]KICET, [2]Pusan National Univeristy, [3]Hana Materials Inc., [4]Dong-Eui University*
WP1-054	**Rapid Physical Vapor Transport Growth of SiC Single Crystal from CVD-SiC Blocks as the Source** Seong-Min Jeong[1], Ju-Hyeong Sun[1], Jae-Hyeon Park[1,2], Yong-Hyeon Kim[1], Si-Young Bae[1], Yun-Ji Shin[1], Chang-Min Kim[3], and Won-Jae Lee[4] *[1]KICET, [2]Pusan National University, [3]Hana Materials Inc., [4]Dong-Eui University*
WP1-055	**P-type Diamond Metal Semiconductor Field Effect Transistor with Highly Boron-doped Contact Layer on Heteroepitaxial Diamond Substrate** Uiho Choi[1], Hyeonu Kang[1], Jongbeom Lee[1], Yeonghwa Kwon[1], Taemyung Kwak[1], Geunho Yoo[1], Seong-Woo Kim[2], and Okhyun Nam[1] *[1]Department of Nano and Semiconductor Engineering, Tech University of Korea, [2]Orbray Co., Ltd.*
WP1-056	**Growth of Quantum Dots with C-Band(1550nm) Emission on GaAs Substrates** Suk In Park and Jin Dong Song *KIST*
WP1-057	**Heteroepitaxial Diamond Grown on Compliant Substrate Using Silicon or Sapphire-Based Air-Void Structure** Yeonghwa Kwon[1], Uiho Choi[1], Hyeonu Kang[1], Jongbeom Lee[1], Taemyung Kwak[1], Joocheol Jeong[1], Geunho Yoo[1], Seong-Woo Kim[2], and Okhyun Nam[1] *[1]Department of Nano and Semiconductor Engineering, Tech University of Korea, [2]Orbray Co., Ltd.*
WP1-058	**Growth of InAs/GaAsSb Type II Super-Lattice on InAs Substrate by Molecular Beam Epitaxy** Sung-Yul L. Park[1,2] and Jin Dong Song[1] *[1]Center for Opto-Electronics Materials and Devices, KIST, [2]Division of Nano and Information Technology, KIST School, University of Science and Technology (UST)*
WP1-059	**Characteristics of Layered Perovskite Structure Nanosheets Film through Layer Control** So-Yeon Yoo[1,2], Haena Yim[1], Sahn Nahm[2], and Ji-Won Choi[1,3] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Korea University, [3]Division of Nano and Information Technology, KIST School, University of Science and Technology (UST)*

D. Thin Film Process Technology

심사위원: 김성근 책임연구원(한국과학기술연구원), 안지훈 교수(한양대학교), 한정환 교수(서울과학기술대학교), 엄태용 선임연구원(한국화학연구원), 백인환 교수(인하대학교)

WP1-060	**Phase-Shift Controller for Analog Circuit Application Using 2-D Material** Seokheon Kong, June Hyeong Kim, Huiwon Kim, and Seul Ki Hong *Seoul National University of Science and Technology*
WP1-061	**Engineering the Linear Conductance Characteristics in PVP Polymer Based Neuromorphic Device for Physical Transient Healthcare Application** Shaikh Mohammad Tauquir A.S. and You Seung Rim *Department of Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone, Sejong University*
WP1-062	**Biocompatible Agarose-Based Resistive Random Access Memory for Transient Electronics** Tan Hoang Vu Nguyen and You Seung Rim *Department of Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone, Sejong University*
WP1-063	**Characteristics of Amorphous Ga_2O_3 Thin Film Growth on Ti Substrates at Low Temperatures Using MOCVD** Nam Jun Ahn, Jang Beom An, Kyoung Hwa Kim, Hyung Soo Ahn, and Min Yang *Nano Semiconductor Engineering, Korea Maritime and Ocean University*
WP1-064	**Forming Gas Annealing에 의한 Ru/W Interface에서의 산소 거동 연구** 김성준[1], 김선용[2], 박인성[3], 박영욱[2], 안진호[1,2] *[1]한양대학교 나노반도체공학과, [2]한양대학교 신소재공학과, [3]한양대학교 나노과학기술연구소*
WP1-065	**Ultralow-Power Transistor with Super-Steep Slope Switching via Graphene-Based Contact Engineering** Seyoung Oh[1,2] and Byungjin Cho[1,2] *[1]Department of Urban, Energy, and Environmental Engineering, Chungbuk National University,* *[2]Department of Advanced Materials Engineering, Chungbuk National University*
WP1-066	**2D NbS_2/MoS_2/p-Si Heterostructured Photodetector Enabling High Photoresponsivity in Visible Wavelength** Hyun Young Seo[1] and Byungjin Cho[1,2] *[1]Department of Urban, Energy, and Environmental Engineering, Chungbuk National University,* *[2]Department of Advanced Materials Engineering, Chungbuk National University*
WP1-068	**A New Synthetic Method of Organic-Inorganic Hybrid Materials for Electrochemical Energy Storage** Jiwoong Ham and Nari Jeon *Department of Materials Science and Engineering, Chungnam National University*

WP1-069	**Reduction of SiO_x Interface Layer Utilizing the Remote Scavenging Effect of Ti Layer on Ferroelectric (Hf, Zr)O_2 Thin Film** Hyun Woo Jeong[1,2], Se Hyun Kim[1,2], Kun Yang[1,2], Younghwan Lee[1,2], and Min Hyuk Park[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-070	**Effect of Hydrogen Plasma Treatment on Electrical Synaptic Properties of Oxide Transistors** Min A Park[1] and Jung Wook Lim[1,2] *[1]ETRI, [2]University of Science and Technology (UST)*
WP1-071	**Selective Passivation of 2D TMD Surface Defects by Atomic Layer Deposited Al_2O_3 for Enhancement of Recovery Properties of Gas Sensor** Raeyoung Lee[1], Inkyu Sohn[1], Sungjoo Wi[1], Youngjun Kim[1], Myoungsub Kim[1,2], Hwi Yoon[1], Dain Shin[1], Jaehyeok Kim[1], Jeongwoo Seo[1], Seung-min Jung[1], and Hyungjun Kim[1] *[1]School of Electrical and Electronic Engineering, Yonsei University, [2]SK Hynix*
WP1-072	**Surface-Dominated HfO_2 Nanorod-Based Memristor Exhibiting Highly Linear and Symmetrical Conductance Modulation for High-Precision Neuromorphic Computing** Jae Uk Kwon[1,2], Young Geun Song[1], Ji Eun Kim[1,2], Suk Yeop Chun[1,3], Gu Hyun Kim[4], Gichang Noh[5], Joon Young Kwak[5], Sunghoon Hur[1], Chong-Yun Kang[1,3], Doo Seok Jeong[4], Soong Ju Oh[2], and Jung Ho Yoon[1] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Korea University, [3]KU-KIST Graduate School of Converging Science and Technology, Korea University, [4]Division of Materials Science and Engineering, Hanyang University, [5]Center for Neuromorphic Engineering, KIST*
WP1-073	**Top Gate a-ITGZO 박막트랜지스터에서 Al_2O_3 Buffer Layer의 Channel Passivation 효과 연구** 강민구[1], 조경아[1], 공희성[1], 김재범[2], 임준형[2], 김상식[1] *[1]고려대학교 전기전자공학과, [2]삼성디스플레이*
WP1-074	**Control Se Vacancy of 2D $MoSe_2$ Thin Films Deposited by Plasma Enhanced Atomic Layer Deposition** Ji-Min Lee, Jeong-Hun Choi, Dong Geun Kim, and Ji-Hoon Ahn *Department of Materials Science and Chemical Engineering, Hanyang University*
WP1-075	**Comparative Study of Nitrogen Incorporation and O_3 Treatment of Al_2O_3 Passivation Layer between ZrO_2/Ge** Byoung-Jun Won, Sung-Min Park, Young-Jin Lim, Seoung-Il Kim, and Il-Kwon Oh *Department of Electrical and Computer Engineering, Ajou University*
WP1-076	**SiO_2 Nanorods-Based Threshold Switching Device with High Speed for True Random Number Generator** Keun Ho Soh[1,2], Ji Eun Kim[1,2], Jae Uk Kwon[1,2], Suk Yeop Chun[1,3], Chong-Yun Kang[1,3], Soo Young Kim[2], and Jung Ho Yoon[1] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Korea University, [3]KU-KIST Graduate School of Converging Science and Technology, Korea University*

WP1-077	**Atomic Layer Deposited Mono-Elemental 2D Tellurium** Changhwan Kim[1], Namwook Hur[1], Jiho Yang[3], Saeyoung Oh[2], Hu Young Jeong[2], Bonggeun Shong[3], and Joonki Suh[1,2] *[1]Department of Materials Science and Engineering, UNIST, [2]Graduate School of Semiconductor Materials and Devices Engineering, UNIST, [3]Department of Chemical Engineering, Hongik University*
WP1-078	**Vertical MoS_2 Field-Effect Transistors with Sub-nm Ultimate Body Scaling** Hui Min Lee[1], Jae Won Kim[2], Byungchul Jang[3], and Joonki Suh[1,2] *[1]Graduate School of Semiconductor Materials and Engineering, UNIST, [2]Department of Materials Science and Engineering, UNIST, [3]School of Electronics Engineering, Kyungpook National University*
WP1-079	**Suppression of Interfacial Layer Formation in ZrO_2-Based Capacitors with TiN Electrode by Adopting MgO Thin Films as an Oxygen Diffusion Barrier** Seungwoo Lee[1,2], Dong Hee Han[1,2], Hyeon Ho Seol[1,2], Min Kyeong Nam[1,2], Daeyeong Kim[3], Hansol Oh[3], Hanbyul Kim[3], Yongjoo Park[3], and Woojin Jeon[1,2] *[1]Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University, [2]Integrated Education Program for Frontier Science and Technology (BK21 Four), Kyung Hee University, [3]Advanced Research Development Team, SK Trichem*
WP1-080	**Volatile Resistance Switching Behavior in Interface Engineered Hafnia Based Ferroelectric Thin Film** Joonbong Lee, Hojin Lee, Hyewon Lee, and Taekjib Choi *Hybrid Materials Research Center and Department of Nanotechnology and Advanced Materials Engineering, Sejong University*
WP1-083	**InGaZnO Field Effect Transistor with Buried-gate Structure Enabling Highly Stable Device** Do Hyeong Kim[1,2] and Byungjin Cho[1,2] *[1]Department of Urban, Energy, and Environmental Engineering, Chungbuk National University, [2]Department of Advanced Materials Engineering, Chungbuk National University*
WP1-084	**Deposition Characteristics of Molybdenum Thin Film Deposited by Thermal ALD** Baek-Ju Lee, Min-Ho Cheon, Kyu-Beom Lee, Hui-Seong Ru, Dong-Won Seo, and Jae-Wook Choi *Hanwha Corporation*
WP1-085	**The Effect of Thermal Conduction in Electrical Properties on InGaZnO Thin Film Transistor** Hyeonmin Bong[1,2], Jinsik Choe[1], Yeong Jae Kim[1], M. –H. Cho[2], and Sungjin Park[1] *[1]Icheon Branch, KICET, [2]Institute of Physics and Applied Physics, Yonsei University*
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WP1-091	**Development of Hybrid Dual-Channel Flexible Field-Effect Phototransistors Array by TeNWs/Te Film to Achieve High Uniformity and Photoresponsivity** Joo-On Oh, Muhammad Naqi, and Sunkook Kim *School of Advanced Materials Science and Engineering, Sungkyunkwan University*
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WP1-095	**순차적 침투 합성법을 사용한 유무기 복합 박막 제작 시 유기 공반응물의 영향** 고민경[1], 김형우[2], 전나리[1] *[1]충남대학교, [2]한국기계연구원*
WP1-096	**Improved Properties of the $SrRuO_3$ Electrode by Controlling Annealing Conditions and Adopting Al-doping** Junil Lim[1,2], Dae Seon Kwon[1,2], Haengha Seo[1,2], Tae Kyun Kim[1,2], Heewon Paik[1,2], Haewon Song[1,2], Jong Hoon Shin[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*

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WP1-101	**Enhanced Atomic Layer Deposition of Antimony Telluride by Ammonia Co-injection** Sangmin Jeon[1,2], Chanyoung Yoo[1,2], Jeong Woo Jeon[1,2], Wonho Choi[1,2], Byongwoo Park[1,2], Gwangsik Jeon[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
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WP1-134	**Enhancement Mode MoS_2 FET Engineering via O_2 Plasma Treatment with Al_2O_3 Barrier Layer** Inseong Lee, Hyeongjin Lim, Kiseong Song, Yunjae Choi, Hyeonji Lee, and Sung-Yool Choi *KAIST*
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WP1-141	**고성능 델타전도 스위칭 소자 기반의 재구성 가능한 논리소자** 전재현, 이용수, 김기영, 이호인, 권희진, 김민재, 이해원, 황현준, 이병훈 *Department of Electrical Engineering, POSTECH*
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WP1-155	**Impact of Atomic-Layer-Deposited Mo(C,N) Bottom Electrode on the Ferroelectric Properties of Hf-Zr-O Capacitors** Hyeonhui Jo, Ji Sang Ahn, Jina Kim, Hee Won Jang, and Jeong Hwan Han *Department of Materials Science and Engineering, Seoul National University of Science and Technology*

WP1-156	**Effects of Zr Doping on Threshold Switching Characteristics of Poly-crystalline ZnTe Thin Fims** Wansun Kim, Jaeyeon Kim, Ju-Young Jeong, Yoogeun Han, and Hyunchul Sohn *Department of Materials Science and Engineering, Yonsei University*
WP1-157	**패터닝 방법을 이용한 유·무기 TFT 기반의 논리 응용 회로 시연** 이용수[1,2], 권희진[1,2], 김민재[1,2], 김승모[1,2], 전재현[1,2], 이해원[1,2], 황현준[1,2], 이병훈[1,2] *[1]Center for Semiconductor Technology Convergence, POSTECH, [2]Department of Electrical Engineering, POSTECH*
WP1-158	**Atomic Layer Deposition of Two-Dimensional Bismuth Oxyselenide** Hyeonbin Park[1,2], Kibum Kang[2], Taeyong Eom[1], and Taek-Mo Chung[1] *[1]Division of Advanced Materials, KRICT, [2]Department of Materials Science and Engineering, KAIST*
WP1-159	**Al_2O_3/AlF_3 Multilayer Anti-Reflection Optical Coating Deposited by Atomic Layer Deposition Method** Seunghun Lee[1,2], Dong In Kim[1], Minsu Kim[1], Minkyun Son[1], Soonmin Yim[1], and Ki-seok An[1] *[1]Thin Film Materials Research Center, KRICT, [2]Department of Advanced Materials Science and Engineering, Sungkyunkwan University*
WP1-160	**1S1R Device with MAC Operation for Neuromorphic Computing Application** Su Yeon Lee, Hyun Kyu Seo, and Min Kyu Yang *Sahmyook University*
WP1-161	**Bias Stress Instability of Solution-processed Amorphous InGaZnO Thin-film Transistors by Rapid Thermal Annealing Process** Jaehyun Ahn and Jaewook Jeong *School of Information and Communication Engineering, Chungbuk National University*
WP1-162	**Self-rectifying Resistive Memory with Reliable Multiply-and-Accumulation Operation in Crossbar Array** Hyun Kyu Seo, Su Yeon Lee, and Min Kyu Yang *Sahmyook University*
WP1-163	**Resistive Switching Characteristics of $La_xNi_{1-x}O_y$ Thin Film Deposited by RF Sputtering** Jeongwoo Lee, Jaeyoung Joo, and Hyunchul Sohn *Department of Materials Science and Engineering, Yonsei University*
WP1-164	**Role of a Cyclopentadienyl Ligand in Hf Precursors in Atomic Layer Deposition by Comparing TEMAH and $CpHf(NMe_2)_3$** Seo-Hyeon Jeong[1], Yeon-Je Yu[1], Geun-Ha Oh[1], Ja-Yong Kim[2], Dohee Kim[2], and Il-Kwon Oh[1] *[1]Department of Electrical and Computer Engineering, Ajou University, [2]Revolutionary Technology Center, R&D Division, SK Hynix*

