

# 제22회 한국반도체학술대회

2015년 2월 10일(화) - 12일(목), 인천 송도컨벤시아

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## A. Interconnect & Package 분과

Room A  
1F / 104호

2015년 2월 11일(수) 09:00-10:30

[WA1-A] TSV & Microbump

좌장: 이후정 (성균관대학교), 조철호 (SK Hynix Inc.)

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| WA1-A-1 | 09:00-09:15 | <b>Tackling High Volume Production of 3DI/TSV Packages</b><br>Hugo Pristauz<br>Besi Austria GmbH  |
| WA1-A-2 | 09:15-09:30 | <b>Characteristics of Through-Si-Via(TSV) Filling by Electrodeposition with Pulse Wave Form Current</b><br>Sanghyun Jin and Bongyoung Yoo<br>Department of Materials Engineering, Hanyang University  |
| WA1-A-3 | 09:30-09:45 | <b>Temporary Bonding and Debonding Technology to Enable Cost-Effective Fabrication of Through-Glass-Via Interposers</b><br>Alvin Lee <sup>1</sup> , Jay Su <sup>1</sup> , Kim Arnold <sup>1</sup> , Dongshun Bai <sup>1</sup> , Bor Kai Wang <sup>2</sup> , Leon Tsai <sup>2</sup> , Aric Shorey <sup>2</sup> , Wen-Wei Shen <sup>3</sup> , Chun-Hsien Chien <sup>3</sup> , Hsiang-Hung Chang <sup>3</sup> , and Jen-Chun Wang <sup>3</sup><br><sup>1</sup> Brewer Science, Inc., <sup>2</sup> Corning Advanced Technology Center/Corning Incorporated, <sup>3</sup> Electronics and Optoelectronics Research Laboratories (EOL), Industrial Technology Research Institute (ITRI) |
| WA1-A-4 | 09:45-10:00 | <b>Effect of the microstructure of electroplated Ni UBM on the Growth of Ni-Cu-Sn Intermetallic Compound in Flip-Chip Packaging</b><br>Mi-Seok Park, Do-Hwan Nam, and Hyuk Sang Kwon<br>Department of Materials Science and Engineering, KAIST  |
| WA1-A-5 | 10:00-10:15 | <b>Mechanisms of Improving Thermal Cycling Reliability with Pad Finish &amp; Solder Alloying Effect on Solder Grains</b><br>Jung-Lae Jo, Soon-Bum Kim, Tae-Eun Kim, Yeo-Hoon Yoon, Ho Jeong Moon, Hyunggil Back, Tae-Je Cho, and Sayoon Kang<br>Reliability & Analysis Part, Fundamental Technology PJT., Package Development Team, Semiconductor R&D Center, SAMSUNG ELECTRONICS CO., LTD.   |
| WA1-A-6 | 10:15-10:30 | <b>Comparison of Creep Models for Solder Alloys</b><br>Yongchang Lee<br>Sk Hynix Inc., Package and Test center, Interconnect Product & Technology (IPT) development group   |

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## B. Patterning 분과

Room B

1F / 105호

2015년 2월 11일(수) 09:00-10:30

[WB1-B] Patterning

좌장: 유원종 (성균관대학교), 정지원 (인하대학교)

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| WB1-B-1 | 09:00-09:15 | <b>Deep Contact Hole Patterning for 3D NAND Flash</b><br>구분왕, 김종훈, 김영식<br>SK Hynix Inc. 미래기술 연구원 PHOTO Technology Team   |
| WB1-B-2 | 09:15-09:30 | <b>EUV Multilayer Defect Compensation in Computational Lithography</b><br>김상곤<br>한양대학교   |
| WB1-B-3 | 09:30-09:45 | <b>Negative Tone Development Process Window according to Pattern Size</b><br>Doyoun Kim, Seyoung Oh, Hyoungsoon Yune, Daejin Park, Woosung Moon, Hyunjo Yang, and Donggyu Yim<br>Research & Development Division, SK Hynix Inc.  |
| WB1-B-5 | 10:00-10:15 | <b>Overlay Metrology In Cell Area with Design based Metrology</b><br>Gyoyeon Jo <sup>1</sup> , Jungchan Kim <sup>1</sup> , Sunkeun Ji <sup>1</sup> , Chanha Park <sup>1</sup> , Minwoo Park <sup>1</sup> , Hyunwoo Kang <sup>1</sup> , Hyunjo Yang <sup>1</sup> , Donggyu Yim <sup>1</sup> , Masahiro Yamamoto <sup>2</sup> , Kotaro Maruyama <sup>2</sup> , and Byungjun Park <sup>1</sup><br><sup>1</sup> Research & Development Division, SK Hynix Inc., Korea, <sup>2</sup> NGR Inc. Japan |
| WB1-B-6 | 10:15-10:30 | <b>Study and Control of Reticle Heating Contribution to Total Overlay Error Budget for Sub-20-nm Devices</b><br>Byong-Seog Lee, Honggoo Lee, Sangjun Han, Wontaik Kwon, and Myoungsoo Kim<br>R&D Div., SK Hynix Inc. Semiconductor Inc.  |

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## G. Device & Process Modeling, Simulation and Reliability 분과

Room C  
1F / 106호

2015년 2월 11일(수) 09:00-10:30

[WC1-G] Device Modeling and Simulation

좌장: 이재규 (삼성전자), 조인욱 (SK Hynix Inc.)

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| WC1-G-1 | 09:00-09:15 | <b>A Newly-Proposed Vacuum-Channel Transistor</b><br>In Jun Park and Changhwan Shin<br>School of Electrical and Computer Engineering, University of Seoul  |
| WC1-G-2 | 09:15-09:30 | <b>DFT-NEGF Simulation of Si Nanowire Transistors using Reduced-Sized Hamiltonian</b><br>Woo Jin Jeong, Jaehyun Lee, and Mincheol Shin<br>Department of Electrical Engineering, KAIST  |
| WC1-G-3 | 09:30-09:45 | <b>Multiple Negative Differential Resistance Device by using the Ambipolar Behavior of TFET with Fast Switching Characteristics</b><br>Jaewon Jung, Sunhae Shin, Esan Jang, and Kyung Rok Kim<br>School of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology |
| WC1-G-4 | 09:45-10:00 | <b>Analysis of Stress Effect on (110)-oriented Single Gate SOI nMOSFETs using Silicon-Thickness-Dependent Deformation Potential</b><br>Sujin Choi, Wookyung Sun, Injae Lee, and Hyungsoon Shin<br>Department of Electronics Engineering, Ewha Womans University                                    |
| WC1-G-5 | 10:00-10:15 | <b>Effects of Ferroelectric Thickness on Negative Capacitance FET Inverters</b><br>Junbeom Seo, Jaehyun Lee, and Mincheol Shin<br>Department of Electrical Engineering, KAIST  |
| WC1-G-6 | 10:15-10:30 | <b>Design and Analysis of Gate-recessed AlGaIn/GaN Fin-type Field-Effect Transistor</b><br>Young In Jang, Jae Hwa Seo, Young Jun Yoon, Hye Rim Eun, Ra Hee Kwon, Jin Su Kim, Jung-Hee Lee, and In Man Kang<br>School of Electronics Engineering, Kyungpook National University                     |

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N. VLSI CAD 분과

Room D  
1F / 107호

2015년 2월 11일(수) 09:00-10:30

[WD1-N] VLSI Design & Automation

좌장: 김윤진 (숙명여대), 이종은 (UNIST)

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| WD1-N-1 | 09:00-09:15 | <b>Analysis of Characterizing Feasible Design Space of LC-VCO Using SVM Classifiers</b><br>Jiho Lee and Jaeha Kim<br>Department of Electrical and Computer Engineering, Seoul National University  |
| WD1-N-2 | 09:15-09:30 | <b>Local Density-aware Metal Retargeting for Preventing Topological CMP Failure in Sub-28nm Node Designs</b><br>Yongchan Ban, Eunjoo Choi, Yongseok Kang, and Woohyun Paik<br>System IC R&D Lab., LG Electronics   |
| WD1-N-3 | 09:30-09:45 | <b>Reducing Routing Congestion and Chip Area by Post Placement Optimization Utilizing Redundant Inter-Cell Margin</b><br>Woohyun Chung, Seongbo Shim, and Youngsoo Shin<br>Department of Electrical Engineering, KAIST   |
| WD1-N-4 | 09:45-10:00 | <b>Comparative Study of Capacitor-Less LDO Regulator Designs Based on Pass Transistor Types</b><br>Soyeon Joo <sup>1</sup> , Jintae Kim <sup>2</sup> , and SoYoung Kim <sup>1</sup><br><sup>1</sup> College of Information and Communication Engineering, Sungkyunkwan University, <sup>2</sup> Department of Electronics Engineering, Konkuk University |
| WD1-N-5 | 10:00-10:15 | <b>Simultaneous Fixing Hold Violations of Best and Worst Corners</b><br>Inhak Han, Jinwook Jung, and Youngsoo Shin<br>Department of Electrical Engineering, KAIST  |
| WD1-N-6 | 10:15-10:30 | <b>Clock Domain Crossing Aware Sequential Clock Gating Optimization</b><br>Jianfeng Liu, Mi-Suk Hong, Kyungtae Do, Jung Yun Choi, and Jaehong Park<br>Design Technology Team, Samsung Electronics Co. Ltd.   |

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## E. Compound Semiconductors 분과

Room E  
1F / 108호

2015년 2월 11일(수) 09:00-10:30

### [WE1-E] Material Characteristic

좌장: 오정우 (연세대학교), 민병규 (한국전자통신연구원)