WP1-165	**Optimization of the Offset Ratio in a-IGZO TFTs with Drain Offset Structure for High-Voltage Electronics Applications** Jungha Lee and Hongki Kang *Department of Electrical Engineering and Computer Science, DGIST*
WP1-166	**Metal Interlayer in $Hf_{0.5}Zr_{0.5}O_2$ to Improve Ferroelectricity** Si-un Song, Anh-Duy Nguyen, Ye-eun Hong, and Rino Choi *Department of Material Science and Engineering, Inha University*
WP1-167	**A Comparative Study of Atomic Layer Deposited SnO_2 Using H_2O and O_3 as Oxygen Sources** Yi Ji Jeong[1], Ae Rim Choi[1], Dong Hyun Lim[1], Dohee Kim[2], Seung Wook Ryu[2], Seiyon Kim[2], Youngbae Ahn[2], and Il Kwon Oh[1] *Department of Electrical and Computer Engineering, Ajou University*
WP1-168	**Area-Selective Atomic Layer Deposition of Cobalt Metal Layer Using Self-Assembled Monolayer (SAM)** Chae Won Kim, Moon Suk Choi, Ji Hyeon Sim, Hyeong Jun Kim, and Changhwan Choi *Division of Materials Science and Engineering, Hanyang University*
WP1-169	**Growth Mechanism of Ge-Sb-Te Thin Films by Supercycles of ALD GeTe and Sb_2Te_3** Okhyeon Kim[1], Yewon Kim[1], Hyunmin Han[1], Hye-Lee Kim[2], Chang Yup Park[3], Dong Geon Koo[3], Dong-Ho Ahn[3], Bong Jin Kuh[3], and Won-Jun Lee[1,2] *[1]Department of Nanotechnology and Advanced Materials Engineering, Sejong University, [2]Metal-organic Compounds Materials Research Center, Sejong University, [3]Samsung Electronics Co., Ltd.*
WP1-170	**Enhanced Ferroelectric Switching Properties in Si FeFETs by Engineering of Oxygen Sources in $HfZrO_x$ Atomic Layer Deposition** Jihoon Jeon[1,2], Song-hyeon Kuk[3], Sang Hyeon Kim[3], Seung-Hyub Baek[2], and Seong Keun Kim[1,2] *[1]KU-KIST Graduate School of Converging Science and Technology, Korea University, [2]Electronic Materials Research Center, KIST, [3]School of Electrical Engineering, KAIST*
WP1-171	**A Study on the Oxidation State for Oxide Semiconductors with Relative Quantification** Min-Yeong Choi[1,2], Yong-Eun Kwon[1], Young-Min Kim[2], and Jae Hyuck Jang[1,3] *[1]Center for Electron Microscopy Research, KBSI, [2]Department of Energy Science, Sungkyunkwan University, [3]Graduate School of Analytical Science and Technology*
WP1-172	**Reaction Mechanism of Thermal Atomic Layer Deposition of Silicon Carbonitride Thin Films** Tanzia Chowdhury[1], Hye-Lee Kim[2], Khabib Khumaini[1,3], Romel Hidayat[1], Jeong Woo Han[4], Jae Seok An[4], Jang-Hyeon Seok[4], Jung Woo Park[4], and Won-Jun Lee[1,2] *[1]Department of Nanotechnology and Advanced Materials Engineering, Sejong University, [2]Metal-organic Compounds Materials Research Center, Sejong University, [3]Universitas Pertamina, [4]Hansol Chemical Co., LTD*

WP1-173	**Surface Reaction of Novel Zirconium Precursor for Atomic Layer Deposition of Zirconium Oxide: A Density Functional Theory Study** Romel Hidayat[1], Hye-Lee Kim[2], Sang-Ick Lee[3], and Won-Jun Lee[1,2] *[1]Department of Nanotechnology and Advanced Materials Engineering, Sejong University, [2]Metal-organic Compounds Materials Research Center, Sejong University, [3]DNF Co., Ltd.*
WP1-174	**Growth of h-BN by Adjusting Growth Conditions in CVD and Measurement of Crossbar Array Device Characteristics** Do Kyeong Yun and Woo Jong Yu *Department of Electrical and Computer Engineering, Sungkyunkwan University*
WP1-175	**Influence of Metal Doping in Ferroelectric and Ferromagnetic Properties of PFN Thin Films** Ahrom Ryu[1,2], Haena Yim[1], Sahn Nahm[2], and Ji-Won Choi[1,3] *[1]Center for Electronic Materials, KIST, [2]Department of Material Science and Engineering, Korea University, [3]Nanomaterials Science and Engineering, University of Science and Technology (UST)*
WP1-176	**Ideal Photodetector Using WSe_2/MoS_2 Heterostructure with Controlled Doping** Sung Hyun Kim and Woo Jong Yu *Department of Electrical and Computer Engineering, Sungkyunkwan University*
WP1-177	**High Photoresponsivity Photodetector by MoS_2/WSe_2 Heterostructure for Photodetector** Seok Won Choi and Woo Jong Yu *Department of Electrical and Computer Engineering, Sungkyunkwan University*

E. Compound Semiconductors

심사위원: 김동현 박사(KANC), 민병규 박사(ETRI)

WP1-178	**DC Characterizations of AlGaN/GaN FinFETs Dependent on Fin Widths** Ki-Sik Im, Yong-Goo Kim, and Byoung Man Bang *Department of Green Semiconductor System, Daegu Campus, Korea Polytechnics*
WP1-179	**Electrical Properties of Pt/p-$CuAlO_2$/β-Ga_2O_3 Heterojunction with a Copper Aluminum Oxide Interlayer** Chowdam Venkata Prasad and You Seung Rim *Department of Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone, Sejong University*
WP1-180	**Compared to AlGaN/GaN HEMTs' Electrical Characteristics with and without a SiCN Cap Layer** Yeo Jin Choi, Seung Mun Back, and Sung Jin An *Kumoh National Institute of Technology*
WP1-181	**Fabrication Process Dependence of Proton Irradiation Damage on GaN Electronics** Young Jun Yoon[1], Jae Hwa Seo[2], and Dong-Seok Kim[1] *[1]Korea Multi-purpose Accelerator Complex, KAERI, [2]Advanced Semiconductor Research Center, KERI*
WP1-182	**Analysis for the Electrical Characteristic of Recessed-Gate AlGaN/GaN MOSFET with Stepped Gate Oxide** Ga Eon Kang, Sang Ho Lee, Jin Park, Geon Uk Kim, Jun Hyeok Heo, So Ra Jeon, and In Man Kang *School of Electronic and Electrical Engineering, Kyungpook National University*
WP1-183	**틸트 이온주입을 적용한 1.2 kV 급 SiC Trench MOSFET의 차단모드 특성 개선을 위한 설계** 박영은, 윤효원, 김채윤, 김광재, 강규혁, 석오균 *금오공과대학교 전자공학부*
WP1-184	**Effects of Pulse I-V Stress on Normally-on AlGaN/GaN HEMT Devices** Sakhone Pharkphoumy[1], Hyeon Cheol Kim[1], Vallivedu Janardhanam[1], Tae-Hoon Jang[2], Chel-Jong Choi[1], and Kyu-Hwan Shim[1,2] *[1]School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Jeonbuk National University, [2]R&D Center, Sigetronics, Inc.*
WP1-185	**Enhanced Electrical Performance β-Ga_2O_3(100) MOSFET with Hafnium Oxide Passivation Layer** Seung Yoon Oh, Jeong Yong Yang, SangHee Kim, Gyuhyung Lee, and Geonwook Yoo *School of Electronic Engineering, Soongsil University*

WP1-186	**A Hybrid Schottky-Ohmic Drain Electrode for β-Ga_2O_3 Field-Effect Transistors** SangHee Kim, Yeong Je Jeong, Seung Yoon Oh, Gyuhyung Lee, and Geonwook Yoo *School of Electronic Engineering, Soongsil University*
WP1-187	**Growth of Si-on-SiC Using Mixed-Source Hydride Vapor Epitaxy** Seonwoo Park[1], Kyoung Hwa Kim[1], Suhyun Mun[1], Hyung Soo Ahn[1], Jae Hak Lee[1,2], Min Yang[1], Young Tea Chun[1], Sam Nyung Yi[1], Won Jae Lee[3], Sang-Mo Koo[4], and Suck-Whan Kim[5] *[1]Korea Maritime and Ocean University, [2]LNBS Co., Ltd., [3]Dong-Eui University, [4]Kwangwoon University, [5]Andong National University*
WP1-188	**β-Ga_2O_3 기반 쇼트키배리어다이오드의 오믹 접합 특성 향상 연구** Won Jin Song and You Seung Rim *Department of Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone, Sejong University*
WP1-189	**Elastic Stiffness Constants of $(Al_xGa_{1-x})_2O_3$ from First-principles Calculations** Hyo Kyung Lim and Byoung Don Kong *Department of Electrical Engineering, POSTECH*
WP1-190	**Thin-AlGaN/GaN MIS Gate HFET with ALD AlN Film** Won-Ho Jang, Jun-Hyeok Yim, and Ho-Young Cha *School of Electrical and Electronic Engineering, Hongik University*
WP1-191	**Investigation on the Effects of Defect Density of β-Ga_2O_3 Epitaxial Layer by Comparing Breakdown Voltage of Vertical Schottky Barrier Diode** Hyeon-Cheol Kim[1], Sakhone Pharkphoumy[1], Tae-Hoon Jang[2], Chel-Jong Choi[1], and Kyu-Hwan Shim[1,2] *[1]Jeonbuk National University, [2]R&D Division, Sigetronics, Inc.*
WP1-192	**Trench MIS 구조를 갖는 수직형 GaN PIN 다이오드의 구조 최적화** Sung-Hoon Lee[1], Jeongjin Kim[1], Cholho Kwak[2], Ho-Young Cha[1,2] *[1]School of Electronic and Electrical Engineering, Hongik University, [2]ChipsK Corp.*
WP1-193	**The Current Monitored p-GaN Etch Process for E-mode AlGaN/GaN HEMTs** Yumin Koh[1,2], Jiseon Lee[1], Arim Choi[1], Myungsoo Park[1], Yun-hee Shin[1], Dong-Hyun Kim[1], Sangwook Nam[2], and Kwang-Seok Seo[1] *[1]KANC, [2]Seoul National University*
WP1-194	**Analysis on Defect States of $FA_{1-x}MA_xPbI_3$ Perovskite Single Crystals Grown by Inverse Temperature Crystallization** Kyoung Su Lee[1], Dae Young Park[2], Mun Seok Jeong[2], and Eun Kyu Kim[1] *[1]Department of Physics and Research Institute of Natural Sciences, Hanyang University, [2]Department of Physics and Department of Energy Engineering, Hanyang University*

WP1-195	**SPDT MMIC 설계를 위한 GaN HEMT 스위치 소자 소신호 모델링** 김성일, 이상흥, 노윤섭, 장성재, 정현욱, 최일규, 안호균, 임종원 *한국전자통신연구원 DMC융합연구단*
WP1-196	**Process Optimization for Highly Uniform $In_{0.53}Ga_{0.47}As$ Channeled InP HEMT Devices on 3-inches-diameter InP(100) Substrate** Jaephil Shim[1], Hyunchul Jang[1], Chang-Hun Song[1,2], Donghyun Kim[1], and Chan-Soo Shin[1] *[1]KANC, [2]Yonsei University*
WP1-197	**Study of Vertical PiN Structure Using Intrinsic AlGaN Drift Layer** Yunseok Heo, Joocheol Jeong, Minho Kim, Shyam Mohan, Keono Kim, Jooyong Park, Joonhyuk Lee, and Okhyun Nam *Convergence Center for Advanced Nano Semiconductor (CANS), Department of Nano-Semiconductor Engineering, Tech University of Korea*
WP1-198	**Interfacial Layer Thickness Effect for Ferroelectric $Hf_xZr_{1-x}O_2$ on InGaAs** Kyul Ko[1,2], Dae-Hwan Ahn[1], Byeong-Kwon Ju[2], and Jae-Hoon Han[1] *[1]KIST, [2]Korea University*
WP1-199	**Fabrication of AlGaN/GaN Heterostructure FET Using Multi-Step Ohmic Annealing Process** Zin-Sig Kim, Hyung-Seok Lee, and Sung-Bum Bae *ICT Materials & Components & Research Laboratory, ETRI*
WP1-200	**High Conduction Band Offset of ALD BeO Films on β-Ga_2O_3 Substrates** Dohwan Jung[1], Yoonseo Jang[1], Prakash R. Sultane[2], Christopher W. Bielawski[2,3], and Jungwoo Oh[1] *[1]School of Integrated Technology, Yonsei University, [2]Center for Multidimensional Carbon Material, IBS, [3]Department of Chemistry, UNIST*
WP1-201	**Design and Growth of Normally-off p-GaN Gate AlN-Buffer HEMTs** Joonhyuk Lee, Minho Kim, Joocheol Jeong, Keono Kim, Yunseok Heo, Jooyong Park, and Okhyun Nam *Convergence Center for Advanced Nano Semiconductor, Department of Nano-Semiconductor, Tech University of Korea*
WP1-202	**Fabrication and Characterization of Vertical GaN Schottky Barrier Diodes** Minwoo Park[1], Gyeong-hun Jung[1], Kyoung-Kook Kim[1], Jongseob Kim[2], and Jaehee Cho[3] *[1]Tech University of Korea, [2]Samsung Advanced Institute of Technology, Samsung Electronics Co., Ltd., [3]School of Semiconductor and Chemical Engineering, Jeonbuk National University*
WP1-203	**GaSb LED Structures Grown on GaP-Si with AlSb Defect Filter Layer** Eung-Beom Yeon[1,2], Seungwan Woo[2,3], Rafael Jumar Chu[2], Tae Soo Kim[2,4], In-Hwan Lee[1], Daehwan Jung[2], and Won Jun Choi[2] *[1]Department of Materials Science and Engineering, Korea University, [2]Center for Opto-Electronic Materials and Devices, KIST, [3]Department of Materials Science and Engineering, Seoul National University, [4]School of Electrical and Electronic Engineering, Yonsei University*

WP1-204	**Analytical Model for Source Resistance in $In_xGa_{1-x}As$ Quantum-well High-electron-mobility Transistors** Ji-Hoon Yoo, In-Geun Lee, Jae-Hak Lee, and Dae-Hyun Kim *School of Electronic and Electrical Engineering, Kyungpook National University*
WP1-205	**A New Technique to Extract Saturation Velocity of $In_{0.53}Ga_{0.47}As/In_{0.52}Al_{0.48}As$ Quantum-Well** Hyo-Jin Kim, In-Geun Lee, Jae-Hack Lee, and Dae-Hyun Kim *School of Electronic and Electrical Engineering, Kyungpook National University*
WP1-206	**Annealing Method Dependent Thermistor Properties for Cu_2CoSnS_4 Films on Glass via Direct Spin-coating Process** Hyeon Bin Jo, Mokurala Krishnaiah, Soo Hyun Kim, Seo Young Jo, Su Hyun Cho, Minseob Kim, and Sung Hun Jin *Department of Electronic Engineering, Incheon National University*
WP1-207	**An Experimental Study of Tantalum Nitride Thin Film Resistor based on Dielectric Assisted Lift-off Process for the High Power GaN MMIC Platform** E-San Jang, Jong Yul Park, Hong Gu Ji, Byoung-Gue Min, and Dong Min Kang *RF/Power Components Research Section, ETRI*
WP1-208	**Effect of p-type Li-doped NiO_x/n-Ga_2O_3 Power Diode** Ji Young Min[1], Taehyun Kim[2], Young-Kyun Jung[2], Taeho Jeong[2], and You Seung Rim[1] *[1]Department of Intelligent Mechatronics Engineering, and Convergence Engineering for Intelligent Drone, Sejong University, [2]Electronic Devices Research Team, Research and Development Division, Hyundai Motor Group*

F. Silicon and Group-IV Devices and Integration Technology

심사위원: 김명수 교수(UNIST), 권지민 교수(UNIST)

WP1-210	**A Comparative Study of the Annealing Effects of Nitrogen and Deuterium on Planar MOSFETs** Ja-Yun Ku, Dae-Han Jung, Dong-Hyun Wang, Khwang-Sun Lee, Sung-Su Yoon, Jae-Hun Kim, Tae-Hyun Kil, and Jun-Young Park *Chungbuk National University*
WP1-211	**Analysis of High Temperature Operating Characteristics of Double Gate Feedback Field Effect Transistor** Myeongho Park, Kichan Kim, Seungyeon Oh, and Il Hwan Cho *Department of Electronic Engineering, Myongji University*
WP1-212	**염기성 용액 내 용존 산소 농도에 따른 Si 표면 상 파티클 제거 및 Si 식각 거동** 이준우, 임상우 *Department of Chemical and Biomolecular Engineering, Yonsei University*
WP1-213	**H_3PO_4 내 CO_2 생성을 통한 3D NAND 구조의 선택적 Si_3N_4 식각 및 산화물 재성장 억제** 김태현, 임상우 *Department of Chemical and Biomolecular Engineering, Yonsei University*
WP1-214	**Epoxy 및 Vinyl 계열 첨가제를 포함한 인산 용액 중 3D NAND 구조 내 Poly-Si의 식각 억제** 박태건, 임상우 *Department of Chemical and Biomolecular Engineering, Yonsei University*
WP1-215	**Dark Characteristic Improvement via Pixel Design and Implantation Modification for CMOS Image Sensor** Hyun Yoo, Suhye Park, Nam Yoon Kim, Hyo Sik Kim, Young-Ju Lee, Chang Ki Lee, Jun Ho Won, Keun Hyuk Lim, and Won Ho Lee *R&D Division, SK Hynix System IC*
WP1-216	**Self-Aligned Asymmetric Double-Gate (SA-ADG) Synaptic Transistors for Neuromorphic Systems** Bosung Jeon[1,2], Taejin Jang[1,2], Junsu Yu[1,2], and Woo Young Choi[1,2] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-217	**Junctionless Ferroelectric-Metal Field-Effect Transistors (JL FeMFETs)** Dong-Oh Kim[1,2,3], Changha Kim[1,2], Hyun-Min Kim[1,2], and Woo Young Choi[1,2] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University, [3]Semiconductor R&D Center, Samsung Electronics Co., Ltd.*

WP1-219	**피드백 전계효과 트랜지스터 기반 3진 인버터 동작 특성 연구** 손재민, 조경아, 김상식 *고려대학교 전기전자공학과*
WP1-220	**The Effect of Leakage Distribution Improvement according to Zener Diode Structure in 0.18um BCD Technology** Maeng Lee, Jung Kyu Yoon, Kyung Wook Kwon, Sun Goo Kim, Myung Hee Nam, and Jeong Soo Park *SK Hynix System IC*
WP1-221	**피드백 전계효과 트랜지스터 기반 Exclusive NOR 로직 동작 특성 연구** 신연우, 손재민, 조경아, 김상식 *고려대학교 전기전자공학과*
WP1-222	**Effect of Ge Mole Fraction on the Ambipolar Behavior of $Si_{1-x}Ge_x$ Tunnel Field-Effect Transistors** Min Jeong Ryu[1,2] and Woo Young Choi[1,2] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-223	**GAA-FET 제작을 위한 Si계 물질의 고선택 습식 식각** 이승효, 임상우 *Department of Chemical and Biomolecular Engineering, Yonsei University*
WP1-224	**오메가 게이트 구조를 갖는 실리콘 나노선 피드백 전계효과 트랜지스터의 전기적 특성 연구** 류승호[1], 손재민[2], 조경아[2], 김상식[1,2] *[1]고려대학교 반도체시스템공학과, [2]고려대학교 전기전자공학과*
WP1-225	**삼중 게이트 피드백 전계효과 트랜지스터의 메모리 특성 연구** 한종성[1], 전주희[2], 조경아[2], 김상식[1,2] *[1]고려대학교 반도체시스템공학과, [2]고려대학교 전기전자공학과*
WP1-226	**Improving the Contact Resistivity of $TiSi_2$ through a Ta Interlayer** Min-Su Kim[1], Seong-Hyun Hwang[1], Sungjoo Song[1], and Hyun-Yong Yu[2] *[1]Department of Semiconductor Systems Engineering, Korea University, [2]School of Electrical Engineering, Korea University*
WP1-227	**양자점을 이용한 플래시 메모리 기반 뉴로모픽 시냅스 모방 소자 연구** Ji Soo Choi[1], Jeong Mok Yang[1], So Yeon Jung[1], Jae Min Kim[1], Ye Eun Kim[1], Da Hyun Kang[1], Seok Gyu Kim[1], and Moon Gyu Jang[1,2] *[1]School of Nano Convergence Technology, Hallym University, [2]Center of Nano Convergence Technology, Hallym University*

WP1-228	**나노-초 레이저를 통한 저마늄에서의 인 (Phosphorus) 활성화** 백승훈, 권혁진, 이지은, 임형태, 박근태, 양규원, 권혁준 *대구경북과학기술원 전기전자컴퓨터공학과*
WP1-229	**Analysis of Self-Heating Effect according to Drain Contact Structure in SOI FinFET** Do Gyun An and Jang Hyun Kim *School of Electrical Engineering, Pukyong National University*
WP1-230	**수소 플라즈마 처리와 향상된 플라즈마 델타 도핑 공정을 이용한 저마늄 내부의 균일한 고농도 인 도핑** 정희재[1], 김윤상[2], 장봉호[1], 김준일[3,4], 송총명[1], 김세희[1], 권혁준[1] *[1]대구경북과학기술원 전기전자컴퓨터공학과, [2](주)세메스, [3]대구경북과학기술원 정보통신융합연구소, [4]대구경북과학기술원 후각융합연구센터*
WP1-231	**A Study on the Electrical Properties of a Neuromorphic Device with a Metal/Insulator/Metal/Insulator Stack Structure** Jeongmok Yang[1], Jisoo Choi[1], Soyeon Jung[1], Jaemin Kim[1], Yeeun Kim[1], Dahyun Kang[1], Seokgyu Kim[1], and Moongyu Jang[1,2] *[1]School of Nano Convergence Technology, Hallym University, [2]Center of Nano Convergence Technology, Hallym University*
WP1-232	**Enhancement of High Voltage Transistor Gate Oxide Reliability by Fluorine Implantation in 28nm HKMG Technology** Muhyun Jin, Il-Hwan Hwang, Dong-Il Park, Youngmok Kim, Kyunglyong Kang, Jun-gu Kang, Byung-hun Kim, Yeonkwang Lee, Injae Jeong, Junghwan Yum, and Yongsang Jeong *Foundry Division, Samsung Electronics Co., Ltd.*
WP1-233	**Tunnel Field-Effect Transistor-Based Charge Trapping Memory for In-Memory Computing** Chang Heon Park[1,2] and Woo Young Choi[1,2] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-234	**낮은 Rs를 갖는 RF 수신기 보호용 고전압 PIN Limiter 다이오드** 원종일, 정동윤, 조두형, 장현규, 박건식 *ETRI ICT창의연구소 반도체소부장기술센터*
WP1-235	**Effect of Cell Position in Cell Strings on the Performance of Neural Networks Using NAND Flash Memory** Gyuho Yeom, Jae-Joon Kim, and Jong-Ho Lee *Department of Electrical and Computer Engineering, Seoul National University*
WP1-236	**Synaptic Devices based on 3D-Semicircular NAND Flash Memory** Seongbin Oh[1,2], Woo Young Choi[1,2], and Jong-Ho Lee[1,2,3] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University, [3]Ministry of Science and Technology Information and Communication*

WP1-237	**Investigation of the Effects on Random Dopant Fluctuation and Work-Function Variation of Monolithic 3D Inverter Stacked with MOSFETs** Geun Jae Lee and Yun Seop Yu *Major of ICT & Robotics Engineering, Hankyong National University*
WP1-238	**Investigation of Electrical Coupling of Monolithic 3-Dimensional Inverting Logic-in-Memory Cell Consisting of the Feedback Field-Effect Transistor** Jong Hyeok Oh and Yun Seop Yu *Major of ICT & Robotics Engineering, Hankyong National University*
WP1-239	**Reliability Analysis by Corner Rounding of 3nm mNS-FET** Jae Won Lim and Jong Wook Jeon *Department of Electrical and Electronics Engineering, Konkuk University*
WP1-240	**Evaluation of Ultra-low Power Logic Device and Circuit Characteristics by Applying Various PTMs in the Latest Technical Node** Hanggyo Jung and Jongwook Jeon *Department of Electrical and Electronics Engineering, Konkuk University*
WP1-241	**Self-heating SPICE Modeling of 3nm Multi-Stacked Nanosheet FET** Woo Kyung Kwon, Chang Hyun Yoo, and Jong Wook Jeon *Department of Electrical and Electronics Engineering, Konkuk University*
WP1-242	**Analysis of Circuit Characteristics in Various Architectures of Sub-2nm Node Oriented MoS_2-FET** Jihun Park and JongWook Jeon *Department of Electrical and Electronics Engineering, Konkuk University*
WP1-243	**Green Laser를 이용한 ALD-HZO 강유전체 특성 구현 연구** 김승모[1], 김기성[1], 추형석[2], 김민재[1], 이해원[1], 황현준[1], 이병훈[1] *[1]Department of Electrical Engineering, POSTECH, [2]Department of Electrical and Computer Engineering, Sungkyunkwan University*
WP1-244	**T-CMOS Inverter Operation and Variation Analysis** Young-Eun Choi[1], Woo-Seok Kim[1], Myoung Kim[1], Min Woo Ryu[1,2], and Kyung Rok Kim[1,2] *[1]Department of Electrical Engineering, UNIST, [2]Ternell Corp.*
WP1-245	**V_{DD} Scaling of T-CMOS with Ion Implantation Process Condition** Young-Eun Choi[1], Woo-Seok Kim[1], Myoung Kim[1], Min Woo Ryu[1,2], and Kyung Rok Kim[1,2] *[1]Department of Electrical Engineering, UNIST, [2]Ternell Corp.*

WP1-246	**Frequency Doubler with Tunnel Field-Effect Transistor Using Line-Tunneling Layer** Ju Hong Min and Jang Hyun Kim *School of Electrical Engineering, Pukyong National University*
WP1-247	**Highly Scalable and Energy Efficient Ternary-CMOS Technology** Woo-Seok Kim[1], Young-Eun Choi[1], Myoung Kim[1], Min Woo Ryu[1,2], and Kyung Rok Kim[1,2] *[1]Department of Electrical Engineering, UNIST, [2]Ternell Corp.*
WP1-248	**모오스 구동 싸이리스터를 적용한 반도체 릴레이** 정동윤[1], 박건식[1], 김상인[2], 조두형[1], 장현규[1], 원종일[1], 임종원[1] *[1]한국전자통신연구원, [2]갑승파워시스템*
WP1-249	**Implementation of Neuromorphic Circuits Using Floating Body Effect** Heejune Cho[1], Il Hwan Cho[2], and Garam Kim[2] *[1]Department of Semiconductor Equipment Engineering, Myongji University, [2]Department of Electronic Engineering, Myongji University*
WP1-250	**Value-Maximized 17nm FinFET Technology beyond 200M Pixel CMOS Image Sensor** Kyungtaek Lee, B. C. Park, D. R. Chang, S. Hwang, S. Wi, K. Choi, S. Her, J. Choi, H. Park, Y. Lee, H. Choi, J. Lee, S. Kim, S. Kim, I. Kim, S. Park, Y. Park, C. J. Lee, M. K. Park, J. C. Kim, S. Maeda, J. H. Lee, and Gitae Jeong *Foundry Division, Samsung Electronics Co., Ltd.*
WP1-251	**Cathode 최적화를 통한 Single-Photon Avalanche Diode 성능 개선** 육세영[1,2], 엄도윤[1], 이명재[1] *[1]한국과학기술연구원 차세대반도체연구소 광전소재연구, [2]숙명여자대학교 ICT융합공학부 전자공학전공*
WP1-252	**CMOS 공정 기반 후면 조사 SPAD의 수광 효율 평가** Eunsung Park[1,2], Woo-Young Choi[1], and Myung-Jae Lee[2] *[1]Department of Electrical and Electronic Engineering, Yonsei University, [2]Post-Silicon Semiconductor Institute, KIST*
WP1-253	**TCAD-Based Analysis of Random Dopant Fluctuation Induced Variability in Ternary-CMOS** Woo-Seok Kim[1], Young-Eun Choi[1], Myoung Kim[1], Min Woo Ryu[1,2], and Kyung Rok Kim[1,2] *[1]Department of Electrical Engineering, UNIST, [2]Ternell Corp.*
WP1-254	**High Responsivity Solar Blind Photodetector based on α-Ga_2O_3** DeokWon Seo, YoungHoon Kim, and JunSeok Heo *Electrical and Computer Engineering, Ajou University*