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| WE1-E-1 | 09:00-09:15 | <b>Extraction of Interface Trap Density by using Frequency Dispersion of C-V in Normally-off Gate-Recessed AlGaIn/GaN HFETs</b><br>Sungju Choi <sup>1</sup> , Youngjin Kang <sup>2</sup> , Jonghwa Kim <sup>1</sup> , Jungmok Kim <sup>1</sup> , Sung-Jin Choi <sup>1</sup> , Dong Myong Kim <sup>1</sup> , Ho-Young Cha <sup>2</sup> , Hyungtak Kim <sup>2</sup> , and Dae Hwan Kim <sup>1</sup><br><sup>1</sup> School of Electrical Engineering, Kookmin University, <sup>2</sup> School of Electronic and Electrical Engineering, Hongik University |
| WE1-E-2 | 09:15-09:30 | <b>Interfacial Reactions of Si/Ti/Al/Cu Ohmic Metallization on AlGaIn/GaN Heterostructures</b><br>Seonno Yoon, Jangwon Bang, and Jungwoo Oh<br>School of Integrated Technology, Yonsei University   |
| WE1-E-3 | 09:30-09:45 | <b>AlN/GaN 이종접합구조의 성장 및 소자제작을 통한 특성 확인</b><br>김정길, 원철호, 김동석, 강희성, 조우영, 김도균, 손동혁, 이준혁, 김지현, 이정희<br>경북대학교 IT 대학 전자공학부   |
| WE1-E-4 | 09:45-10:00 | <b>Correlation between 2-DEG Mobility and Crystal Quality in AlGaIn/GaN HEMT Structure Grown on 4H-SiC</b><br>Cheon Heo, Jongjin Jang, Kyungjae Lee, Byungchan So, Kyungbae Lee, and Okhyun Nam<br>Department of Nano-Optical Engineering, Korea Polytechnic University   |
| WE1-E-5 | 10:00-10:15 | <b>Fabrication of through-Hole n-Electrode for GaN Buffer Layer Removed UV Flip Chip LED</b><br>Anil Kawan, Jong Min Park, and Soon Jae Yu<br>Department of Electronic Engineering, Sunmoon University  |
| WE1-E-6 | 10:15-10:30 | <b>InGaAs-on Insulator Transistors with Y<sub>2</sub>O<sub>3</sub> Buried Oxide Layer</b><br>SangHyeon Kim, Dae-Myeong Geum, Min-Su Park, and Won Jun Choi<br>Center for Opto-electronic convergence systems, Korea Institute of Science and Technology   |

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## O. System LSI Design 분과

Room G  
1F / 109호

2015년 2월 11일(수) 09:00-10:30

[WG1-O] Systems and Applications

좌장: 김지훈 (충남대학교), 이한호 (인하대학교)

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| WG1-O-1 | 09:00-09:15 | <b>Area-Efficient and High-Throughput Architecture for Galois/Counter Mode (GCM)</b><br>Hoo-Sung Lee <sup>1,2</sup> , Ik-Jae Chun <sup>1</sup> , Moon-Sik Lee <sup>1</sup> , and Ji-Hoon Kim <sup>2</sup><br><sup>1</sup> Wireless Proximity Communications Research Section, ETRI, <sup>2</sup> Division of Electrical and Information Technology Engineering, Chungnam National University |
| WG1-O-2 | 09:15-09:30 | <b>Efficient Successive-Cancellation Polar Decoder</b><br>윤하람, 이한호<br>인하대학교 정보통신공학과  |
| WG1-O-3 | 09:30-09:45 | <b>FPGA Implementation of a Barrel and Vignetting Distortion Correction Processor for Wide-Angle Cameras</b><br>Won-Tae Kim, Hui-Sung Jeong, Jinu Hong, Sunah Moon, and Tae-Hwan Kim<br>School of Electronics, Telecommunication & Computer Engineering, Korea Aerospace University  |
| WG1-O-4 | 09:45-10:00 | <b>멀티스레드 효율을 개선한 Multi-banked Cache 설계</b><br>Gyutaek Kyung, Dohyun Kim, and Kwangyeob Lee<br>Department of Computer engineering, Seokyeong University   |
| WG1-O-5 | 10:00-10:15 | <b>An Area Efficient Scaling-Free CORDIC Algorithm Using Global Shifting Sum (GSS) Method</b><br>Gihoon Jung and Jongsun Park<br>Department of Electrical Electronic Engineering, Korea University   |
| WG1-O-6 | 10:15-10:30 | <b>A MP-based BCH Encoder for Reducing the Latency of SC based on re-Encoding Architecture</b><br>Hoyoung Tang and Jongsun Park<br>School of Electrical Engineering, Korea University  |

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## I. MEMS & Sensor Systems 분과

Room H  
1F / 110호

2015년 2월 11일(수) 09:00-10:30

[WH1-I] Physical Sensor System

좌장: 한상욱 (KIST), 박재영 (광운대학교)

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WH1-I-1	09:00-09:15	<b>Implementation and Analysis of Avalanche Photodiode for Single-Photon Detection</b> 이인준 <sup>1,2</sup> , 이민수 <sup>1</sup> , 김상인 <sup>2</sup> , 한상욱 <sup>1</sup> , 문성욱 <sup>1</sup> <sup>1</sup> 한국과학기술연구원 나노양자정보연구센터, <sup>2</sup> 아주대학교 전자공학과
WH1-I-2	09:15-09:30	<b>P&amp;P QKD System using Single Photon Detectors with Dual Path Method</b> Minsoo Lee, Byungkwon Park, Minki Woo, Il-young Kim, Osung Kwon, Yong-su Kim, Sang-wook Han, and Sung Moon Nano & Quantum Information Research Center, KIST / Korea University of Science and Technology
WH1-I-3	09:30-09:45	<b>Theoretical and Experimental Investigation of Two-Photon Interference with Classical Pulses</b> Yong-Su Kim Center for nano & quantum information research, KIST
WH1-I-4	09:45-10:00	<b>Electrical Characteristics of Electrolyte-Oxide-Silicon (EOS) capacitor with the gold nanoparticle (AuNPs) attachments</b> Nanki Hong <sup>1</sup> , Kihyun Kim <sup>1</sup> , Chanoh Park <sup>2</sup> , Donghoon Kim <sup>1</sup> , and Jeong-Soo Lee <sup>1,2</sup> <sup>1</sup> Department of Electrical Engineering, POSTECH, <sup>2</sup> Division of IT convergence Engineering, POSTECH
WH1-I-5	10:00-10:15	<b>Analysis and Experiment of Interface Delamination Based BCB Cap Transfer Packaging of RF-MEMS Switch on MMIC</b> Seonho Seok <sup>1</sup> and Janggil Kim <sup>2</sup> <sup>1</sup> L'Institut d'Électronique Fondamental (IEF), Centre Scientifique d'Orsay, France, <sup>2</sup> School of Mechanical and Aerospace Engineering, Seoul National University
WH1-I-6	10:15-10:30	<b>Silicon Bulk Micromachined Piezoelectric Energy Harvester using Interdigital Shaped Cantilevers</b> Hyunok Cho, Jongcheol Park, and Yeong Park Department of Electronic Engineering, Kwangwoon University

The 22<sup>nd</sup> Korean Conference on Semiconductors (KCS 2015)

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J. Nano-Science & Technology 분과

Room I

1F / 111호

2015년 2월 11일(수) 09:00-10:30

[WI1-J] 에너지

좌장: 조경상 (삼성종합기술원)

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| WI1-J-1 | 09:00-09:30 | <b>[초청] Self-Powered Flexible Electronic Systems</b><br>Keon Jae Lee<br>Department of Materials Science and Engineering, KAIST   |
| WI1-J-2 | 09:30-10:00 | <b>[초청] On-Glass and Flexible GaN Light Emitting Diodes</b><br>Jun Hee Choi, Kyung-Sang Cho, Sungwoo Hwang, and Tae Sung Jung<br>Samsung Advanced Institute of Technology, Samsung Electronics Co., Ltd.   |
| WI1-J-3 | 10:00-10:15 | <b>Asymmetric Sodium-Ion Pseudocapacitors based on Ultra-Thin Hollow Carbon Nanospheres</b><br>Young Soo Yun and Kisuk Kang<br>Department of Materials Science and Engineering, Seoul National University  |
| WI1-J-4 | 10:15-10:30 | <b>Defect Formation in Cu(In,Ga)Se<sub>2</sub> Solar Cells by Proton Irradiation</b><br>Bonhyeong Koo <sup>1</sup> , June Hyuk Lee <sup>2</sup> , Donghyeop Shin <sup>1</sup> , Byung Tae Ahn <sup>1</sup> , and Byungha Shin <sup>1</sup><br><sup>1</sup> Department of Materials Science and Engineering, KAIST, <sup>2</sup> Korea Atomic Energy Research Institute |



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## A. Interconnect & Package 분과

Room A  
1F / 104호

2015년 2월 11일(수) 13:00-14:30

[WA2-A] Flip-chip, Solar, & LED Package

좌장: 조태제 (삼성전자), 이용선 (SK Hynix Inc.)

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| WA2-A-1 | 13:00-13:15 | <b>Ni Barrier Effect on Electromigration Reliability of Cu/Sn-Ag Microbump</b><br>Young-Bae Park <sup>1</sup> , Gyu-Tae Park <sup>1</sup> , Byeong-Rok Lee <sup>1</sup> , Ho-Young Son <sup>2</sup> , Min-Suk Suh <sup>2</sup> , Nam-Seog Kim <sup>2</sup><br><sup>1</sup> School of Materials Science and Engineering, Andong National University,<br><sup>2</sup> SK Hynix Inc. |
| WA2-A-2 | 13:15-13:30 | <b>EMI Issues in Pseudo-Differential Signaling for SDRAM Interface</b><br>Young-Jae Jang, Il-Min Yi, Byungsub Kim, Jae-Yoon Sim, and Hong-June Park<br>Dep.EE., POSTECH   |
| WA2-A-3 | 13:30-13:45 | <b>Pre-Applied Underfill Film Solution for the Productivity of Micro-Bump Interconnection</b><br>Jie Bai, Hung Chau, and YounSang Kim<br>Product Development and Engineering, Henkel Electronic Materials LLC   |
| WA2-A-4 | 13:45-14:00 | <b>단결정 및 다결정 태양광 모듈 Package의 Bypass Diode 동작 Point에 관한 연구</b><br>임종록 <sup>1</sup> , 민용기 <sup>1</sup> , 정태희 <sup>2</sup> , 안재현 <sup>1</sup> , 안형근 <sup>1</sup><br><sup>1</sup> 건국대학교, <sup>2</sup> 한국에너지기술연구원  |
| WA2-A-5 | 13:00-13:15 | <b>The Patterned Metal Plate(PMP) for Effective High Power LED Package</b><br>Choong-Mo Nam, Byung-Tak Jang, Su-Min Ko, Pau-Sun Ko, Jong-Kwan Jung, Kum-Hee Seo, Gyu-Man Lee, and In-Ho Jeong<br>Department of Electronics Engineering, Korea Polytechnic University  |
| WA2-A-6 | 14:15-14:30 | <b>박막 태양전지 package의 warpage 현상에 대한 연구 Warpage behavior of thin solder cell package</b><br>Sihan kim, JongRok Lim, YongKi Min, and HyungKeun Ahn<br>Department of Electrical Engineering, Konkuk University  |

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## B. Patterning 분과

Room B  
1F / 105호

2015년 2월 11일(수) 13:00-14:30

[WB2-B] Patterning

좌장: 유원종 (성균관대학교), 정지원 (인하대학교)

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| WB2-B-2 | 13:15-13:30 | <b>Synchronized Dual Pulse Etching Effect of SiO<sub>2</sub> in Capacitive Coupled C<sub>4</sub>F<sub>8</sub>/Ar/O<sub>2</sub> Plasmas</b><br>Kyung-Chae Yang, Min-Hwan Jeon, Hyun-Woo Sung, and Geun-Young Yeom<br>Department of Advanced material science and Engineering, SungKyunKwan University  |
| WB2-B-3 | 13:30-13:45 | <b>그래핀 접촉저항 감소를 위한 플라즈마기술</b><br>라창호, 최민섭, 유원종<br>SSKU Advanced Institute of Nano Technology, Sungkyunkwan University   |
| WB2-B-4 | 13:45-14:00 | <b>Inductively Coupled Plasma Type Etcher의 ESC Edge Ring 소재 적합성 분석</b><br>김형준, 김무진, 원복연, 장기수, 구덕자, 민경진, 최길현<br>삼성전자 반도체연구소  |
| WB2-B-5 | 14:00-14:15 | <b>RF Plasma SiNx Etching Fault Detection using Optical Emission Spectra with Modified K-Means Cluster Analysis and Principal Component Analysis</b><br>Haegyung Jang <sup>1</sup> , Hakseung Lee <sup>2</sup> , and Heeyeop Chae <sup>1,2</sup><br><sup>1</sup> SSKU Advanced Institute of Nanotechnology, Sungkyunkwan University,<br><sup>2</sup> School of Chemical Engineering, Sungkyunkwan University                                    |
| WB2-B-6 | 14:15-14:30 | <b>Plasma-Assisted Preparation of Metal Nanoparticles on the Branched Nanowires to Enhance the Gas Sensing Properties</b><br>Han Gil Na <sup>1</sup> , Yong Jung Kwon <sup>1</sup> , Hong Yeon Cho <sup>1</sup> , Chongmu Lee <sup>2</sup> , and Hyoun Woo Kim <sup>1</sup><br><sup>1</sup> Division of Materials Science and Engineering, Hanyang University,<br><sup>2</sup> Department of Materials Science and Engineering, Inha University |

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## G. Device & Process Modeling, Simulation and Reliability 분과

Room C  
1F / 106호

2015년 2월 11일(수) 13:00-14:30

### [WC2-G] Device Physics and Characterization 1

좌장: 신민철 (KAIST), 김대환 (국민대학교)

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| WC2-G-1 | 13:00-13:30 | <b>Comparison of Electrical Characteristics between NanoPlate FET and Nanowire FET for 5 nm node Technology</b><br>Jong-su Kim, Duckseoung Kang, and Hyungcheol Shin<br>School of Electrical Engineering and Computer Science, Seoul National University  |
| WC2-G-2 | 13:15-13:30 | <b>Investigation of the Asymmetrical Degradation Behaviors under Various Gate and Drain Bias Stresses in a-InGaZnO Thin-Film Transistors</b><br>Daeun Lee <sup>1</sup> , Chan-Yong Jeong <sup>1</sup> , Sang-Hun Song <sup>1</sup> , Jin Xiao-Shi <sup>2</sup> , and Hyuck-In Kwon <sup>1</sup><br><sup>1</sup> School of Electrical and Electronics Engineering, Chung-Ang University, <sup>2</sup> School of Information Science and Engineering, Shenyang University of Technology |
| WC2-G-3 | 13:30-13:45 | <b>Various Heterojunction Single Gate Tunneling FETs with Graded Channel Doping in Sub-40 nm Channels</b><br>Jungsik Kim <sup>1</sup> , Hyeongwan Oh <sup>2</sup> , Taiuk Rim <sup>3</sup> , Chang-Ki Baek <sup>3</sup> , and Jeong-Soo Lee <sup>1,2</sup><br><sup>1</sup> Department of IT Convergence Engineering, POSTECH, <sup>2</sup> Electrical Engineering, POSTECH, <sup>3</sup> Creative IT Engineering and Future IT Innovation Lab, POSTECH                                |
| WC2-G-4 | 13:45-14:00 | <b>Analysis of Structural Dependences on the Electrical Performance of Vertical Organic Field-Effect Transistor (VOFET)</b><br>Juhee Lee, Bongsik Choi, Jinsu Yoon, Minsu Jeon, Jaeman Jang, Dong Myong Kim, Dae Hwan Kim, and Sung-Jin Choi<br>Kookmin University  |
| WC2-G-5 | 14:00-14:15 | <b>The High-k/Metal Gate Structure to Suppress GIDL and FIBL in MOSFET</b><br>Esan Jang, Jaewon Jung, Sunhae Shin, and Kyung Rok Kim<br>Department of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology   |
| WC2-G-6 | 14:15-14:30 | <b>2T SONOS Cell with a Low Voltage Select Gate for Random Access Operation</b>   |

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Jaegwan Kim, Youngjun Kwon, Taeho Lee, Sunkun Park, Seongyong Sung,  
Inwook Cho, and Kyongdong Yoo

Technology Development team, SK Hynix Inc.

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N. VLSI CAD 분과

Room D  
1F / 107호

2015년 2월 11일(수) 13:00-14:30

[WD2-N] System Level Design & Test

좌장: 정재용 (인천대학교), 김윤진 (숙명여대)

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| WD2-N-1 | 13:00-13:30 | <b>Managing Power Consumption and Clock Skew using Mesh Clock Network with Multiple Subtrees</b><br>Jinwook Jung and Youngsoo Shin<br>Department of Electrical Engineering, KAIST   |
| WD2-N-2 | 13:15-13:30 | <b>Efficient Configuration-Data Assignment Algorithm for CGRA-based Multi-Core Architecture1</b><br>So Hyun Yoon, Hyejin Joo, and Yoonjin Kim<br>Department of Computer Science, Sookmyung Women's University                 |
| WD2-N-3 | 13:30-13:45 | <b>Pipelining Nested Loops with Triangular Iteration Space for High-Level Synthesis</b><br>Atul Rahman, Hyeonuk Sim, and Jongeun Lee<br>School of ECE, Ulsan National Institute of Science and Technology                     |
| WD2-N-4 | 13:45-14:00 | <b>Fast Verification Flow with High-Level Synthesis - Case Study</b><br>Ganghee Lee, Changsoo Park, Kyungah Jeong, Jinhong Oh, and Jinaeon Lee<br>Multimedia Core Development Team, System LSI, Samsung Electronics Co., Ltd. |
| WD2-N-5 | 14:00-14:15 | <b>UVM based Register Test Automation Flow</b><br>Jaehun Woo, Yongkwan Cho, and SunKyu Park<br>Design Solution Lab, DMC R&D, Samsung Electronics Co., Ltd.  |
| WD2-N-6 | 14:15-14:30 | <b>Fault-Recoverability Evaluation of CGRA-based Multi-Core Architecture1</b><br>Seungyeon Sohn and Yoonjin Kim<br>Department of Computer Science, Sookmyung Women's University   |

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## E. Compound Semiconductors 분과

Room E  
1F / 108호

2015년 2월 11일(수) 13:00-14:30

[WE2-E] Device & Circuit

좌장: 문재경 (한국전자통신연구원), 장태훈 (서울대학교 융합기술원)