WP1-255	**Ternary SRAM-Based Processing-in-Memory Cell for Edge AI Devices** Myoung Kim[1], Young Eun Choi[1], Woo-seok Kim[1], Min Woo Ryu[1,2], and Kyung Rok Kim[1,2] *[1]Department of Electrical Engineering, UNIST, [2]Ternell Corp.*
WP1-256	**High-Speed THz Detector Design with Monolithic Trantenna** Sang Hyo Ahn[1], Minjae Kim[1], Myoung Kim[1], Yoo Bin Song[1], Min Woo Ryu[1,2], and Kyung Rok Kim[1,2] *[1]Department of Electrical Engineering, UNIST, [2]Ternell Corp.*
WP1-257	**CMOS SPAD 구조 및 Guard Ring 사이즈에 따른 Noise 특성 변화** Myeong-Hun Yu[1,2], Eunsung Park[1,3], and Myung-Jae Lee[1] *[1]Post-Silicon Semiconductor Institute, KIST, [2]Department of Electronic and Information Technology Media Engineering, Seoul National University of Science and Technology, [3]Department of Electrical and Electronic Engineering, Yonsei University*
WP1-258	**CMOS공정 기반 SPAD의 구조에 따른 Breakdown Voltage 검증 및 응용** Yun-Mi Moon[1,2], Eunsung Park[1,3], and Myung-Jae Lee[1] *[1]Post-Silicon Semiconductor Institute, KIST, [2]Department of Electronic and Information Technology Media Engineering, Seoul National University of Science and Technology, [3]Department of Electrical and Electronic Engineering, Yonsei University*
WP1-259	**Comparison of Current-Voltage Characteristics with Channel Length of Nanosheet FET and FinFET** Eunseo Ahn and Yun Seop Yu *Hankyung National University*
WP1-260	**SPAD Pixel 검증을 위한 전용회로 및 이를 적용한 측정 방법** Hyo-Sung Park[1,2], Woo-Young Choi[1], and Myung-Jae Lee[2] *[1]Department of Electrical and Electronic Engineering, Yonsei University, [2]Post-Silicon Semiconductor Institute, KIST*
WP1-261	**Terahertz Near-field Microscopy based on Trantenna with Aperture** Min Jae Kim[1], Sang Hyo Ahn[1], Yoo Bin Song[1], Min Woo Ryu[1,2], and Kyung Rok Kim[1,2] *[1]Department of Electrical Engineering, UNIST, [2]Ternell Corp.*
WP1-262	**Optimization of Double-Gate TFET with Vertical Channel Sandwiched by Lightly Doped Si** Hyunho Ahn[1], Seungwon Go[1], Dong Keun Lee[2], Jang Hyun Kim[3], and Sangwan Kim[1] *[1]Department of Electronic Engineering, Sogang University, [2]Department of Electrical and Computer Engineering, Ajou University, [3]School of Electrical Engineering, Pukyong National University*
WP1-263	**More Physics-Based Compact Modeling of a Synaptic Device for Large-Area Simulation of Advanced Computing Systems** Saurabh Suredra Joshi and Seongjae Cho *Department of Electronic Engineering, Gachon University*

WP1-264	**A Compact Leaky Integrate-and-Fire Neuron Circuit for Spiking Neural Network** Arati Kumari Shah and Seongjae Cho *Department of Electronic Engineering, Gachon University*
WP1-265	**Analysis of CP Current for Charge-pumping Conditions with TCAD** Yoo Bin Song, Sang Hyo Ahn, Min Jae Kim, Min Woo Ryu, and Kyung Rok Kim *Department of Electrical Engineering, UNIST*
WP1-266	**Statistical Study on Grain Size in the Post-Annealed Ultra-Thin Polycrystalline Si Thin Film** Gyuhoon Lee[1], Yongmin Kim[1], Yelin Yoo[1], Yujin An[1], Yongwoo Kwon[2], Kyung Song[3], and Seongjae Cho[1] *[1]Department of Electronic Engineering, Gachon University, [2]Department of Materials Science and Engineering, Hongik University, [3]Materials Modeling and Characterization Department, KIMS*
WP1-267	**생물체의 특이적 시각계 구조를 모방한 이미징 센서 시스템** 김민수, 김대형 *서울대학교 화학생물공학부*

G. Device & Process Modeling, Simulation and Reliability

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WP1-268	**Bio-Inspired Compliance Control Unit with Co-Integrated Neuromorphic Devices** Hery Shin, Ji-Man Yu, Joon-Kyu Han, and Yang-Kyu Choi *KAIST*
WP1-269	**Junction Depth Optimization in Nanosheet FETs Fabricated on Silicon-on-Insulator (SOI) Substrate** Sung-Su Yoon, Khwang-Sun Lee, Ja-Yun Ku, Dae-Han Jung, Dong-Hyun Wang, Jae-Hun Kim, Tae-Hyun Kil, and Jun-Young Park *Chungbuk National University*
WP1-270	**Properties of the Conducting Filaments in HfO_2-Based Resistive Switching Materials by First Principles Calculations** Seungjae Yoon[1,2,3], Kun Hee Ye[1,2,3], Taeyoung Jeong[1,2,3], Dohyun Kim[1,2,3], Cheol Seong Hwang[2,3], and Jung-Hae Choi[1] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Seoul National University, [3]Inter-university Semiconductor Research Center, Seoul National University*
WP1-271	**Sub-stoichiometric Adaptive Phase of Conducting Filament in Ta_2O_5-Based Resistive Switching Materials by First Principles Calculations** Dohyun Kim[1,2,3], Taeyoung Jeong[1,2,3], Kun Hee Ye[1,2,3], Seungjae Yoon[1,2,3], Cheol Seong Hwang[2,3], and Jung-Hae Choi[1] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Seoul National University, [3]Inter-university Semiconductor Research Center, Seoul National University*
WP1-272	**다결정 실리콘 채널 피드백 전계효과 트랜지스터의 스위칭 특성 연구** 박태호, 조경아, 김상식 *고려대학교 전기전자공학과*
WP1-273	**피드백 전계효과 트랜지스터의 바이어스 스트레스 신뢰성 연구** 전주희, 조경아, 김상식 *고려대학교 전기전자공학과*
WP1-274	**Understanding Switching Mechanism of Analog Redox Synaptic Transistor based on Effective Electrolyte Thickness Model** Nayeon Kim[1], Heebum Kang[2], Hyun Wook Kim[2], Eunryeong Hong[2], Seonuk Jeon[1], and Jiyong Woo[1,2] *[1]School of Electronics Engineering, Kyungpook National University, [2]School of Electronic and Electrical Engineering, Kyungpook National University*
WP1-275	**Ionized Oxygen Vacancies in Amorphous InGaZnO Thin Film Transistors under Cross-applied Bias Stress** Hyunjin Kim[1], Beom Jung Kim[1], Jungyeop Oh[2], Sung-Yool Choi[2], and Hamin Park[1] *[1]Department of Electronic Engineering, Kwangwoon University, [2]School of Electrical Engineering, KAIST*

WP1-276	**Complementary Schottky Barrier Diode Pair for ESD Structure in CMOS** Deokgi Kim[1], Byeongju Kang[1], Donghyuk Jung[1], Minyong Kim[1], Taeho Kim[2], Minhyeok Yoo[3], Daekyeon Shin[3], Seongkweon Kim[4], and Dongha Shim[1] *[1]Department of Manufacturing Systems and Design Engineering, Seoul National University of Science and Technology, [2]Department of Integrated IT Engineering, Seoul National University of Science and Technology, [3]Department of Information Technology and Media Engineering, Seoul National University of Science and Technology, [4]Department of Electronic IT Media Engineering, Seoul National University of Science and Technology*
WP1-277	**Analysis of DC Characteristics and SNM Degradation in 10nm Node FinFET 6T-SRAM due to Displacement Defect** Minji Bang, Jonghyeon Ha, Gyeongyeop Lee, Minki Suh, Minsang Ryu, and Jungsik Kim *Department of Electrical Engineering, Gyeongsang National University*
WP1-278	**P형기판과 Isolation되는 Lateral PNP구조의 고전압 용 ESD 보호소자 개발** Youngbum Eom, Myoungchul Lim , Joungcheul Choi, Sangwook Nam, and Jeongsoo Park *SK Hynix*
WP1-279	**Charge Transition Mechanism to Explain the Eight-Wise Polarity in a Ti/TiO_2/Pt ReRAM Device** Taeyoung Jeong[1,2,3], Kun Hee Ye[1,2,3], Seung Jae Yoon[1,2,3], Dohyun Kim[1,2,3], Cheol Seong Hwang[2,3], and Jung Hae Choi[1] *[1]Electronic Materials Research Center, KIST, [2]Department of Materials Science and Engineering, Seoul National University, [3]Inter-university Semiconductor Research Center, Seoul National University*
WP1-280	**Product Reliability Characterization for Advanced 15nm Mobile DRAM** E-Y. Choi, S. Lee, D. Park, N-H. Lee, Y-S. Lee, and H-S. Kim *Memory Division, Samsung Electronics Co., Ltd.*
WP1-281	**A Physics-Based Compact Model of Resistive Random Access Memory with Double-Layer Conductive Filament for a Synaptic Simulation in Neuromorphic Systems** Tae-Hyun Park and Ji-Woon Yang *Department of Electronics and Information Engineering, Korea University*
WP1-282	**Tersoff Potential for $InGaZnO_4$ toward Realistic Molecular Dynamics Simulations** Yun Ho Lee and Byoung Don Kong *Department of Electrical Engineering, POSTECH*
WP1-283	**Influence of Process Variations on the Electrical Performance of Nanosheet Gate-All-Around Complementary FET** Seong-Ji Min and Hyun-Yong Yu *Korea University*

WP1-284	**Oscillatory Neural Networks with NbO_x Threshold Switch-Based Neurons for Image Edge Detection** Hyun Wook Kim[1], Heebum Kang[1], Eunryeong Hong[1], Nayeon Kim[2], Seonuk Jeon[2], and Jiyong Woo[1,2] *[1]School of Electronic and Electrical Engineering, Kyungpook National University, [2]School of Electronics Engineering, Kyungpook National University*
WP1-285	**Simulation of Carbon Nanotube Network Transistors for Physical Unclonable Function Applications** Hyo-In Yang[1], Hanbin Lee[1], Jeonghee Ko[1], Yulim An[1], Dong Myong Kim[1], Dae Hwan Kim[1], Jong-Ho Bae[1], Mee-Hyun Lim[2], and Sung-Jin Choi[1] *[1]School of Electrical Engineering, Kookmin University, [2]Mechatronics R&D Center, Samsung Electronics Co., Ltd.*
WP1-286	**First-principles Study of Water Molecules at the Electrified Graphene Surface** Hyeonwoo Yeo, Juho Lee, Ryong Gyu Lee, Seunghyun Yu, and Yong-Hoon Kim *School of Electrical Engineering, KAIST*
WP1-287	**Theory of Electric Enthalpy of Formation in Electrified Electrochemical Interfaces** Ryong-Gyu Lee, Juho Lee, Hyeonwoo Yeo, and Yong-Hoon Kim *School of Electrical Engineering, KAIST*
WP1-288	**Computational Fluid Dynamics Simulations of Atomic Layer Deposition Process** Da Yeon Lee[1], Boram Gu[2], and Bonggeun Shong[1] *[1]Department of Chemical Engineering, Hongik University, [2]School of Chemical Engineering, Chonnam National University*
WP1-289	**Optimization of NSFET Structural Parameters for Circuit Performance** 석준하, 김소영 *성균관대학교 정보통신대학*
WP1-290	**Power, Performance Benchmark of Various Interconnect Metal Options at Latest Process Node** Moon Jeong Choi, Seoung Yeol Choi, Kyung Bae Kwon, Ye Ji Lee, Won Yeong Jang, and Jong Wook Jeon *Department of Electrical and Electronics Engineering, Konkuk University*
WP1-291	**Partial Isolation Type Buried Channel Array Transistor (Pi- BCAT)에서 Passing Gate의 영향에 대한 문턱전압과 누설전류 분석** Su-Yeon Kim, Je-won Park, and Myoung Jin Lee *Department of ICT Convergence System Engineering, Chonnam National University*
WP1-292	**Novel Scheme to Form Non-uniform Oxide in Gate-all-around NCFETs for Capacitance Matching** Sanguk Lee, Jinsu Jeong, Jongseo Park, Junjong Lee, Seunghwan Lee, Jaewan Lim, and Rock-Hyun Baek *Department of Electrical Engineering, POSTECH*

WP1-293	**Investigation of Efficient TCAD Method for Simulating Very Large and Complicated Semiconductor Device** Youngtaek Oh, Jieun Lee, Jongmin Kim, Youngchul Kim, and Hyunchul Nah *Device Enabling Team, DB HiTek*
WP1-294	**Convergence of Quantum Transport Calculations with Respect to Atomic Basis Sets: Application to Graphene-Based DNA Sequencing** Jaeeun Kim[1], Han Seul Kim[2], Hyeonwoo Yeo[1], Seunghyun Yu[1], and Yong-Hoon Kim[1] *[1]KAIST, [2]KISTI*
WP1-295	**래치업 면역 특성을 위한 높은 홀딩전압 및 낮은 온저항 특성을 갖는 SCR 기반의 ESD 보호소자에 관한 연구** Seung-Gu Jeong, Jun-Ho Gong, Seung-Hwan Baek, and Yong-Seo Koo *Department of Electronics and Electrical Engineering, Dankook University*
WP1-296	**공정 변수 반영을 위한 기계학습 기반 소자 모델링** 정현준, 공정택, 김소영 *성균관대학교 정보통신대학*
WP1-297	**Finite Element Simulation Using Fully Coupled Electrothermal and Phase-field Simulation of Unipolar and Bipolar Resistive Memory** Dongmyung Jung and Yongwoo Kwon *Department of Materials Science and Engineering, Hongik University*
WP1-298	**Phase Field Modeling of Solid Phase Crystallization in Thin Films Deposited on Non-planar Substrates** Hwan Wook Lee, Ahmad Nadeem, and Yong Woo Kwon *Hongik University*
WP1-299	**Electrical Character Transition owing to Interface Trap Charge and Captured Carbon Density in 1.2kV 4H-SiC DMOSFET** Dahui Yoo, Jee-hun Jeong, Min-Seok Jang, Sang-Woo Kim, Park Min Sang, Sung-Hyeon Jung, Mijin Kim, Tae-hui Wang, Oh Jong Hoon, and Ho-Jun Lee *Department of Electrical Engineering, Pusan National University*
WP1-300	**Thermal Modeling of Hybrid-Bonded Wafers with MgO Conducting Interlayer** Anh-Duy Nguyen, Ye-eun Hong, Si-un Song, and Rino Choi *3D Convergence Center and Department of Materials Science and Engineering, Inha University*
WP1-301	**조건부 적대적 생성 신경망 기반 FEM Simulation 대체 모델을 활용한 Copper Metal Line Stress Migration Chip Level Hotspot Detection** Il Gyu Choi, You Jin Jung, Jong Won Baek, Min Jae Hur, Dong Yean Oh, Sung Kye Park, and Ji Woong Sue *R&D Division, SK Hynix*