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| WE2-E-1 | 13:00-13:30 | <b>Dual-Gate p-GaN gate HEMTs for Steep Subthreshold Slope</b><br>Jong-Ho Bae and Jong-Ho Lee<br>Department of Electrical and Computer Engineering, Seoul National University  |
| WE2-E-2 | 13:15-13:30 | <b>First Demonstration of Omega-shaped-gate AlGaIn/GaN Nanowire FinFETs</b><br>Dong-Gi Lee <sup>1</sup> , V.Sindhuri <sup>1</sup> , Young-Woo Jo <sup>1</sup> , Do-Kyun Kim <sup>1</sup> , Ryun-Hwi Kim <sup>1</sup> , Dong-Hyuk Son <sup>1</sup> , Jae-Hong Lee <sup>1</sup> , Jeong-Gil Kim <sup>1</sup> , Jung-Hee Lee <sup>1</sup> , and Ki-Sik Im <sup>2</sup><br><sup>1</sup> School of Electronics Engineering, Kyungpook National University, <sup>2</sup> Institute of Semiconductor Fusion Technology, Kyungpook National University |
| WE2-E-3 | 13:30-13:45 | <b>낮은 온저항을 갖는 AlGaIn/GaN 더블 쇼트키 다이오드에 대한 연구</b><br>나제호, 전치훈, 장우진, 정동윤, 이형석, 고상춘, 남은수<br>한국전자통신연구원 정보통신부품소재연구소 GaN전력소자연구실   |
| WE2-E-4 | 13:45-14:00 | <b>Normally-off Operation of AlGaIn/GaN-on-Si MISHFET Integrated with Clamping Circuit</b><br>Sang-Woo Han, Jae-Gil Lee, and Ho-Young Cha<br>School of Electronic and Electrical Engineering, Hongik University  |
| WE2-E-5 | 14:00-14:15 | <b>다이오드 브릿지 내장형 AlGaIn/GaN 양방향성 전력소자</b><br>박성훈, 한상우, 박봉렬, 차호영<br>홍익대학교 전자정보통신 공학과   |
| WE2-E-6 | 14:15-14:30 | <b>고효율 및 고속 스위칭용 GaN 기반 부스트 컨버터</b><br>정동윤 <sup>1</sup> , 이현수 <sup>1</sup> , 박영락 <sup>1</sup> , 전치훈 <sup>1</sup> , 장우진 <sup>1</sup> , 나제호 <sup>1</sup> , 고상춘 <sup>1</sup> , 권기백 <sup>2</sup> , 남은수 <sup>1</sup><br><sup>1</sup> 한국전자통신연구원 정보통신 부품소재연구소 GaN 전력소자연구실, <sup>2</sup> 대덕대학교 전자자동화학과   |

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## P. Device for Energy 분과

Room G  
1F / 109호

2015년 2월 11일(수) 13:00-14:30

### [WG2-P] Device for Energy

좌장: 함문호 (광주과학기술원), 박성기 (LG디스플레이)

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WG2-P-1	13:00-13:30	<b>Antireflective Subwavelength Structures for High Efficient III-V Photovoltaics</b> Yunwon Song and Jungwoo Oh School of Integrated Technology, Yonsei University
WG2-P-2	13:15-13:30	<b>Anti-reflective and Electrical Characteristics of Al-doped ZnO Nanorods for Chalcogenide Thin-Film Solar Cell</b> Ji-Hyeon Park <sup>1</sup> , Tae Il Lee <sup>2</sup> , and Jae-Min Myoung <sup>1</sup> <sup>1</sup> Department of Materials Science and Engineering, Yonsei University, <sup>2</sup> Department of BioNano Technology and Gachon BioNano Research Institute, Gachon University
WG2-P-3	13:30-13:45	<b>Realistic Circuit Model of an Impact-Based Energy Harvester</b> Sunhee Kim, Suna Ju, Chang-Hyeon Ji, and Seungjun Lee Department of Electronics Engineering, Ewha Womans University
WG2-P-4	13:45-14:00	<b>Graphene as Interfacial Layer for Improving Cycle Performance of Si Nanowires in Lithium Ion Battery</b> Fan Xia, Su Han Kim, Dong Hyun Lee, Jung Min Lee, Ungyu Paik, and Won Il Park Division of Material Science and Engineering, Hanyang University
WG2-P-5	14:00-14:15	<b>Thin HfxZr<sub>1-x</sub>O<sub>2</sub> Films (x=0.1-0.4) for a Monolithic Device for Various Energy-related Applications</b> Min Hyuk Park, Han Joon Kim, Yu Jin Kim, Taehwan Moon, Keum Do Kim, Young Hwan Lee, and Cheol Seong Hwang Department of Materials Science and Engineering and Interuniversity Semiconductor Research Center, Seoul National University
WG2-P-6	14:15-14:30	<b>Proton Irradiation Effects on Normally-off AlGaN/GaN MISHFETs</b> Dongmin Keum, Junyoung Choi, Ho-young Cha, and Hyungtak Kim Department of Electronics and Electrical Engineering, Hongik University

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## I. MEMS & Sensor Systems 분과

Room H  
1F / 110호

2015년 2월 11일(수) 13:00-14:30

[WH2-I] Chemical-Bio Sensor System

좌장: 이정수 (포항공과대학교)

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WH2-I-1	13:00-13:15	<b>Probabilistic Detection Sensitivity of Localized Surface Plasmon Resonance Biosensing</b> Heejin Yang, Wonju Lee, Kiheung Kim, Taewon Hwang, and Donghyun Kim School of Electrical and Electronic Engineering, Yonsei University
WH2-I-2	13:15-13:30	<b>Ultrasensitive Protein Detection using Biologically-Sensitive Field-Effect Transistors (BioFETs) with Multiple Si-Nanowires</b> Kihyun Kim <sup>1</sup> , Chanoh Park <sup>2</sup> , Donghoon Kim <sup>1</sup> , Nanki Hong <sup>1</sup> , Minjae Kang <sup>3</sup> , M. Meyyappan <sup>4,5</sup> , and Jeong-Soo Lee <sup>1,2</sup> <sup>1</sup> Department of Electrical Engineering, POSTECH, <sup>2</sup> Division of IT-Convergence Engineering, POSTECH, <sup>3</sup> National Institute for Nanomaterials Technology, POSTECH, <sup>4</sup> Department of Creative IT Engineering, POSTECH, <sup>5</sup> NASA Ames Research Center, USA
WH2-I-3	13:30-13:45	<b>Design and Fabrication of Vertical Nanoslit Fluid Channel Array for High Volume Flow Application</b> Yul Koh, Min-Hye Oh, Yeong-Tai Seo, and Yong-Kweon Kim School of Electrical Engineering & Computer Science, Seoul National University
WH2-I-4	13:45-14:00	<b>Influence of Buffer Dilution on the Sensing Performances of the Silicon Nanowire Field-Effect Transistor Sensors</b> ChanOh Park <sup>1</sup> , Kihyun Kim <sup>2</sup> , Donghoon Kim <sup>2</sup> , Nanki Hong <sup>2</sup> , Minjae Kang <sup>3</sup> , M. Meyyappan <sup>4,5</sup> , and Jeong Soo Lee <sup>1,2</sup> <sup>1</sup> Division of IT-Convergence Engineering, POSTECH, <sup>2</sup> Department of Electrical Engineering, POSTECH, <sup>3</sup> National Institute for Nanomaterials Technology, POSTECH, <sup>4</sup> Department of Creative IT Engineering, POSTECH, <sup>5</sup> NASA Ames Research Center, USA
WH2-I-5	14:00-14:15	<b>Biosensing Comparison Between Dry and Wet Environment in Silicon Nanowire Transistor</b> Hyoun Mo Choi, Jisun Park, Dong Jae Shin, Bongsik Choi, Seungguk Kim, Hyunsun Mo, Dong Myong Kim, Sung-Jin Choi, and Dae Hwan Kim School of Electrical Engineering, Kookmin University
WH2-I-6	14:15-14:30	<b>Sensing Property of FET-type Gas Sensor Having a Sensing Material of</b>



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## **ZnO Film Prepared by ALD**

Chang-Hee Kim<sup>1</sup>, Soohyun Kim<sup>1</sup>, Yoonki Hong<sup>1</sup>, Jongmin Shin<sup>1</sup>, In-Tak Cho<sup>1</sup>,  
Un Ki Kim<sup>2</sup>, Cheol Seong Hwang<sup>2</sup>, and, Jong-Ho Lee<sup>1</sup>

<sup>1</sup>Department of Electrical and Computer Engineering and Inter-university  
Semiconductor Research Center, Seoul National University, <sup>2</sup>Department of  
Materials Science and Engineering, Inter-University Semiconductor Research  
Center, Seoul National University

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J. Nano-Science & Technology 분과

Room I

1F / 111호

2015년 2월 11일(수) 13:00-14:30

[WI2-J] 메모리 소자, 나노 융합/유연 소자

좌장: 박철민 (연세대학교), 이택희 (연세대학교)

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| WI2-J-1 | 13:00-13:30 | <b>[초청] Inkjet-Printed Stretchable Electrodes based on Nano-Particle Materials</b><br>Yongtaek Hong, Sangwoo Kim, Taehoon Kim, Junghwan Byun, Seongdae Choi, Seungjun Chung, and Jaemyeon Lee<br>Department of Electrical and Computer Engineering, Seoul National University   |
| WI2-J-2 | 13:30-14:00 | <b>[초청] Resistive Memory and Switch Device for Stackable Scalable 3D Nanoscale Memory</b><br>Myoung-Jae Lee <sup>1</sup> , Ji-Hoon Ahn <sup>1</sup> , Ji Ho Sung <sup>1,2</sup> , Hoseok Heo <sup>1,2</sup> , Kyungwook Kim <sup>1,3</sup> , and Moon-Ho Jo <sup>1,2,3</sup><br><sup>1</sup> Center for Artificial Low Dimensional Electronic Systems, Institute for Basic Science (IBS), <sup>2</sup> Division of Advanced Materials Science, POSTECH, <sup>3</sup> Department of Materials Science and Engineering, POSTECH |
| WI2-J-3 | 14:00-14:15 | <b>Conductive Filaments Control of Resistive Memories Employing Self-Assembled Silica-Nanodots for Switching Stability Improvement</b><br>Byoung Kuk You, Jong Min Kim, Yeon Sik Jung, and Keon Jae Lee<br>Department of Materials Science and Engineering, KAIST   |
| WI2-J-4 | 14:15-14:30 | <b>Transferred Partially-Grown Patterned Graphene Layer for Charge-Floating Gate in Organic Non-Volatile Memory transistors</b><br>Yunhwan Park <sup>1</sup> , Subeom Park <sup>2</sup> , Byung Hee Hong <sup>2</sup> , and Yongtaek Hong <sup>1</sup><br><sup>1</sup> Department of Electrical Engineering and Computer Science, Inter University Semiconductor Research Center (ISRC,) Seoul National University, <sup>2</sup> Department of Chemistry Seoul National University  |