WP1-302	**Multi-physics Modeling of Crystallization in the Ultrathin Sb-Based Monatomic Phase-change Memory** Kang-Hyun Joo and Mincheol Shin *School of Electrical Engineering, KAIST*
WP1-303	**Thickness Dependent Electrical Characteristics on Ultra-Thin Body IGZO Field-Effect Transistors** Min Jae Kim[1], Hyeong Jin Park[1], Bangjoo Park[1], Seonwoong Bang[1], Sungwon Yoo[2], Min Hee Cho[2], and Jae Kyeong Jeong[1] *[1]Department of Electronic Engineering, Hanyang University, [2]Semiconductor R&D Center, Samsung Electronics Co., Ltd.*

J. Nano-Science & Technology

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WP1-304	**Substrate-coupled Modulation of Charge Carriers in Degenerately Doped Transition Metal Dichalcogenides** Kyungmin Ko[1] and Joonki Suh[1,2] *[1]Department of Materials Science and Engineering, UNIST, [2]Graduate School of Semiconductor Materials and Devices Engineering, UNIST*
WP1-305	**The Modified Magnetic Tunnel Junction-Based Ultrafast Magnetic Tactile Sensor Development** June-Seo Kim, Jaehun Cho, Junwoo Kim, Hyeon-Jun Lee, and Myoung-Jae Lee *Division of Nanotechnology, DGIST*
WP1-306	**Facial Synthesis of p-p Heterojunction Composites: Evaluation of Their Electrochemical Properties with Photovoltaics-Electrolyzer Water Splitting Using Two-Electrode System** Karthik Kannan[1,2], Debabrata Chanda[1,2], Jagadis Gautam[1,2], Arjun Behera[1,2], Mikiyas Mekete Meshesha[1,2], Jang Seok Gwon[1,2], Im Beyol Im[1,2], Lee G.S[3], Hong D.W[3], Myungsik Choi[4], and Bee Lyong Yang[1,2] *[1]School of Advanced Materials Science and Engineering, Kumoh National Institute of Technology, [2]GHS Co., Ltd., [3]Nano-Convergence Technology Division, NNFC, [4]SJ Tech Co., Ltd.*
WP1-307	**Low Frequency Noise Analysis on Hexagonal WS_2 Field Effect Transistor** Jungchun Kim, Seain Bang, Dong Geun Park, Donghyun Kim, Min Jung Kim, Seoyeon Choi, Kiseok Heo, Sanghyeok Kim, Inkyu Yoon, and Jae Woo Lee *Department of Electronics and Information Engineering, Korea University*
WP1-308	**Effect of Proton Irradiation on WSe_2 FETs with hBN Layer** Seongmin Ko[1], Jiwon Shin[1], Jaeyoung Kim[1], Juntae Jang[1], Jaehyoung Park[1], Jongeun Yoo[1], Kyungjune Cho[2], and Takhee Lee[1] *[1]Department of Physics and Astronomy, Seoul National University, [2]Soft Hybrid Materials Research Center, KIST*
WP1-309	**Electrically Controllable Spin-polarized States on Si_XGe_{1-X} Nanosheet** Jeong Wook Kim and Byoung Don Kong *Department of Electrical Engineering, POSTECH*
WP1-310	**Unusual Raman Enhancement Effect from Two-dimensional Copper Sulfide** Du Won Jeong[1], Suok Lee[2], Keun Soo Kim[3], SeungNam Cha[1], Young-Woo Lee[2], and A-Rang Jang[4] *[1]Department of Physics, Sungkyunkwan University, [2]Department of Energy Systems Engineering, Soonchunhyang University, [3]Department of Physics, Sejong University, [4]Division of Electrical, Electronic and Control Engineering, Kongju National University*
WP1-311	**Polycrystalline MoS_2 Memtransistor Treated with O_2 Plasma: A Wide Tunable Resistive Switching based on Sulfur Vacancy Modulation** Ojun Kwon[1,2] and Byungjin Cho[1,2] *[1]Department of Advanced Materials Engineering, Chungbuk National University, [2]Department of Urban, Energy, and Environmental Engineering, Chungbuk National University*

WP1-312	**Double-side p-doping of 2D WSe_2 Field-effect Transistors** Kwangro Lee[1], Brian S. Y. Kim[2], Sungwon Lee[1], Hoseong Shin[1], James Hone[2], and Won Jong Yoo[1] *[1]Department of Nano Science and Technology, SKKU Advanced Institute of Nanotechnology, Sungkyunkwan University, [2]Department of Mechanical Engineering, Columbia University*
WP1-313	**Inkjet Printing of Organic Dopants for Tailoring the Electrical Characteristics of MoS_2 FETs** Jiwoo Yang[1,2], Inho Jeong[1,3], Kyungjune Cho[1], and Seungjun Chung[1,4] *[1]Soft Hybrid Materials Research Center, KIST, [2]Department of Electrical and Computer Engineering, Seoul National University, [3]School of Electrical Engineering, Korea University, [4]KHU-KIST Department of Converging Science and Technology, Kyung Hee University*
WP1-314	**Physical Unclonable Function by a Disordered Distribution of Multiple Functional Groups from Mixed Self-assembled Monolayers** Subin Lee[1], Hyun Ho Kim[2,3], Juhyung Seo[1], Byung Chul Jang[4], and Hocheon Yoo[1] *[1]Department of Electronic Engineering, Gachon University [2]Department of Energy Engineering Convergence, Kumoh National Institute of Technology, [3]School of Materials Science and Engineering, Kumoh National Institute of Technology, [4]School of Electronic and Electrical Engineering, Kyungpook National University*
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WP1-385	**Minimized Interfacial Energy Using Combination of Silver Nanosheets and Silver Nanoparticles Enables Fabrication of High-performance Elastic Nanomembrane** Son Woo Jung[1,2,3] and Dae-Hyeong Kim[1,2,3,4] *[1]Center for Nanoparticle Research, IBS, [2]School of Chemical and Biological Engineering, Seoul National University, [3]Institute of Chemical Processes, Seoul National University, [4]Department of Materials Science and Engineering, Seoul National University*
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K. Memory (Design & Process Technology)

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WP1-394	**Threshold Switching - Phase Change Memory (TS-PCM) for Simultaneous Emulation of Synaptic and Intrinsic Plasticity** Sang Hyun Sung, Yu Jin Jeong, and Keon Jae Lee *Department of Materials Science and Engineering, KAIST*
WP1-396	**Heater-All-Around Vertical Phase-Change Memory with Multi-Level States and Ultra-Low Energy Consumption** Namwook Hur[1], Sohui Yoon[1], Beomsung Park[1], Ho Thi Thu Trang[3], Hongsik Joeng[1,2], Yoongwoo Kwon[3], and Joonki Suh[1,2] *[1]Department of Materials Science and Engineering, UNIST, [2]Graduate School of Semiconductor Materials and Devices Engineering, UNIST, [3]Department of Materials Science and Engineering, Hongik University*
WP1-397	**Controlling Resistive Switching Behavior of ZnO Resistive Random Access Memory via Ultraviolet Irradiation and Ultraviolet-Ozone Treatment** Yeunwoo Kwon[1,2,3], Yeon Jun Kim[1,2,3], and Jeonghun Kwak[1,2,3] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University, [3]Soft Foundry Institute, Seoul National University*
WP1-398	**Bio-resorbable Resistive Random Access Memory for Transient Electronics and Applying to Artificial Synapse** Hojung Jeon and You Seung Rim *Department of Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone, Sejong University*

WP1-399	**Three-Dimensional Grain Boundary Ion Transport Channels Providing Reliable and Robust Reconfigurable Resistive Switching Memory for Neuromorphic Computing** Dohyung Kim[1,2], Phuoc Loc Truong[3], Jongmin Lee[1,2], Bumho Jeong[1,2], Kyeounghak Kim[4], Daeho Lee[3], and Hui Joon Park[1,2] *[1]Department of Organic and Nano Engineering, Hanyang University, [2]Human-Tech Convergence Program, Hanyang University, [3]Department of Electronic Engineering, Gachon University, [4]Department of Chemical Engineering, Hanyang University*
WP1-400	**저 전력 연산 동작을 위한 8+T 차동 SRAM 설계** Chang Ki Hong and Jeong Beom Kim *Kangwon National University*
WP1-402	**Simulation of a Recessed Channel Ferroelectric-Gate Field-Effect Transistor with a Dual Ferroelectric Gate Stack for Memory Application** Simin Chen, Seong Ui An, and Younghyun Kim *Department of Photonics and Nanoelectronics, BK21 FOUR ERICA-ACE Center, Hanyang University*
WP1-403	**Effect of On/Off Ratio of Ferroelectric FET in Binary Neural Network with 3-D NAND Architecture** Min Suk Song, Geun Ho Lee, Hwiho Hwang, Suhyeon Ahn, and Hyungjin Kim *Department of Electrical and Computer Engineering, Inha University*
WP1-404	**Color-Cognitive Detection and Wireless Communication via Photonic Synapse Transistor** Bum Ho Jeong[1,2], Miju Ku[3], Jaehee Park[1,2], Jongmin Lee[1,2], Dohyung Kim[1,2], In Hwan Jung[1,2], Young Beom Kim[3], and Hui Joon Park[1,2] *[1]Department of Organic and Nano Engineering, Hanyang University, [2]Human-Tech Convergence Program, Hanyang University, [3]Department of Mechanical Convergence Engineering, Hanyang University*
WP1-405	**Spiking Neural Network 시스템 설계 및 I&F 뉴런회로의 선형성 개선** 김재성[1], 구민석[2], 김윤[1] *[1]서울시립대학교 전자전기컴퓨터공학과, [2]인천대학교 컴퓨터공학과*
WP1-406	**NAND Flash Memory 의 메모리 윈도우 확장을 위한 강유전체 스위칭 및 전하 트랩 시너지 메모리** Eui Joong Shin, Gyusoup Lee, and Byung Jin Cho *KAIST*
WP1-407	**Preparation of RPALD HfO_2 Films with High Charge Trapping Density and Its Application to Charge Trapping Memory Devices** Jae Hoon Yu, Da Hee Hong, Won Ji Park, and Hee Chul Lee *Department of Advanced Materials Engineering, Tech University of Korea*

WP1-408	**Biocompatible Potato Starch Electrolyte Based Coplanar Gate-type Artificial Synaptic Transistors on the Paper Substrate** Hyun-Sik Choi and Won-Ju Cho *Department of Electronic Materials Engineering, Kwangwoon University*
WP1-409	**Optical Stimulation Artificial Synapses Using Casein Electrolyte-Based IGZO Transistors for Neuromorphic Systems** Hwi-Su Kim and Won-Ju Cho *Department of Electronic Materials Engineering, Kwangwoon University*
WP1-410	**Simulation of Conductive-filament Behaviors according to Applied Voltages, Material Specifics and Initial Defect in Resistive Memory by Integrating Electrothermal and Phase-field Models** Park Chanhoo, Dongmyung Jung, and Yongwoo Kwon *Hongik University*
WP1-411	**Graph Analysis Using Self-rectifying Memristor Crossbar Array** Yoon Ho Jang[1,2], Janguk Han[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-412	**Analysis of Sneak Current through N Cell in the Memristive-crossbar Array** Jang Uk Han[1,2], Yoon Ho Jang[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-413	**Time-Series Data Processing Using 2Memristor-1Capacitor Integrated Temporal Kernel** Sung Keun Shim[1,2], Yoon Ho Jang[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-414	**Atomic Layer Deposition of GeTe-Sb_2Te_3 Thin Films for Novel Three-Dimensional Vertical Crosspoint Memory** Jeong Woo Jeon[1,2], Chanyoung Yoo[1,2], Wonho Choi[1,2], Byongwoo Park[1,2], Gwangsik Jeon[1,2], Sangmin Jeon[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-415	**Development of Casein Bio-memristors with Outstanding Synapse Characteristics based on Bovine Milk** Tae-Gyu Hwang, Dong-Gyun Mah, and Won-Ju Cho *Department of Electronic Materials Engineering, Kwangwoon University*
WP1-416	**Synaptic Transistors based on PVA-Chitosan Biopolymer Blended Electric-Double-Layer with High Ionic Conductivity** Dong-Hee Lee and Won-Ju Cho *Department of Electronic Materials Engineering, Kwangwoon University*

WP1-417	**Synaptic Characteristic and Mechanism of IGZO TFT with Silk Fibroin Gate Insulator** Hyunjoo Hwang[1], Wonwoo Kho[1], Gyuil Park[1], Jisoo Kim[1], Yoomi Kang[1], Minjeong Kang[1], Jisu Byun[1], and Seung-Eon Ahn[1,2] *[1]Department of IT and Semiconductor Convergence Engineering, Tech University of Korea, [2]Department of Nano and Semiconductor Engineering, Tech University of Korea*
WP1-418	**Storage Charge Boosting Dependence of Ferroelectric-Based Capacitors on Electrical Input Energy** Yoomi Kang[1], Minjeong Kang[1], Jisu Byun[1], Jisoo Kim[1], Wonwoo Kho[1], Hyunjoo Hwang[1], Jisoo Kim[1], Gyuil Park[1], and Seung-Eon Ahn[1,2] *[1]Department of IT and Semiconductor Convergence Engineering, Tech University of Korea, [2]Department of Nano and Semiconductor Engineering, Tech University of Korea*
WP1-419	**Charge Boosting Characteristics of Ferroelectric-Based Capacitors for DRAM Cell Capacitor Applications** Minjeong Kang[1], Yoomi Kang[1], Jisu Byun[1], Wonwoo Kho[1], Hyunjoo Hwang[1], Jisoo Kim[1], Gyuil Park[1], and Seung-Eon Ahn[1,2] *[1]Department of IT and Semiconductor Convergence Engineering, Tech University of Korea, [2]Department of Nano and Semiconductor Engineering, Tech University of Korea*
WP1-420	**Polarization Switching Fine Control for Realization of Multi-Resistance State of FTJ** Wonwoo Kho[1], Hyunjoo Hwang[1], Jisoo Kim[1], Gyuil Park[1], Jisu Byun[1], Yoomi Kang[1], Minjeong Kang[1], and Seung-Eon Ahn[1,2] *[1]Department of IT and Semiconductor Convergence Engineering, Tech University of Korea, [2]Department of Nano and Semiconductor Engineering, Tech University of Korea*
WP1-421	**Optimizing of Spike Shape for Time Dependent Plasticity of Hafnia-Based Ferroelectric Tunnel Junction Device for Neuromorphic Computing Application** Jisu Byun[1], Wonwoo Kho[1], Gyuil Park[1], Yoomi Kang[1], Minjeong Kang[1], Jisoo Kim[1], Hyunjoo Hwang[1], and Seung-Eon Ahn[1,2] *[1]Department of IT and Semiconductor Convergence Engineering, Tech University of Korea, [2]Department of Nano and Semiconductor Engineering, Tech University of Korea*
WP1-422	**Review: A Reflection-Self-Canceling Design Technique for Multi-Drop Interconnects in Memory System** Changyoon Han and Byungsub Kim *Department of Electrical Engineering, POSTECH*
WP1-423	**Device Characterization and Modeling of Forming-free RRAM for Logic and Neuromorphic Application** Donghoon Shin[1,2], Sunwoo Lee[1,2], Hyo Cheon Woo[1,2], Yeong Rok Kim[1,2], Taegyun Park[1,2], and Cheol Seong Hwang[1,2] *[1]Department of Materials Science and Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-424	**Enhanced Synaptic Behavior of Chitosan-Based Electric Double Layer Transistors via Random Network Polysilicon Nanowire Channels** Ki-Woong Park and Won-Ju Cho *Department of Electronic Materials Engineering, Kwangwoon University*
WP1-425	**Self-Rectifying Resistive Switching Characteristics of Ti/BN/p-Si Structure for High-Density Memory Application** Ibtisam Ahmad and Hee-Dong Kim *Department of Electrical Engineering and Convergence Engineering for Intelligent Drone, Sejong University*

WP1-426	**Effect of Oxygen Treatment on the Resistive Switching Characteristics of TaO_x-Based RRAM** Jung-Hwa Cha, Hee Yeon Noh, and Myoung-Jae Lee *Research Institute, DGIST*
WP1-428	**Improvement of Polarization Switching in Oxide-Based Ferroelectric Transistor through Interface Trap Reduction for Artificial Synapses** Dong-Gyu Jin, Jong-Hyun Kim, and Hyun-Yong Yu *Korea University*
WP1-430	**Analysis of Standby Leakage Current Degradation in PSWD through GIDL Stress after Burn-In Test in DRAM** Heesung Lee, Dongheon Lee, Eun-Sun Lee, Beomyong Hwang, Kyo-Suk Chae, Ji Hun Kim, Jeonghoon Oh, Hyo-Dong Ban, and Joo-young Lee *DRAM Product & Techonology, Memory Business, Samsung Electronics Co., Ltd.*
WP1-431	**Analyzing the Dependence of Propagation Delay on Device Dimensions in the 4th Generation of 10nm DRAM Products by Using Process Monitoring Method on Chip** Youngkwan Park[1], Yeohyeok Yun[2], Donghean Lee[1], Eun-sun Lee[1], Kyosuk Chae[1], Ji Hun Kim[1], Jeong-Hoon Oh[1], Hyo-dong Ban[1], and Jooyoung Lee[1] *[1]DRAM Product & Techonology, Memory Business, Samsung Electronics Co., Ltd., [2]Department of Information and Communication Technology Engineering, Jeonju University*
WP1-432	**Improved DRAM Single Bit Characteristics through Chlorine Control** Sehyun Kwon, Taiuk Rim, Kyosuk Che, Jin-Seong Lee, Jeonghoon Oh, Hyodong Ban, and Jooyoung Lee *DRAM Product & Technology, Samsung Electronics Co., Ltd.*
WP1-433	**Investigation of Non-Circular Channel Profile in 3D NAND Flash Memory** Jaewoo Lee, Jongwon Lee, Hyunju Kim, Yunjae Kim, Daewoong Kang, and Myounggon Kang *Department of Electronics Engineering, Korea National University of Transportation*
WP1-434	**Flexible Resistive Random Access Memory Consisting of Solution-processed Metal-oxide Dielectrics Fabricated at Low Temperature** Myeong-Hyeon Kim, Sang-Joon Park, and Tae-Jun Ha *Department of Electronic Materials Engineering, Kwangwoon University*
WP1-435	**3차원 적층형 실리콘 나노와이어 더블 팁 저항 변화 메모리** 이원주[1], 구민석[2] *[1]서울시립대학교 전자전기컴퓨터공학과, [2]인천대학교 컴퓨터공학부*
WP1-436	**Dopant Optimization in DRAM Buried Contact for Reducing Radiation Failure** Heejae Choi, Hyewon Seo, Taiuk Rim, Kyosuk Chae, Sungsam Lee, Jeonghoon Oh, Hyodong Ban, and Jooyoung Lee *DRAM Product & Technology, Samsung Electronics Co., Ltd.*

WP1-437	**Synaptic Characteristics of SWNT-FET for Neuromorphic Computing Application** Jisoo Kim[1], Hyunjoo Hwang[1], Wonwoo Kho[1], Gyuil Park[1], Jisu Byun[1], Yoomi Kang[1], Minjeong Kang[1], and Seung-Eon Ahn[1,2] *[1]Department of IT · Semiconductor Convergence Engineering, Tech University of Korea, [2]Department of Nano and Semiconductor Engineering, Tech University of Korea*
WP1-438	**Effect of RF Power in the Sputter-deposition of Amorphous InGaZnO Film on the Synaptic Weight Update Characteristic of InGaZnO Memristors** Dong Hyeop Shin, Seung Joo Myoung, Donguk Kim, Jong-Ho Bae, Sung-Jin Choi, Dong Myong Kim, and Dae Hwan Kim *School of Electrical Engineering, Kookmin University*
WP1-439	**FINFET 구조의 SRAM에서의 읽기 동작 마진 분석** 이수지, 전정훈 *성균관대학교 전자전기컴퓨터공학과*
WP1-440	**$HfZrO_2$ Thin-film Transistor as Synaptic Device Using ALD Process for Advanced Neuromorphic Computing** Eun Seo Jo and You Seung Rim *Department of Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone, Sejong University*
WP1-441	**Demonstration of Binary Neural Network based on the Amorphous InGaZnO Memristor-Based 10×10 Crossbar Array for the 1T1M Integration** Seung Joo Myoung, Donguk Kim, Hee Jun Lee, Dong Hyeop Shin, Sung-Jin Choi, Jong-Ho Bae, Dong Myong Kim, and Dae Hwan Kim *School of Electrical Engineering, Kookmin University*
WP1-442	**Ternary Content Addressable Memory Modeling Using Non-volatile Ferroelectric Field Effect Transistors with Mono-layer WS_2** Juhwan Park, Changho Ra, and Jongwook Jeon *Department of Electrical and Electronics Engineering, Konkuk University*
WP1-443	**Emulating Synaptic Characteristics of Ferroelectric Aluminum Doped HfO_2 for Neuromorphic Engineering** Jihyung Kim, Doohyung Kim, Juri Kim, Hyojin So, Eunjin Lim, Dongyeol Ju, Gyutaek Oh, and Sungjun Kim *Department of Electronics and Electrical Engineering, Dongguk University*
WP1-444	**Full Adder Circuit Design Using Non-volatile Ferroelectric Field Effect Transistors with Mono-layer WS_2 Channel** Huijun Kim, Changho Ra, and Jongwook Jeon *Department of Electrical and Electronics Engineering, Konkuk University*
WP1-445	**Linear Transient Current Response of a Charge Trap Memristor** Younghyun Lee and Kyung Min Kim *Department of Materials Science and Engineering, KAIST*

WP1-446	**Analysis of Memory Characteristics of a-IGZO-Based 2T-DRAM** Seongwon Lee, Hyojin Yang, Sanghyuk Yun, Haesung Kim, Sung-Jin Choi, Dong Myong Kim, Dae Hwan Kim, and Jong-Ho Bae *School of Electrical Engineering, Kookmin University*
WP1-447	**Non-volatile Resistive Switching of Pt/HfO_2/TiN/HfO_2/TiN in 2F VRRAM** Seyeong Yang, Gyeongpyo Kim, Jungwoo Lee, Youngboo Cho, Seonghoon Kim, Subaek Lee, Hyeongseung Ji, and Sungjun Kim *Division of Electronics and Electrical Engineering, Dongguk University*
WP1-448	**Effect of IGZO/HfO_2 Ferroelectric Capacitor Structure on Polarization Switching** Sejun Park, Hyojin Yang, Haesung Kim, Sanghyuk Yun, Dong Myong Kim, Dae Hwan Kim, Sung-Jin Choi, and Jong-Ho Bae *School of Electrical Engineering, Kookmin University*
WP1-449	**IGZO Synaptic Thin-film Transistors with Bilayer Gated of $HfAlO_X$ and CeO_X** Beomki Jeon, Yunseok Lee, Yongjin Park, Seongmin Kim, Jungang Heo, Junwon Jang, Sangwoo Kang, and Sungjun Kim *Division of Electronics and Electrical Engineering, Dongguk University*
WP1-450	**Ionic-Gel Based Electric Double Layer Synaptic Transistor for Neuromorphic Computing** Kyong Jae Kim and You Seung Rim *Department of Intelligent Mechatronics Engineering, and Convergence Engineering for Intelligent Drone, Sejong University*
WP1-451	**Reservoir Optimization in Oxygen-Based Electrochemical Random-Access Memory for Improved Synaptic Characteristics** Seungkun Kim, Jeonghoon Son, and Seyoung Kim *Department of Materials Science and Engineering, POSTECH*
WP1-452	**High Performance Neural Network Inference with a 3D NAND-like Synaptic Weight Storage** Byoungwoo Lee, Min-Kyu Kim, Ik-Jyae Kim, Jang-Sik Lee, and Seyoung Kim *POSTECH*
WP1-453	**Analysis on Electric Field and Polarization Switching in Ferroelectric HfO_2 Amorphous $InGaZnO_x$ Thin-Film Transistor** Ha Neul Lee, Hyojin Yang, Haesung Kim, Sanghyuk Yun, Seongwon Lee, Sung-Jin Choi, Dong Myong Kim, Dae Hwan Kim, and Jong-Ho Bae *School of Electrical Engineering, Kookmin University*
WP1-454	**Threshold Voltage Control of Amorphous InGaZnO Thin-Film Transistor for Ferroelectric Memory Application** Sanghyuk Yun, Hyojin Yang, Sung-Jin Choi, Dong Myong Kim, Dae Hwan Kim, and Jong-Ho Bae *School of Electrical Engineering, Kookmin University*

WP1-455	**Multilevel Cell Nonvolatile Memory with Ferroelectric Modulated Antiferroelectric Superlattice Field Effect Transistors (FETs)** Yu Jeong Choi[1], Chulwon Chung[2], Boncheol Ku[1], Jin Ho Park[1], Se Jin Kim[1], and Changhwan Choi[1] *[1]Division of Materials Science and Engineering, Hanyang University, [2]Deparment of Energy Engineering, Hanyang University*
WP1-456	**저전압 동작을 위한 SRAM 읽기 보조 회로** Ju Hwan Seok and Jung-Hoon Chun *Department of Semiconductor and Display Engineering, Sungkyunkwan University*
WP1-457	**시냅스 소자의 Retention 특성이 Tiki-Taka 알고리즘 기반 뉴럴 네트워크 학습의 정확도에 미치는 영향에 관한 연구** Doyoon Kim and Seyoung Kim *Department of Materials Science and Engineering, POSTECH*
WP1-458	**Optimization of Memory Properties of 2T-DRAM Cell by a-IGZO TFT Engineering** Junseong Park, Haesung Kim, Hyojin Yang, Seongwon Lee, Sanghyuk Yun, Sejun Park, Haneul Lee, Sung-Jin Choi, Dae Hwan Kim, Dong Myong Kim, and Jong-Ho Bae *School of Electrical Engineering, Kookmin University*
WP1-459	**Influence of $Ge_2Sb_2Te_5$ Insertion for the Performance of ZrO_2 Resistive Switching Devices and Their Application toward Neuromorphic Systems** Bidyashakti Dash, Ajit Kumar, Hyo Seob Kim, Hye Yeon You, Chang Woo Seo, Hyeon Seok Yoo, Hyo Jeong Park, and Sung Hun Jin *Department of Electronic Engineering, Incheon National University*
WP1-460	**ZrO_2 Thickness Effects on Resistive Switching Behaviors for Fully Transparent Stacked IGZO/ZrO_x Resistive Memory** Geun Lee, Da Han Lee, Se Hun Jung, Seong Been Wi, Dong Hyun Kim, Jun Woo Jung, and Sung Hun Jin *Department of Electronic Engineering, Incheon National University*

L. Analog Design

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WP1-461	**Design Method of Split Capacitor Array in SAR ADC to Mitigate the Impact on Parasitic Capacitor** Han-Yeol Lee, Dong-Shin Kim, Hyo-Bin Ahn, Yoon-Young Park, and Sun-Ha Hwang *SK Hynix System IC*
WP1-462	**A 8 Bit 8 GS/s Time Interleaved Current Steering DAC in 28-nm CMOS Technology** Tae Wha Hong and Jung-Dong Park *Division of Electronics and Electrical Engineering, Dongguk University*
WP1-463	**A 8 Bit 16 GS/s Current Steering DAC in 28-nm CMOS Technology** Tae Wha Hong and Jung-Dong Park *Division of Electronics and Electrical Engineering, Dongguk University*
WP1-464	**Sense Amplifier 에서 Power Noise 와 Parasitic R&C 의 영향** Jin-Gon Oh and Kee-Won Kwon *Department of Semiconductor and Display Engineering, Sungkyunkwan University*
WP1-465	**Effects of Inverter Circuit Size on Analog Pulse-Width Modulation Circuit** Joon Hwang[1,2], Min-Kyu Park[1,2], Won-Mook Kang[1,2], Woo Young Choi[1,2], and Jong-Ho Lee[1,2] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-466	**A Ring Amplifier for Pre-amplifier of SAR ADC Comparator** 조영원, 김의근, 박종민, 양성훈, 정재훈, 조요셉, 채종혁, 범진욱 *Sogang University*
WP1-467	**FMCW LiDAR에서 높은 분해능으로 거리를 탐지하기 위한 12.5ps의 High Resolution Ring Oscillator Type TDC in 28-nm CMOS** 이승주, 김의근, 박종민, 양성훈, 정재훈, 조영원, 조요셉, 채종혁, 범진욱 *Sogang University*
WP1-468	**A VGA CMOS Image Sensor with Dual CDS and Column-parallel Two-step Single Slope ADC for High Frame Rate** Seonghun Yang, Jaehun Jung, Youngwon Cho, Jongmin Park, Seungju Lee, Euigeun Kim, Yosep Jo, Jongheok Chae, and Jinwook Burm *Department of Electronic Engineering, Sogang University*

WP1-469	**LSB Correction Logic이 적용된 5-Ms/s 12-bit R-C Hybrid SAR ADC in 28-nm CMOS** 정재훈, 양성훈, 조영원, 범진욱 *Sogang University*
WP1-470	**Design of Asynchronous Digital LDO with Coarse-Fine-Tuning and Burst-Mode Operation** Wooyoung Choi and Junyoung Song *Department of Electronics Engineering, Incheon National University*
WP1-471	**Energy-efficient Neuron Circuit with Minimized Shoot-through Current** Jong Hyun Ko[1,2], Jae-Joon Kim[1,2], and Jong Ho Lee[1,2] *[1]Department of Electrical and Computer Engineering, Seoul National University, [2]Inter-university Semiconductor Research Center, Seoul National University*
WP1-472	**CMOS Inverter 기반의 Variable Gm Cell을 이용한 Crystal Oscillator** Yeong-Ryul Yun, Jung-Hun Kim, and In-Chul Hwang *Department of Electrical and Medical Convergent Engineering, Kangwon National University*
WP1-473	**A PVT-Variation Tolerant 6-bit Capacitor-DAC-Based Constant-Slope Digital-to-Time Converter** Gyuchan Cho and Jintae Kim *Konkuk University*
WP1-474	**A 10-bit 50 MS/s Flash-SAR Combined Sub-ranging ADC** Min-Hyeong Son and Ji-Yong Um *Department of Medical IT Convergence Engineering, Kumoh National Institute of Technology*
WP1-475	**Time-domain Equalization을 이용하는 6-Gsymblol/s MIPI C-PHY 수신기** 조민준, 김시한, 송창민, 장영찬 *금오공과대학교 전자공학부*
WP1-476	**56Gb/s PAM4 수신기를 위한 트랜스컨덕턴스-트랜스임피던스 VGA 회로** Yun Kuk Park and Jung Hoon Chun *Sungkyunkwan University*
WP1-477	**Feedback Detection 구조 및 개선된 Transient 특성을 갖는 LDO 레귤레이터** Sang Wook Kwon, Jung Min Lee, Woo-yeol Seo, and Yong-Seo Koo *Department of Electronics and Electrical Engineering, Dankook University*