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## A. Interconnect & Package 분과

Room A  
1F / 104호

2015년 2월 12일(목) 09:00-10:30

### [TA1-A] Emerging Interconnect Technology

좌장: 여종석 (연세대학교), 오정우 (연세대학교)

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| TA1-A-1 | 09:00-09:30 | <b>[초청] Atomic Switch using Electro-Migration for a Programmable Logic Circuit</b><br>Deok-kee Kim <sup>1</sup> , Jongwan Jung <sup>2</sup> , Sunae Seo <sup>3</sup> , Young Joon Hong <sup>2</sup> , and Won-Jun Lee <sup>2</sup><br><sup>1</sup> Department of Electrical Engineering, Sejong University, <sup>2</sup> Department of Nanotechnology and Advanced Materials Engineering, Sejong University, <sup>3</sup> Department of Physics, Sejong University |
| TA1-A-2 | 09:30-09:45 | <b>Nanoplasmonics for On-Chip Photonic Interconnection: Photodetection of Broadband Incoherent Light</b><br>Jeong-Hyeon Kim <sup>1,2</sup> and Jong-Souk Yeo <sup>1,2</sup><br><sup>1</sup> School of Integrated Technology, Yonsei University, <sup>2</sup> Yonsei Institute of Convergence Technology, Yonsei University   |
| TA1-A-3 | 09:45-10:00 | <b>Strain-Dependent Optical Properties of Ge Thin Films on Si Substrates Formed by Thermal Annealing</b><br>Chulwon Lee <sup>1</sup> , Yang-Seok Yoo <sup>1</sup> , Min-Ho Jang <sup>1</sup> , Isnaeni <sup>1</sup> , Bugeun Ki <sup>2</sup> , Jungwoo Oh <sup>2</sup> , and Yong-Hoon Cho <sup>1</sup><br><sup>1</sup> Department of Physics, KI for NanoCentury, KAIST, <sup>2</sup> School of Integrated Technology, Yonsei University                          |
| TA1-A-4 | 10:00-10:15 | <b>Raman Depth Profiles for Non-Linearly Strained Ge-on-Si Lasers</b><br>Bugeun Ki <sup>1,2</sup> , Chulwon Lee <sup>3</sup> , Yong-Hoon Cho <sup>3</sup> , and Jungwoo Oh <sup>1,2</sup><br><sup>1</sup> School of Integrated Technology, Yonsei University, <sup>2</sup> Yonsei Institute of Convergence Technology, <sup>3</sup> Department of Physics, KI for the NanoCentury, KAIST   |
| TA1-A-6 | 10:15-10:30 | <b>벤젠을 이용한 그래핀의 저온 합성 및 배선 특성</b><br>손명우 <sup>1</sup> , 장지수 <sup>2</sup> , 함문호 <sup>1,2</sup><br><sup>1</sup> 광주과학기술원 나노바이오재료전자공학과, <sup>2</sup> 광주과학기술원 신소재공학부  |

## H. Display and Imaging Technologies 분과

Room B  
1F / 105호

2015년 2월 12일(목) 09:00-10:30

[TB1-H] Display and Imaging Technologies

좌장: 전상훈 (고려대학교)

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| TB1-H-1 | 09:00-09:15 | <b>Nonvolatile Memory Cell Composed of Oxide Thin-Film Transistors and Ferroelectric Memory Transistors for Low-Power Reflective LCD Panels</b><br>Kyeong-Ah Kim <sup>1</sup> , C-W. Byun <sup>2</sup> , C-S. Hwang <sup>2</sup> , S-H. Lee <sup>3</sup> , S-W. Lee <sup>3</sup> , and Sung-Min Yoon <sup>1</sup><br><sup>1</sup> Dep. of Adv. Mater. Eng. for Inform. & Electr., Kyung Hee University, <sup>2</sup> ETRI, <sup>33</sup> Dept. of Information Display, Advanced Display Research Center, Kyung Hee University |
| TB1-H-2 | 09:15-09:30 | <b>An AMOLED Display Pixel Structure to Compensate Variations in Mobility and Threshold Voltage of Poly-Si TFTs in Every Gray Level</b><br>Ki-Han Kim, Seong-Kwan Hong, and Oh-Kyong Kwon<br>Department of Electronic Engineering, Hanyang University   |
| TB1-H-3 | 09:30-09:45 | <b>Fabrication of Integrated Febry-Perot Type Color Reflector for Reflective Display</b><br>Seong M. Cho, Sang Hoon Jeon, Tae-Youb Kim, Chil Seong Ah, Juhee Song, Hojun Ryu, and Hye Yong Chu<br>Reflective Display Research Section, Next Generation Display Research Department, Convergence Components and Materials Research Laboratory, ETRI  |
| TB1-H-4 | 09:45-10:00 | <b>The Solution of Electric Power Reduction in the Capacitor-less LED Driver Circuit</b><br>Hyung-Gon Kim, Kyeoung-Jae Woo, Won-Jin Lim, Byung-Tak Jang, In-Ho Jeong, and Choong-Mo Nam<br>Department of Electronics Engineering, Korea Polytechnic University  |
| TB1-H-5 | 10:00-10:15 | <b>Inverted Organic Light-Emitting Diodes using Various Types of Solution-Processable ZnO for Efficient Electron Injection</b><br>Jangwoo Chae, Seonghwa Choi, and Jeonghun Kwak<br>Department of Electronic Engineering, Dong-A University   |

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## G. Device & Process Modeling, Simulation and Reliability 분과

Room C  
1F / 106호

2015년 2월 12일(목) 09:00-10:30

### [TC1-G] Device Variability and Reliability

좌장: 박찬형 (광운대학교), 신민철 (KAIST)

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| TC1-G-1 | 09:00-09:15 | <b>The Influence of Variability Sources on SRAM Stability in 90 Å Non-rectangular Bulk FinFET SRAM cell</b><br>Sung-Won Yoo, Young-Soo Seo, Do-Gyun Son, and Hyungcheol Shin<br>School of Electrical Engineering and Computer Science, Seoul National University  |
| TC1-G-2 | 09:15-09:30 | <b>Analysis of Structural Variation in 10-nm Double Gate-All-Around (D-GAA) Transistor with Asymmetric Channel Width</b><br>Myunghwan Ryu and Youngmin Kim<br>School of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology   |
| TC1-G-3 | 09:30-09:45 | <b>Analysis of Current Fluctuation Due to Trap in Nano-scale Bulk FinFETs</b><br>Kyu-Bong Choi, Jongmin Shin, and Jong-Ho Lee<br>Department of ECE and ISRC, Seoul National University  |
| TC1-G-4 | 09:45-10:00 | <b>Hump Characteristics Generated by Bias Stress in a-IGZO TFTs</b><br>Jungmin Lee, Sungju Choi, Jaeyeop Ahn, Jun Seok Hwang, Seong Kwang Kim, Sung-Jin Choi, Dae Hwan Kim, and Dong Myong Kim<br>School of Electrical Engineering, Kookmin University  |
| TC1-G-5 | 10:00-10:15 | <b>The Statistical Distribution of Electrical Characteristics with Random Grain Boundary in Vertical NAND Unit Cells</b><br>Jungsik Kim <sup>1</sup> , Bo Jin <sup>1</sup> , Hyeongwan Oh <sup>2</sup> , Chang-Ki Baek <sup>3</sup> , Jeong-Soo Lee <sup>1,2</sup><br><sup>1</sup> Department of IT Convergence Engineering, Pohang University of Science and Engineering, <sup>2</sup> Electrical Engineering, Pohang University of Science and Engineering, <sup>3</sup> Creative IT Engineering and Future IT Innovation Lab, Pohang University of Science and Engineering |
| TC1-G-6 | 10:15-10:30 | <b>Interconnect Line-Induced 1/f Noise in Printed Circuit Board (PCB)</b><br>Hyeong-Sub Song <sup>1</sup> , Sung-Kyu Kwon <sup>1</sup> , Jae-Nam Yu <sup>2</sup> , Sun-Ho Oh <sup>2</sup> , Jong-Chan Ahn <sup>1</sup> , and Hi-Deok Lee <sup>2</sup><br><sup>1</sup> Research Division, SMAT Solutions, <sup>2</sup> Department of Electronic Engineering, Chungnam National University  |

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## D. Thin Film Process Technology 분과

Room D  
1F / 107호

2015년 2월 12일(목) 09:00-10:30

[TD1-D] Memory Thin-Film Technologies

좌장: 박태주 (한양대학교)