WP1-478	**기준 클락 없이 동작하는 순수 디지털 클럭 및 데이터 복원 회로 설계** 박민수, 전정훈 *Department of Electrical and Computer Engineering, Sungkyunkwan University*
WP1-479	**적응형 PWM Duty 보상 회로를 가진 고정밀 PWM LED Driver IC** Ha-Kyung Lee, Jong-Tack Kim, Seok-In Hong, Dong-Won Lee, and Byung-Do Yang *Department of Electronics Engineering, Chungbuk National University*
WP1-480	**넓은 출력 전압 범위를 가지는 재구성 가능한 스위치드 커패시터 전력 변환기** Seok-In Hong, Jong-Tack Kim, Ha-Kyung Lee, Dong Won Lee, and Byung-Do Yang *Department of Electronics Engineering, Chungbuk National University*
WP1-481	**역전도 제어기를 구비한 BCD기반 고효율 GaN Gate Driver IC** 김동훈, 이용승, 한결, 김종선 *홍익대학교 전자전기공학과*
WP1-482	**듀오바이너리 프리코더를 이용한 송신단 설계 비교 연구** 한슬기, 이원영 *서울과학기술대학교 전자 IT미디어공학과*

M. RF and Wireless Design

심사위원: 권구덕 교수(강원대학교), 한상욱 수석연구원(삼성전자)

WP1-483	**Feed-Forward Equalizer and Decision-Feedback Equalizer with Adaptive Coefficient Engines for ADC-Based Receiver** Kwangho Lee, Haram Ju, Yongchul Jung, and Sungho Lee *Convergence Signal – SoC Research Center, KETI*
WP1-484	**An Output Enhancement Technique of a Concurrent-Mode CMOS Detector for Millimeter-Wave Imaging** Ju-Hyeon Park, Ha-Neul Lee, Ji-In Jeong, Ui-Gyu Choi, and Jong-Ryul Yang *Department of Electronic Engineering, Yeungnam University*
WP1-485	**입력 데이터의 Duty Cycle 왜곡에 동작할 수 있는 2 Clock 주기 샘플링을 사용한 Extended Bang-Bang Phase and Frequency Detector(XBBPFD)** 박종민, 조요셉, 이승주, 양성훈, 조영원, 정재훈, 김의근, 채종혁, 범진욱 *Sogang University*
WP1-486	**22.5Gb/s Switched Capacitor Based Two Tap Half-Rate DFE** 조요셉, 박종민, 양성훈, 이승주, 김의근, 정재훈, 조영원, 채종혁, 범진욱 *Sogang University*
WP1-487	**A 26-43GHz Wideband High Linearity CMOS Low-Noise Amplifier** Hyojin Yoon and Changkun Park *Department of Electronic Engineering, Soongsil University*
WP1-488	**A Ka-Band Vector Sum Phase Shifter Using Active Balun** Jimin Lee and Changkun Park *Department of Electronic Engineering, Soongsil University*
WP1-489	**Ka-Band GaN-Based LNA MMIC for 5G FR2 Applications** Hyun Bae Ahn, Sung-Min Son, and Junghwan Han *Chungnam National University*
WP1-490	**2.4GHz Bluetooth Low Energy Receiver with Quadrature Local Oscillator Buffer** Sukju Yun and Kuduck Kwon *Department of Electronics Engineering, Kangwon National University*

WP1-491	**Multi-Phase Bang-Bang Phase Locked Loop for 4Gb/s NRZ Clock and Data Recovery in 0.18um CMOS** Min-Jeong Son and In-Chul Hwang *Kangwon National University*
WP1-492	**GaN HEMT 공정을 이용한 Ku 대역 위성통신용 SPDT 스위치 설계** 빈수현[1], 양영구[1,2] *[1]성균관대학교 정보통신대학 전자전기컴퓨터공학과, [2]㈜파라피에이*
WP1-493	**Ku 대역 위성통신용 5 W GaN MMIC 전력증폭기** 김성형[1], 배순철[1], 양영구[1,2] *[1]성균관대학교 정보통신대학 전자전기컴퓨터공학과, [2]para-PA Inc.*
WP1-494	**20 Watt Ku-band GaN Power Amplifier MMIC for SATCOM** Sooncheol Bae[1], Seonghyoung Kim[1], and Youngoo Yang[1,2] *[1]Department of Electrical and Computer Engineering, Sungkyunkwan University, [2]para-PA Inc.*
WP1-495	**Design of Single-/Dual-band Signal Generation Using Electro-Optic Frequency Comb and Field Programmable Photonic Gate Array** Youngseok Bae, Sungjun Yoo, Seungbae Ahn, Dawon Yang, and Sanghoon Jin *Agency for Defense Development*
WP1-496	**94 GHz 1Tx 4Rx FMCW Radar Transceiver Using 28-nm CMOS Technology** Jin Uk Shin, Seuk Won Kang, Dong Yeol Yang, and Byung-Sung Kim *RF Microelectronic Design Lab., Sungkyunkwan University*
WP1-497	**Robust Wireless Power Transfer System for Implantable Bioelectronics** Seungwon Yoo[1,2,3,4], Seonghyeon Nam[1,2,3,4], and Dae-Hyeong Kim[1,2,3,4] *[1]Interdisciplinary Program, Bioengineering Major, Graduate School, Seoul National University, [2]School of Chemical and Biological Engineering, Seoul National University, [3]Institute of Chemical Processes, Seoul National University, [4]Center for Nanoparticle Research, IBS*

O. System LSI Design

심사위원: 정준원 교수(숙명여자대학교), 심민섭 교수(경상대학교)

WP1-498	**Adaptive Image Size Padding for Memory Load Balancing** So Yeon Kim[1], Yung-Cheol Byun[2], and Jae Young Hur[1] *[1]Department of Electronic Engineering, Jeju National University, [2]Department of Computer Engineering, Jeju National University*
WP1-499	**Xilinx Spartan-3 계열용 범용 역공학 도구** 신성균, 최소연, 이은채, 유호영 *충남대학교 전자공학과*
WP1-500	**저면적 저전력 Multiply-Accumulate(MAC) 구현** 이유진, 임지환, 유호영 *충남대학교 전자공학과*
WP1-501	**FPGA 기반 딜레이 가변 링 오실레이터 TRNG 구조** 양희훈, 박지호, 이상원, 최소연, 유호영 *충남대학교 전자공학과*
WP1-502	**Separated Driving-node Sense Amplifier with Enhanced Sensing Margin for Low Voltage Applications** Dong-Yeong Kim and Myoung Jin Lee *Department of ICT Convergence System Engineering, Chonnam National University*
WP1-503	**Indirect Time-of-Flight 이미지 센서를 위한 On-Chip 실시간 거리 계산 회로 구현** Seung-Ah Park and Jung-Hoon Chun *Department of Electrical and Computer Engineering, Sungkyunkwan University*
WP1-504	**Design Exploration of AES-CCM Implementation for Bluetooth LE** Yujin Jeon[1,2], Eunkyung Ham[1,2], Jaeyun Lim[1,2], and Ji-Hoon Kim[1,2] *[1]Ewha Womans University, [2]Smart Factory Multidisciplinary Program*
WP1-505	**AMBA Monitoring Platform for SoC Architectural Exploration** Jaeyun Lim[1,2], Eunkyung Ham[1,2], Yujin Jeon[1,2], and Ji-Hoon Kim[1,2] *[1]Ewha Womans University, [2]Smart Factory Multidisciplinary Program*

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

심사위원: 박정웅 교수(가천대학교), 유상우 교수(경기대학교)

WP1-506	**Boron Nitride Nanotube-ZnO QDs Nanocomposites for Transparent Flexible Piezoelectric Nanogenerator** Dong Su Shin and Dong Ick Son *Institute of Advanced Composite Materials, KIST*
WP1-507	**Electric Field-Enhanced Electrochemical Performance in Flexible In-Plane Micro-Supercapacitors** Jihong Kim[1], Sung Min Wi[1], Yeonsu Park[1], Sangjun Son[1], Hee Young Lim[1], Suok Lee[1], A-Rang Jang[2], and Young-Woo Lee[1] *[1]Department of Energy Systems Engineering, Soonchunhyang University, [2]Division of Electrical, Electronic, and Control Engineering, Kongju National University*
WP1-508	**Fabrication and Performances of Recessed Gate AlGaN/GaN MOSFET Using Mg Ion Implantation** Jun Hyeok Heo[1], Sang Ho Lee[1], Jin Park[1], Geon Uk Kim[1], Ga Eon Kang[1], So Ra Jeon[1], Young Jun Yoon[2], and In Man Kang[1] *[1]School of Electronic and Electrical Engineering, Kyungpook National University, [2]Korea Multi-purpose Accelerator Complex, KAERI*
WP1-509	**High Performance Flexible Micro-Supercapacitor based on MnO_2 Electrode with Oxygen Vacancy Control** Sung Min Wi[1], Jihong Kim[1], HeeYoung Lim[1], Yeonsu Park[1], Sangjun Son[1], Suok Lee[1], A-Rang Jang[2], and Young-Woo Lee[1] *[1]Department of Energy Systems Engineering, Soonchunhyang University, [2]Division of Electrical, Electronic, and Control Engineering, Kongju National University*
WP1-510	**플라즈마 차징을 이용한 패시베이션 기술 개발** 강민구, 정경택, 송희은 *한국에너지기술연구원*
WP1-511	**Advanced Carrier Lifetime Analysis Method of Silicon Solar Cells for Industrial Applications** Sang Hee Lee[1], Kwan Hong Min[1], Sungjin Choi[1], Hee-eun Song[1], Min Gu Kang[1], Kyung Taek Jeong[1], Taejun Kim[2], and Sungeun Park[1] *[1]Photovoltaic Laboratory, KIER, [2]PV R&D Center, Hyundai Energy Solutions*
WP1-512	**기계적 에너지 수확을 위한 $BaZnF_4$의 합성 및 나노발전소자 응용** Venkata Siva Kavarthapu, Sontyana Adonijah Graham, Punnarao Manchi, Mandar Vasant Paranjape, and Jae Su Yu *Kyung Hee University*
WP1-513	**Bimetallic-metal Organic Framework-derived Co_9S_8-MoS_2 Nanohybrids as an Efficient Bifunctional Electrocatalyst towards Hydrogen and Oxygen Evolution Reaction** Suok Lee[1], Yeonsu-Park[1], Sangjun Son[1], Jihong Kim[1], Sung Min Wi[1], Jong Bea Park[2], A-Rang Jang[3], and Young-Woo Lee[1] *[1]Department of Energy Systems Engineering, Soonchunhyang University, [2]Jeonju Centre, KBSI, [3]Division of Electrical, Electronic and Control Engineering, Kongju National University*

WP1-514	**High Performance Self-Powered Ag_2O/β-Ga_2O_3 P-N Junction-Based Solar-Blind UV Photodetector** Sangbin Park[1], Hyungmin Kim[1], Sangmo Kim[2], Kyung Hwan Kim[1], and Jeongsoo Hong[1] *[1]Department of Electrical Engineering, Gachon University, [2]Department of Smart Device Engineering, Sejong University*
WP1-515	**Ferroelectric B-Site Modified Bismuth Lanthanum Titanate Thin Films for High-Efficiency PV Systems** Rui Tang, Rui He, Sangmo Kim, Vo Thi Muoi, and Chung Wung Bark *Gachon University*
WP1-516	**Enhancement of Thermoelectric Performances in P-type Bismuth Telluride Based Nanocomposites via Solution Phase Bi_2Te_3-Mxene Ink** Sun-Woo Kim, Jiyoung Park, and Jeong Min Baik *School of Advanced Materials Science and Engineering, Sungkyunkwan University*
WP1-517	**Enhancement of Perovskite Solar Cells Efficiency Using Cu_2O/ Reduced Graphene Oxide Nanocomposite as Hole Transport Material** Thi Muoi Vo, Thi My Huyen Nguyen, and Chung Wung Bark *Gachon University*
WP1-518	**Building Better Rechargeable Aluminum Batteries with High-power Capabilities** Yeong Hoon Heo, Jong Chan Hyun, Dong Hyuk Kang, Yeonhua Choi, Eunji Lee, and Young Soo Yun *KU-KIST Graduate School of Converging Science and Technology, Korea University*
WP1-519	**High Coulombic Efficiency Lithium Metal Anode for High-Voltage Lithium Metal Batteries** Minhyuck Park, Son Ha, Jimin Park, Ji Soo Kim, Hyun Soo Kim, Sion Kim, and Young Soo Yun *KU-KIST Graduate School of Converging Science and Technology, Korea University*
WP1-520	**Enhanced Output Power of Thermoelectric Generator with Ferroelectric Materials** Ji-Young Park, Sun-Woo Kim, and Jeong Min Baik *School of Advanced Materials Science and Engineering, Sungkyunkwan University*
WP1-521	**Revamping the Graphene Oxide into rGO by Hydrothermal Protocol with an Aid of Povidone to Fabricate the Energy Storage Device** Selvaraj David and Yung Ho Kahng *Department of Physics Education, Chonnam National University*
WP1-522	**Boosting Electron Transfer Induced by N-doped Graphene Quantum Dots/FeOOH in LaSrCoO/$MoSe_2$ for Efficient Bifunctional Electrocatalyst** Sang Heon Kim and Jeong Min Baik *School of Advanced Materials Science and Engineering, Sungkyunkwan University*