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|---------|-------------|--|
| TD1-D-1 | 09:00-09:15 | <b>Evaluating the Top Electrode Material for Achieving an Equivalent Oxide Thickness Smaller than 0.4 nm from an Al-doped TiO<sub>2</sub> Film</b><br>Woojin Jeon, Sijung Yoo, Hyo Kyeom Kim, Woongkyu Lee, Cheol Hyun An, Min Jung Chung, and Cheol Seong Hwang<br>Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University  |
| TD1-D-2 | 09:15-09:30 | <b>Influence of Reduced Al-Doping Concentration with Modified Atomic Layer Deposition Recipes on Electrical Properties of TiO<sub>2</sub> Films</b><br>Cheol Jin Cho <sup>1,2</sup> , Min-Jung Choi <sup>1</sup> , Jin-Sang Kim <sup>1</sup> , Cheol Seong Hwang <sup>2</sup> , and Seong Keun Kim <sup>1</sup><br><sup>1</sup> Electronic Materials Research Center, Korea Institute of Science and Technology, <sup>2</sup> Department of Materials Science and Engineering, Seoul National University   |
| TD1-D-3 | 09:30-09:45 | <b>Atomic Layer Deposition of Chalcogenide Films using Novel Ge Precursor</b><br>Taehong Gwon <sup>1</sup> , Taeyong Eom <sup>1</sup> , Sijung Yoo <sup>1</sup> , Moo-Sung Kim <sup>2</sup> , Iain Buchanan <sup>3</sup> , Manchao Xiao <sup>3</sup> , and Cheol Seong Hwang <sup>1</sup><br><sup>1</sup> Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University, <sup>2</sup> Air Products Korea, <sup>3</sup> Air Products and Chemicals, Inc.  |
| TD1-D-4 | 09:45-10:00 | <b>Conformal Formation of Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> Film for Phase Change Memories Realized by Controlling Non-Ideal Behaviors of ALD.</b><br>Taeyong Eom <sup>1</sup> , Taehong Gwon <sup>1</sup> , Sijung Yoo <sup>1</sup> , Byung Joon Choi <sup>2</sup> , Moo-Sung Kim <sup>3</sup> , Iain Buchanan <sup>4</sup> , Manchao Xiao <sup>4</sup> , and Cheol Seong Hwang <sup>1</sup><br><sup>1</sup> Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University, <sup>2</sup> Department of Materials Science and Engineering, Seoul National University of Science and Technology, <sup>3</sup> Air Products Korea, <sup>4</sup> |
| TD1-D-5 | 10:00-10:15 | <b>Electronic Type Self-Rectifying Resistive Switching Memory with Excellent Uniformity and Multi-level Functionality in Pt/Ta<sub>2</sub>O<sub>5</sub>/HfO<sub>2-x</sub>/Ti Structure</b><br>Jung Ho Yoon, Seul Ji Song, Jun Yeong Seok, Kyung Jean Yoon, Dae Eun   |

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Kwon, Tae Hyung Park, Young Jae Kwon, and Cheol Seong Hwang

Department of Materials Science and Engineering and Inter-university  
Semiconductor Research Center, Seoul National University

**TD1-D-6    10:15-10:30    Al-doped ZnO Thin Films as Switching Layers for Nonvolatile Resistive-  
Change Memory Devices**

Won-Ho Lee, Eom-Ji Kim, and Sung-Min Yoon

Department of Advanced Materials Engineering for Information and  
Electronics, Kyung Hee University

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## K. Memory (Design & Process Technology) 분과

Room E

1F / 108호

2015년 2월 12일(목) 09:00-10:30

[TE1-K] RRAMs, Memristors, and MRAMs

좌장: 공배선 (성균관대학교), 조우영 (삼성전자)

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|---------|-------------|--|
| TE1-K-1 | 09:00-09:15 | <b>멤리스터의 저항 drift 문제 해결을 위한 멤리스턴스 복구회로에 관한 연구</b><br>김영수, 신상학, 변상돈, 송재상, Son Ngoc Truong, 모현선, 민경식<br>국민대학교 전자공학부  |
| TE1-K-2 | 09:15-09:30 | <b>Disturbance-Suppressed ReRAM Write Algorithm for High-Capacity and High-Performance Memory</b><br>Chi-Weon Yoon, H. K. Park, Y. K. Lee, H. J. Kwon, Y. T. Lee, D. S. Byeon, and K. H. Kyung<br>Samsung Electronics Co., Ltd.  |
| TE1-K-3 | 09:30-09:45 | <b>Novel Self-Reference Sense Amplifier for Spin-Transfer-Torque Magneto-Resistive Random Access Memory</b><br>Gyuhyun Kil, Juntae Choi, and Yunheub Song<br>Department of Electronics Computers and Communications Engineering, Hanyang University  |
| TE1-K-4 | 09:45-10:00 | <b>멤리스터 어레이 회로를 위한 읽기전압 마진의 개선에 관한 연구</b><br>신상학, 변상돈, 송재상, Son Ngoc Truong, 모현선, 민경식<br>국민대학교 전자공학부   |
| TE1-K-5 | 10:00-10:15 | <b>TiOx-based Filamentary ReRAM Synapse for Neuromorphic Systems</b><br>Jaesung Park, Amit Prakash, Kibong Moon, Daeseok Lee, Jiyong Woo, Euijun Cha, Sangheon Lee, Jeonghwan Song, Yunmo Koo, Jaehyuk Park, Seokjae Lim, and Hyunsang Hwang<br>Department of Materials Science and Engineering, POSTECH |
| TE1-K-6 | 10:15-10:30 | <b>Cross Point Array의 Sneak Path 문제 최소화를 위한 멤리스터소자특성연구</b><br>노진우, 심창후, 김소영, Abdul Karim Khan, 이병훈<br>School of Material Science and Engineering, Gwangju Institute of Science and Technology  |



F. Silicon Device and Integration Technology 분과

Room G  
1F / 109호

2015년 2월 12일(목) 09:00-10:30

[TG1-F] Emerging Devices (1)

좌장: 신동석 (삼성전자), 김소영 (성균관대학교)

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- TG1-F-1 09:00-09:15 Neuromorphic System based on CMOS Analog Neuron Circuit**  
Jungjin Park, Min-Woo Kwon, Hyungjin Kim, and Byung-Gook Park  
Inter University Semiconductor Research Center (ISRC) and Department of Electrical and Computer Engineering, Seoul National University
- TG1-F-2 09:15-09:30 Self-Boosted Tunnel Field-Effect Transistor using Nitride Charge Trapping Layer**  
Hyungjin Kim and Byung-Gook Park  
Inter-university Semiconductor Research Center (ISRC) and Department of Electrical and Computer Engineering, Seoul National University
- TG1-F-3 09:30-09:45 Work-Function Variation and Random Dopant Fluctuation of Tunneling Field-Effect Transistors (TFETs)**  
Kyoung Min Choi, Seung Kyu Kim, and Woo Young Choi  
Department of Electronic Eng., Sogang University
- TG1-F-4 09:45-10:00 Study of Work-function Variation with Various Gate Materials in High-k/Metal (HK/MG) MOSFETs**  
Hyohyun Nam and Changhwan Shin  
School of Electrical and Computer Engineering, University of Seoul
- TG1-F-5 10:00-10:15 Low-Power and High-Speed Optically Readable Charge-Trap Flash Memory with Sub-10-ps Read Time**  
Seongjae Cho<sup>1,2</sup> and Byung-Gook Park<sup>3</sup>  
<sup>1</sup>Department of Electronic Engineering, Gachon University, <sup>2</sup>Department of IT Convergence Engineering, Gachon University, <sup>3</sup>Department of Electrical and Computer Engineering and Inter-university Semiconductor Research Center (ISRC), Seoul National University
- TG1-F-6 10:15-10:30 A Study on Room-Temperature Photoluminescence of RF-Sputtered GaN for Cost-Effective III-V-on-Si Beyond-CMOS Technology**  
Jeongmin Lee<sup>1</sup>, Hong-Seok Kim<sup>2</sup>, Seongmin Lee<sup>1</sup>, Jae-Hee Han<sup>2</sup>, and Seongjae Cho<sup>1,3</sup>  
<sup>1</sup>Department of IT Convergence Engineering, Gachon University, <sup>2</sup>Department of Energy IT, Gachon University, <sup>3</sup>Department of Electronic Engineering, Gachon University

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## C. Materials Growth & Characterization 분과

Room H  
1F / 110호

2015년 2월 12일(목) 09:00-10:45

[TH1-C] Growth and Characterization of Graphene/Nitrides

좌장: 송진동 (KIST), 권순용 (UNIST)