WP1-523	**RF 스퍼터링으로 증착한 NiO 박막의 급속 열처리에 따른 다양한 특성의 변화** 김형민[1], 박상빈[1], 김상모[2], 홍정수[1], 김경환[1] *[1]가천대학교 전기공학과, [2]세종대학교 지능기전공학부*
WP1-524	**Cu-Single Atoms Decorated N-doped Carbon Dots for Boosting Electrocatalytic CO_2–to–ethanol Production** Rahul Purbia, Sung Yeol Choi, and Jeong Min Baik *School of Advanced Materials Science and Engineering, Sungkyunkwan University*
WP1-525	**Salt Template Based Synthesis of Bi Nanoparticles and Their Electrochemical CO2RR Activity for Formic Acid Production** Sung Yeol Choi, Rahul Purbia, and Jeong Min Baik *Sungkyunkwan University*
WP1-526	**Ultra-Stretchable, Biodegradable Triboelectric Nanogenerator for Green/Biomedical Energy Systems** Heeseok Kang, Won Bae Han, Seung Min Yang, Gwan-Jin Ko, and Suk-Won Hwang *KU-KIST Graduate School of Converging Science and Technology, Korea University*
WP1-527	**Fabrication of Ga_2O_3 Power Semiconductor Devices for Extreme Environments Using Aerosol Deposition Method** Hyeon Ho Cho[1,2], Han Eol Jang[3], and Hak Ki Yu[1,2] *[1]Department of Energy Systems Research, Ajou University, [2]Department of Materials Science and Engineering, Ajou University, [3]School of Advanced Materials Science and Engineering, Sungkyunkwan University*
WP1-528	**Position Selective Growth of WO_3 Nanosheets for Room Temperature Toxic Gas Sensors** D. D. Megersa[1,2] and H. K. Yu[1,2] *[1]Department of Energy Systems Research, Ajou University, [2]Department of Materials Science and Engineering, Ajou University*
WP1-529	**Enhanced Performance Perovskite Photodetectors via Polymer Blend** Dante Ahn[1,2], Woochul Kim[1], and Yusin Pak[2] *[1]Sensor System Research Center, KIST, [2]KU-KIST Graduate School of Converging Science and Technology, Korea University*
WP1-530	**Nanoporous Carbon Materials for the Anode of Aluminum Metal Battery** Juhee Yoon[1], Geonhee Han[1], Jihyeon Kim[2], and Hyoung-Joon Jin[1,2] *[1]Program in Environmental and Polymer Engineering, Inha University, [2]Department of Polymer Science and Engineering, Inha University*
WP1-531	**Characteristic Dual-domain Composite Structure of Reduced Graphene Oxide and Its Application to Higher Specific Capacitance** Jun Beom Kim, Sung Hwan Koo, In Ho Kim, and Sang Ouk Kim *KAIST*

WP1-532	**Micro and Nano Barium Hexaferrite Particle for EMI Shielding Film** Mingi Lee[1,2], Seungsik Kim[1,2], and Hak Ki Yu[1,2] *[1]Department of Materials Science and Engineering, Ajou University, [2]Department of Energy Systems Research, Ajou University*
WP1-533	**경사각을 갖는 Gate Oxide (Tapered Gate Oxide)를 통한 1.2 kV SiC Buffered Gate Oxide MOSFET (BFOX-MOSFET)의 전계완화연구** Hyowon Yoon, Chaeyun Kim, Yeongeun Park, Gwangjae Kim, Sangyeob Kim, Gyuhyeok Kang, JinHun Kim, Gukhwa Jeon, Seonghyo Park, and Ogyun Seok *Kumoh National Institute of Technology*
WP1-534	**MgO Nano-gear for Anti-bacteria Applications** Yeongji Yu[1] and Hak Ki Yu[1,2] *[1]Department of Materials Science and Engineering, Ajou University, [2]Department of Energy Systems Research, Ajou University*
WP1-535	**Rolled-up Nickel Catalyst Promoted by MoO_3 for Sodium Borohydride ($NaBH_4$) Dehydrogenation** Hojun Shin[1,2], Sang Yeop Park[1], and Hak Ki Yu[1,2] *[1]Department of Energy Systems Research, Ajou University, [2]Department of Materials Science and Engineering, Ajou University*
WP1-536	**Sputtering to Reactive Gas Ratios-controlled Magnetron Sputtering Growth of MoO_3 Nanorods** G.T. Gudena[1,2] and H. K. Yu[1,2] *[1]Department of Energy Systems Research, Ajou University, [2]Department of Materials Science and Engineering, Ajou University*
WP1-537	**Ultra-high Porosity MgO Micro-particles for Various Application** Youngho Kim[1,2,3] and Hak Ki Yu[1,2] *[1]Department of Materials Science and Engineering, Ajou University, [2]Department of Energy Systems Research, Ajou University, [3]Department of Materials Science and Engineering, Korea University*
WP1-538	**실내 광원에서 상시 구동 가능한 대면적 유기 태양광 발전 연구** 한세림[1,2], 최효정[1], Swarup Biswas[1], 김혁[1] *[1]서울시립대학교 전자전기컴퓨터공학부, [2]한국생산기술연구원 융합기술연구소*
WP1-539	**Cu-Based Electrocatalysts for CO_2 Reduction Reaction** Seokwoo Choe and Youn Jeong Jang *Department of Chemical Engineering, Hanyang University*
WP1-540	**Layered Double Hydroxides Derived Nano-sized Nickel Catalyst for CO_x Free Hydrogen Production by Ammonia Decomposition** Sung Min Kim and Youn Jeong Jang *Department of Chemical Engineering, Hanyang University*

WP1-541	**Electrophoretically Deposited $Ti_3C_2T_x$ MXene Sheets as Efficient Catalysts for Electrochemical Nitrate Reduction Reaction to Ammonia** Yong Hyun Moon[1], Tae Hee Han[2], and Youn Jeong Jang[1] *[1]Department of Chemical Engineering, Hanyang University, [2]Department of Organic and Nano Engineering, Hanyang University*
WP1-542	**Interface Modification of NiO_x Hole Transport Layer with Organic Interlayer for High-Efficiency Perovskite Solar Cells** Jihye Young[1,2], Seok Woo Lee[3], Han Sol Park[1,2], Jihyeon Heo[1,2], Jae Won Chang[3], and Hui Joon Park[1,2] *[1]Department of Organic and Nano Engineering, Hanyang University, [2]Human-Tech Convergence Program, Hanyang University, [3]Department of Industrial Chemistry, Pukyong National University*
WP1-543	**Embellishment of $MnFeO_3$ Nanoparticles on WS_2 Nanoflakes for Solid-state Asymmetric Supercapacitor to Enhance Storage Properties** Zulfqar Ali Sheikh[1,2], Honggyun kim[1], Pranav K. Katkar[3], Muhammad Farooq Khan, and Deok-Kee Kim[1,2] *[1]Department of Electrical Engineering, Sejong University, [2]Electrical Engineering and Convergence Engineering for Intelligent Drone, Sejong University, [3]Department of Physics, Sejong University*
WP1-544	**1,200V Split Gate IGBT 전기적 특성 분석** Hyeong Seong Jo, Yu Rim Kim, Min Sang Kim, and Ey Goo kang *Department of Energy IT Engineering, Far East University*
WP1-545	**Facile Synthesis of WO_3/WS_2 Core@Shell Nanorods Using $WO_3 \cdot 0.33H_2O$ and Their Efficient Photoelectrochemical Reactivity** Dong-Bum Seo[1], Seungyoung Park[1], Jin Kim[1], Minsu Kim[1], Wooseok Song[1], Sun Sook Lee[1], Eui-Tae Kim[2], and Ki-Seok An[1] *[1]Thin Film Materials Research Center, KRICT, [2]Department of Materials Science and Engineering, Chungnam National University*
WP1-546	**TCAD Prediction of SJ MOSFET Size Dependent Failure in Reverse Recovery Condition** Jieun Lee[1], Jong Min Kim[1], Myeong Bum Pyun[2], Kwang Young Ko[2], Youngchul Kim[1], and Hyunchul Nah[1] *[1]Device Enabling Team, DB HiTek, [2]Device Development Team, DB HiTek*
WP1-547	**1700V Double Trench MOSFET 전기적 특성 최적화 연구** Yu Rim Kim, Ji Yeon Ryou, Jang Hyeon Lee, and Ey Goo Kang *Department of Energy IT Engineering, Far East University*
WP1-548	**Investigation of Triboelectricity-Based Back-gated Transistor towards Self-powered Systems** Jihyeon Park[1] and Daewon Kim[2] *[1]Department of Electronics and Information Convergence Engineering, Kyung Hee University, [2]Department of Electronic Engineering, Kyung Hee University*

WP1-549	**Self-heating 특성을 고려한 GaN HEMT 고주파 회로 모델링** 권경배, 최지웅, 정수윤, 전종욱 *건국대학교 전기전자공학부*
WP1-550	**P-type Ohmic Contact Formation on Bulk WSe_2 Using Semimetal $NiSe_2$ by Inhibiting Metal Induced Gap State** Ji Kwon Bae[1,2], Soheil Ghods[1], and Hak Ki Yu[1,2] *[1]Department of Energy Systems Research, Ajou University, [2]Department of Materials Science and Engineering, Ajou University*
WP1-551	**High-Output Power Thermoelectric Generator based on Cr-MgF_2/PMMA-carbon Light Absorber** Geonho Kwak[1], Yoo-Seok Jeong[2], Jeong Min Baik[2], and Hak Ki Yu[1] *[1]Department of Energy Systems Research, Ajou University, [2]School of Advanced Materials Science and Engineering, Sungkyunkwan University*
WP1-552	**Electrochromic $Li_4Ti_5O_{12}$ Thin Film as Anode for All-solid-state Lithium Ion Battery by Sputtering Method** Kwan-Young Oh[1,2], Haena Yim[1], and Ji-Won Choi[1,2] *[1]Electronic Materials Research Center, KIST, [2]Nanomaterials Science and Engineering, KIST School, University of Science and Technology (UST)*
WP1-553	**Developing a Face-shear Lead-free Piezoelectric Transducer through Anti-parallel Co-poling and Its Application to an Omnidirectional Piezoelectric Transducer Sensor** Jae-Min Eum[1], Sahn Nahm[2], and Ji-Won Choi[1,3] *[1]Center for Electronic Materials, KIST, [2]Department of Materials Science and Engineering, Korea University, [3]Nanomaterials Science and Engineering, University of Science and Technology (UST)*
WP1-554	**Laser-directed Synthesis of Strain-induced MoS_2 Structure for Improved Triboelectric Touch Sensors** Jiseul Park[1], Chang Kyu Jeong[2], and Ji-Won Choi[1,3] *[1]Electronic Materials Research Center, KIST, [2]Division of Advanced Materials Engineering, Jeonbuk National University, [3]Nanomaterials Science and Engineering, University of Science and Technology (UST)*
WP1-555	**Transparent Thin Film Battery with Ag-doped $SiO_{0.7}N$ Anode** Yaelim Hwang[1,2], Ho-Won Jang[2], and Ji-Won Choi[1,3] *[1]Electronic Materials Research Center, KIST, [2]Department of Material Science and Engineering, Research Institute of Advanced Materials, Seoul National University, [3]Nanomaterials Science and Engineering, University of Science and Technology (UST)*
WP1-556	**Perovskite Microcells Fabricated Using Swelling-induced Crack Propagation for Colored Solar Windows** Jinhong Park[1,2] and Dae-Hyeoung Kim[1,2,3] *[1]Center for Nanoparticle Research, IBS, [2]School of Chemical and Biological Engineering, Institute of Chemical Processes, Seoul National University, [3]Department of Materials Science and Engineering, Seoul National University*
WP1-700	**1200V 급 4H-SiC Trench MOSFET의 최적화의 관한 연구** Ji Yeon Ryou, Dong Hyeon Lee, Dong Hyeon Kim, and Ey Goo Kang *Department of Energy IT Engineering, Far East University*

WP1-702	**Two-dimensional Characteristics Analysis of Perovskite Solar Cells by Photoluminescence Imaging Measurement based on Particle Swarm Optimization Algorithm** Jae Sun Lee[1,2], Yong-Jin Kim[1], Sang Hee Lee[1], Soohyun Bae[1], Hee-eun Song[1], Min-Gu Kang[1], Yimhyun Jo[1], Min Jin Kim[1], Yun Ae Cho[1], Do Hyung Kim[1], Han Ul Min[1], Kyung Taek Jeong[1], Minseo Kim[1], Sungeun Park[1], Jae-Min Myoung[2] *[1]KIER, [2]Yonsei University*

Q. Metrology, Inspection, Analysis, and Yield Enhancement

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

WP1-557	**3개의 Pitch를 이용한 Moire 효과 기반의 오버레이 Mark 설계** Hyun Chul Lee[1,3], Hyun Jin Chang[1], Ho Sung Woo[2], and Won Gyu Lee[3] *[1]AUROS Technology, Inc., [2]Korea National Open University, [3]Korea University*
WP1-558	**Electrical Property Measurement of 2D MoS_2/WS_2-Based Field-Effect Transistors for Physically Unclonable Function** Jaeseo Park[1,2], Jung Woo Leem[3], Minji Park[1], Zahyun Ku[4], Jun Oh Kim[1], Young L. Kim[3], and Sang Woo Kang[1,2] *[1]Advanced Instrumentation Institute, KRISS, [2]Precision Measurement, University of Science and Technology (UST), [3]Weldon School of Biomedical Engineering, Purdue University, [4]Materials and Manufacturing Directorate, Air Force Research Laboratory (AFRL)*
WP1-559	**Extraction Methods of Acceptor-Like State Distributions in Solution-Processed InZnO Semiconductor depending on In Molarity Ratio** Dongwook Kim, Hyunju Lee, Bokyoung Kim, and Jaehoon Park *Hallym University*
WP1-560	**EMC측정을 통한 고다층 보드 신뢰성 확보에 관한 특성 연구** 박진성[1], 유일근[2], 박진열[2], 박남선[3], 김기현[1], 김경민[1], 김성용[1] *[1]한국공학대학교, [2](주)에이티씨, [3](주)제*기한국*
WP1-561	**Model-less TSOM 기법 적용 Defect 분류 및 높이, 침투 깊이 측정 연구** 주지용, 박지원, 김도희, 이준호 *공주대학교 기하광학연구실*
WP1-562	**Highly Reliable Dynamic Spectroscopic Imaging Ellipsometer** Gukhyeon Hwang[1], Vamara Dembele[1], Sukhyun Choi[1], Saeid Kheiryzadehkhanghah[1], Inho Choi[1], Junbo Shim[1], Sungtae Kim[2], Sangjun Kim[2], and Daesuk Kim[1] *[1]Department of Mechanical System Engineering, Jeonbuk National University, [2]AUROS Technology, Inc.*
WP1-563	**Hierarchical C-MoS_2 Nanobranches Based Ppt-level Gas Detection Sensor** Jeongin Song[1,2], Jinwook Baek[1], Jinill Cho[3], Taesung Kim[3], Ha Sul Kim[2], Jihun Mun[1], and Sang-Woo Kang[1,4] *[1]Advanced Instrumentation Institute, KRISS, [2]Department of Physics, Chonnam National University, [3]School of Mechanical Engineering, Sungkyunkwan University, [4]Measurement Engineering, University of Science and Technology (UST)*
WP1-564	**Accuracy Analysis of Dynamic Spectroscopic Ellipsometry for System Design Optimization** Saeid Kheiryzadehkhanghah, Inho Choi, Gukhyeon Hwang, Sukhyun Choi, Junbo Shim, and Daesuk Kim *Department of Mechanical System Engineering, Jeonbuk National University*

WP1-566	**모델링을 통한 플렌옵틱 1.0과 2.0의 공간분해능 비교분석** 연하늘, 한석기, 주지용, 장관우, 이준호 *공주대학교 기하광학연구실*
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WP1-571	**심층 학습을 이용한 In Cell 열화 Pattern 분류 방법** Sang-Chul Kim, Sang-Hyun Kim, and Eun-Jung Ko *R&D, SK Hynix*
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T. AI

심사위원: 이상설 박사(KETI)

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심사위원: 박성윤 교수(부산대학교), 배준성 교수(강원대학교)

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