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- TH1-C-1      09:00-09:15      Physical Synthesis of Monolithic Graphene Oxide Sheets with Tunable Composition**
- Jae Hwan Chu<sup>1</sup>, Jinsung Kwak<sup>1</sup>, Sung-Dae Kim<sup>2,6</sup>, Mi Jin Lee<sup>1</sup>, Jong Jin Kim<sup>3</sup>, Soon-Dong Park<sup>1</sup>, Jae-Kyung Choi<sup>1</sup>, Gyeong Hee Ryu<sup>1</sup>, Kibog Park<sup>4,5</sup>, Sung Youb Kim<sup>1,5</sup>, Ji Hyun Kim<sup>3</sup>, Zonghoon Lee<sup>1,5</sup>, Young-Woon Kim<sup>2</sup>, and Soon-Yong Kwon<sup>1,5</sup>
- <sup>1</sup>School of Mechanical and Advanced Materials Engineering, Ulsan National Institute of Science and Technology (UNIST), <sup>2</sup>Department of Materials Science and Engineering, Seoul National University, <sup>3</sup>Interdisciplinary School of Green Energy, Ulsan National Institute of Science and Technology (UNIST), <sup>4</sup>School of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology (UNIST), <sup>5</sup>Opto-Electronics Convergence Group and Low Dimensional Carbon Materials Center, Ulsan National Institute of Science and Technology (UNIST), <sup>6</sup>Advanced Characterization and Analysis Group, Korea Institute of Materials Science
- TH1-C-2      09:15-09:30      Wrinkle-Free Graphene Grown on Controlled Pt (200, 220) Films and Thermal-Assisted Transfer of Large-Scale Patterned Graphene**
- Jae-Kyung Choi<sup>1</sup>, Jinsung Kwak<sup>1</sup>, Soon-Dong Park<sup>2</sup>, Hyung Duk Yun<sup>1</sup>, Se-Yang Kim<sup>1</sup>, Minbok Jung<sup>1</sup>, Sung Youb Kim<sup>2</sup>, Kibog Park<sup>3</sup>, Seoktae Kang<sup>4</sup>, Dong-Yeon Park<sup>5</sup>, Dong-Su Lee<sup>5</sup>, Suk-Kyung Hong<sup>5</sup>, Sung-Dae Kim<sup>6</sup>, Hyung-Joon Shin<sup>1</sup>, and Soon-Yong Kwon<sup>1,2</sup>
- <sup>1</sup>School of Materials Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), <sup>2</sup>School of Mechanical and Nuclear Engineering, Ulsan National Institute of Science and Technology (UNIST), <sup>3</sup>Department of Physics, Ulsan National Institute of Science and Technology (UNIST), <sup>4</sup>Department of Civil Engineering, Kyung Hee University, <sup>5</sup>G-Mek Incorporation, <sup>6</sup>Advanced Characterization and Analysis Group, Korea Institute of Materials Science
- TH1-C-3      09:30-09:45      Improvement in Electrical Conductivity, Mechanical and, Thermal Stabilities of Graphene/Carbon Nanotube Composite Electrodes with**

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## **AuCl<sub>3</sub> Doping**

Hyung Duk Yun, Jinsung Kwak, Lee Soon Park, and Soon-Yong Kwon  
School of Materials Science and Engineering, Ulsan National Institute of  
Science and Technology

**TH1-C-4      09:45-10:00      Study on the Resistive Switching Phenomena in AlN and Al<sub>x</sub>Ga<sub>1-x</sub>N films  
Grown by Atomic Layer Deposition**

Daeho Kim and Byung Joon Choi  
Department of Materials Science and Engineering, Seoul National University  
of Science and Technology

**TH1-C-5      10:00-10:15      Analysis of GaN-based Light-Emitting Diodes Using Near-field Scanning  
Optical Microscopy in Various Modes**

Min-Kwan Kim, Chung-Hyun Park, and Yong-Hoon Cho  
Department of Physics and Graduate School of Nanoscience & Technology,  
KAIST

**TH1-C-6      10:15-10:30      Growth of GaN Layer with Conductive Al<sub>x</sub>Ga<sub>1-x</sub>N Buffer on SiC Substrate  
using Metal Organic Chemical Vapor Deposition**

Byeongchan So, Kyungbae Lee, Kyungjae Lee, Cheon Heo, Jongjin Jang, and  
Okhyun Nam  
Advanced Photonics Research Center / LED Technology Center, Department  
of Nano-Optical Engineering Korea Polytechnic University

**TH1-C-7      10:30-10:45      Crystallographic Study of *m*-Plane GaN Grown on *m*-Plane Sapphire by  
Hydride Vapor Phase Epitaxy**

Sangil Lee, Minho Kim, Seohwi Woo, Uiho Choi, Byeongchan So, and  
Okhyun Nam  
Advanced Photonics Research Center/LED technology center; Department of  
Nano-Optical Engineering, Korea Polytechnic University

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J. Nano-Science & Technology 분과

Room I

1F / 111호

2015년 2월 12일(목) 09:30-10:30

[TI1-J] 나노 구조

좌장: 김상욱 (KAIST), 박원일 (한양대학교)

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| TI1-J-1 | 09:30-10:00 | <b>[초청]</b> Spatially Aligned Nanostructures Fabricated via Lithographic Techniques and their Applications into Photovoltaics<br>Gun Young Jung<br>School of Materials Science and Engineering, Gwangju Institute of Science and Technology  |
| TI1-J-2 | 10:00-10:15 | <b>Solution-Based Synthesis of 2D Core/Multi-Shell Nanoplates through a Successive Epitaxial Growth of Bi<sub>2</sub>Se<sub>3</sub> and Bi<sub>2</sub>Te<sub>3</sub></b><br>Yuho Min, Gyeongbae Park, and Unyong Jeong<br>Department of Materials Science and Engineering, Yonsei University |
| TI1-J-3 | 10:15-10:30 | <b>Three-Dimensional Si Nano- and Miro-Structures using Metal-Assisted Chemical Etching</b><br>Keorock Choi and Jungwoo Oh<br>School of Integrated Technology, Yonsei University   |

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R. Semiconductor Software 분과

Room J

1F / 113호

2015년 2월 12일(목) 09:00-10:30

[TJ1-R] Semiconductor Software 1

좌장: 백승재 (단국대학교), 박정규 (단국대학교)

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TJ1-R-1	09:00-09:15	<b>압축기반 SSD에서 낸드 플래시 컨트롤러를 이용한 읽기 성능 향상 기법</b> 김동욱, 강수용 Department of Electronic and Computer Engineering, Hanyang University
TJ1-R-2	09:15-09:30	<b>Optimizing Fsync Performance with Dynamic Queue Depth Adaptation</b> Min Ji Kim, Daejun Park, and Dongkun Shin College of Information & Communication Engineering, Sungkyunkwan University
TJ1-R-3	09:30-09:45	<b>Optimization of Streaming Application with Limited Scratch-pad memory on Coarse-Grained Reconfigurable Architecture</b> Hongsik Lee and Jongeun Lee School of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology
TJ1-R-4	09:45-10:00	<b>Offline Deduplication with Lightweight Hash for Solid State Disk</b> Eunsoo Park and Dongkun Shin College of Information & Communication Engineering, Sungkyunkwan University
TJ1-R-5	10:00-10:15	<b>Optimal Resource-Aware Mapping of Stream Graphs to GP-GPUs</b> Dong Nguyen and Jongeun Lee Department of Electrical and Computer Engineering, UNIST

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## M. RF Design 분과

Room K

1F / 102+103호

2015년 2월 12일(목) 09:00-10:30

[TK1-M] RF Circuit Blocks and Systems

좌장: 이강윤 (성균관대학교), 박준배 (아나패스)

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|---------|-------------|--|
| TK1-M-1 | 09:00-09:15 | <b>A Low Phase Noise 30GHz Frequency Synthesizer for 802.11ad</b><br>이동수, 김상윤, 조성훈, 이강윤<br>College of Information and Communication Engineering, Sungkyunkwan University   |
| TK1-M-2 | 09:15-09:30 | <b>Wide Range Driver Amp for TVWS with Tunable Filter Characteristic</b><br>이주리, 윤담, 박형구, 이강윤<br>College of Information and Communication Engineering, Sungkyunkwan University                                       |
| TK1-M-3 | 09:30-09:45 | <b>2 단계 자동 진폭 캘리브레이션 기법을 적용한 넓은 튜닝 범위를 갖는 클래스-C 타입 전류 재사용 전압 제어 발진기 설계</b><br>Jin-Wook Choi, Dong-Soo Lee, and Kang-Yoon Lee<br>Sungkyunkwan University  |
| TK1-M-4 | 09:45-10:00 | <b>Single to Differential Low Noise Amplifier with Automatic Mismatch Calibration Circuits</b><br>In-Seong Kim and Kang-Yoon Lee<br>College of information and Communication Engineering, Sungkyunkwan University    |
| TK1-M-5 | 10:00-10:15 | <b>A Low-Noise and Wide-Range VCO with Bias Voltage Compensation for Mobile Telecommunication</b><br>Min Chan Kim and Kang-Yoon Lee<br>College of Information and Communication Engineering, Sungkyunkwan University |
| TK1-M-6 | 10:15-10:30 | <b>A 2.4GHz 0.18um CMOS Self-Biased Cascode Power Amplifier</b><br>Nak-Young Ko and Kang-Yoon Lee<br>School of Information and Communication Engineering, Sungkyunkwan University                                    |

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## A. Interconnect & Package 분과

Room A  
1F / 104호

2015년 2월 12일(목) 13:10-14:40

[TA2-A] Barriers for Cu Interconnect

좌장: 이원준 (세종대학교), 김덕기 (세종대학교)

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- TA2-A-1    13:10-13:25    Synthesis of Ru-Mn Alloy Thin Films by Atomic Layer Deposition as a Cu Direct-Plateable Diffusion Barrier**  
Hyun-Jung Lee<sup>1</sup>, Seung-Joon Lee<sup>1</sup>, Seungmin Yeo<sup>1</sup>, Yujin-Jang<sup>1</sup>, Taehoon Cheon<sup>1,2</sup>, Tae Eun Hong<sup>3</sup>, and Soo-Hyun Kim<sup>1</sup>  
<sup>1</sup>School of Materials Science and Engineering, Yeungnam University, <sup>2</sup>Center for Core Research Facilities, Deagu Gyeonbuk Institute of Science & Technology, <sup>3</sup>Busan Center, Korea Basic Science Institute
- TA2-A-2    13:25-13:40    Highly Reliable Cu Interconnect using CVD Ru Liner for 10 nm Node Logic Device and Beyond**  
Jin-Nam Kim, Rak-Hwan Kim, Byung-Hee Kim, Tsukasa. Matsuda, Jong-Min Baek, Jong-Jin Lee, Jung-Ha Hwang, Seung-Yong Yoo, Kyung-Min Chung, Eui-Bok Lee, Jin-Seok Kim, Hyun-Jun Choi, Ki-Hyun Park, Sang-Hoon Ahn, Seong-Ho Park, Nae-In Lee, Ja-Hum Ku, Sunhom Steve Paak, Ho-Kyu Kang, and ES Jung  
Semiconductor R&D Center Process Development Team, Samsung Electronics Co., Ltd.
- TA2-A-3    13:40-13:55    Ru Thin Films by Thermal Atomic Layer Deposition using H<sub>2</sub> Molecules as a Non-Oxidizing Reactant**  
Seung-Joon Lee<sup>1</sup>, Minyoung Lee<sup>1</sup>, Taehoon Cheon<sup>1,2</sup>, Soo-Hyun Kim<sup>1</sup>, Tae Eun Hong<sup>3</sup>, Masayuki Saito<sup>4</sup>, Kazuharu Suzuki<sup>4</sup>, Shunichi Nabeya<sup>4</sup>, Jeongyeop Lee<sup>5</sup>, Sangdeok Kim<sup>5</sup>, and Seungjin Yeom<sup>5</sup>  
<sup>1</sup>School of Materials Science and Engineering, Yeungnam University, <sup>2</sup>Center for Core Research Facilities, Deagu Gyeonbuk institute of Science & Technology, <sup>3</sup>Busan Center, Korea Basic Science Institute, <sup>4</sup>TANAKA Kikinzoku Kogyo K.K., <sup>5</sup>SK Hynix Inc.
- TA2-A-4    13:55-14:10    Effect of Post-Annealing Treatments on the Interfacial Reliability of Co Capping layer for Advance Cu Interconnects**  
Hyeon-Chul Lee<sup>1</sup>, Minsu Jung<sup>1</sup>, Byung-Hyun Bae<sup>1</sup>, Hee-Oh Kang<sup>1</sup>, Wook-Jung Hwang<sup>2</sup>, Jeong-Min Seo<sup>3</sup>, Tak-Soo Kim<sup>3</sup>, and Young-Bae Park<sup>1</sup>  
<sup>1</sup>School of Material Science and Engineering, Andong National University,

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<sup>2</sup>National Nanofab Center, <sup>3</sup>KAIST

TA2-A-5    14:10-14:25    **Enhancement of Graphene-based Cu Diffusion Barrier Properties by Controlling Grain Size**

Juree Hong and Taeyoon Lee

School of Electrical and Electronic Engineering, Yonsei University

TA2-A-6    14:25-14:40    **구리 배선에서의 자기조립단분자막의 활용**

이상근, 이태윤

연세대학교 전기전자공학부



## H. Display and Imaging Technologies 분과

Room B  
1F / 105호

2015년 2월 12일(목) 13:10-14:40

[TB2-H] Display and Imaging Technologies

좌장: 구본원 (삼성전자)

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|---------|-------------|---|
| TB2-H-1 | 13:10-13:25 | <b>The Capacitor-Less LED Lamp using FR-4 PCB</b><br>Choong-Mo Nam, Nam-Jin Kim, Hyun-Soo Yoon, Hyun-Kee Min, In-Hak Lee, Byung-Tak Jang, and In-Ho Jeong<br>Department of Electronics Engineering, Korea Polytechnic University  |
| TB2-H-2 | 13:25-13:40 | <b>Analysis of Instability Mechanism under simultaneous positive Gate and Drain Bias Stress in Self-Aligned Top-Gate Amorphous Indium-Zinc-Oxide Thin-Film Transistors</b><br>Jonghwa Kim, Sungju Choi, Jaeman Jang, Jun Tae Jang, Jungmok Kim, Sung-Jin Choi, Dong Myong Kim, and Dae Hwan Kim<br>School of Electrical Engineering, Kookmin University |
| TB2-H-3 | 13:40-13:55 | <b>A New ISP Function to Support Gain Control at Each Input Code</b><br>Younghwan Yun<br>Application Engineering Team, SK Hynix Inc.  |
| TB2-H-4 | 13:55-14:10 | <b>Low-Temperature All-Solution-Processed Indium Oxide Thin-Film Transistors</b><br>Seon-Beom Ji, Narkhyeon Seong, Jewook Ha, and Yongtaek Hong<br>Department of Electrical Engineering and Computer Science, Inter-University Semiconductor Research Center (ISRC), Seoul National University  |
| TB2-H-5 | 14:10-14:25 | <b>Comparative Analysis on Positive Bias Stress-Induced Instability under HVGS and HVDS in Amorphous InGaZnO Thin-Film Transistors</b><br>Hara Kang, Jun Tae Jang, Jonghwa Kim, Sung-Jin Choi, Dong Myong Kim, and Dae Hwan Kim<br>School of Electrical Engineering, Kookmin University   |

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## G. Device & Process Modeling, Simulation and Reliability 분과

Room C  
1F / 106호

2015년 2월 12일(목) 13:10-14:40

### [TC2-G] Device Physics and Characterization 2

좌장: 이성현 (한국외국어대학교), 박문수 (삼성디스플레이)

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| TC2-G-1 | 13:10-13:25 | <b>Extraction of Distance between Interface Trap and Oxide Trap from Random Telegraph Noise in Gate-Induced Drain Leakage</b><br>Youngsoo Seo, Sung-Won Yoo, Joonha Shin, Hyunsoo Kim, Hyunsuk Kim, Sangbin Jeon, and Hyungcheol Shin<br>Inter-university Semiconductor Research Center (ISRC) and School of Electrical Engineering and Computer Science, Seoul National University |
| TC2-G-2 | 13:25-13:40 | <b>The Influence of Dummy Pattern on the RF Inductor Characteristics in 90nm CMOS Chip Layout</b><br>Jong Keun Kim, Hee Kyeong Yang, Myoung Jun Jang, In Wook Cho, and Kyung Dong Yoo<br>Technology Development in Image Development Group, Sk Hynix Inc.   |
| TC2-G-3 | 13:40-13:55 | <b>Cost-Effective Approach using Deep N-type Well Junction in 180nm BCDMOS Technology</b><br>Sekyung Oh, Daehoon Kim, Kwangsik Ko, Jaeho Hwang, Soonyeol Park, Jina Eum, Joowon Park, Kuemju Lee, Sanghyun Lee, Inwook Cho, and Kyungdong Yoo<br>Technology Development team, SK Hynix Inc.   |
| TC2-G-4 | 13:55-14:10 | <b>Origin of Kink Phenomenon in <math>S_{11}</math>-Parameter of Standard RF MOSFETs</b><br>Ja-Hyun Ahn and Seonghearn Lee<br>Department of Electronic Engineering, Hankuk University of Foreign Studies  |
| TC2-G-5 | 14:10-14:25 | <b>A Characteristic Method of Extracting Intrinsic Threshold Voltage Fluctuation from Depletion Charge Variation</b><br>Dongseok Cho, Jaekyu Lee, Junhee Lim, Jaerok Kahng, and Satoru Yamada<br>Semiconductor R&D Center, Samsung Electronics  |
| TC2-G-6 | 14:25-14:40 | <b>Design of Robust High-Voltage MOSFETs for Source Driver Applications</b><br>Yon-Sup Pang, Eunkyung Park, Kwangho Park, Gukhwan Kim, Leeyeun Hwang, Boseok Oh, Sung-Bum Park, Jung Lee, and Taejong Lee<br>MagnaChip Semiconductor, Corporate Engineering   |

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## D. Thin Film Process Technology 분과

Room D  
1F / 107호

2015년 2월 12일(목) 13:10-14:40

[TD2-D] Oxide Semiconductor & 2D Dichalcogenide Thin-Film Transistor Technologies

좌장: 정선호 (한국화학연구원)

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|---------|-------------|--|
| TD2-D-1 | 13:10-13:25 | <b>Device Characterizations on the Performance and Stabilities of InGaZnO Thin Film Transistors Fabricated on Flexible Polyethylene Naphthalate</b><br>Minji Park <sup>1</sup> , Jun-Yong Bak <sup>1</sup> , Min-Ki Ryu <sup>2</sup> , Jong-Heon Yang <sup>2</sup> , Gi Heon Kim <sup>2</sup> , Sung-Min Yoon <sup>1</sup><br><sup>1</sup> Kyung Hee University, <sup>2</sup> Electronics & Telecommunication Research Institute   |
| TD2-D-2 | 13:25-13:40 | <b>Fully-Transparent Nonvolatile Memory Thin-Film Transistors Using Organic/Inorganic Hybrid Gate-Stack with Double-Gate Configuration</b><br>Da-Bin Jeon and Sung-Min Yoon<br>Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University  |
| TD2-D-3 | 13:40-13:55 | <b>Nonvolatile Memory Performances of Transparent Memory Thin-Film Transistors Using IGZO Channel and ZnO Charge-Trap Layers</b><br>Sojung Kim, Jun-Yong Bak, and Sung-Min Yoon<br>Department of Advanced Materials Engineering for Information and Electronics, Kyung Hee University  |
| TD2-D-4 | 13:55-14:10 | <b>Growth of MoS<sub>2</sub> Thin Films by Atomic Layer Deposition</b><br>Jung Joon Pyeon <sup>1,2</sup> , Cheol Jin Cho <sup>2,3</sup> , Soo Hyun Kim <sup>1</sup> , Chong Yun Kang <sup>1,2</sup> , and Seong Keun Kim <sup>2</sup><br><sup>1</sup> KU-KIST Graduate school of Converging Science and Technology, <sup>2</sup> Electronic Material Center, Korea Institute of Science and Technology, <sup>3</sup> Department of Materials Science and Engineering and Interuniversity Semiconductor Research Center, Seoul National Unive   |
| TD2-D-5 | 14:10-14:25 | <b>Synthesis of Wafer-Scale Layer Controlled Molybdenum Disulfide using Atomic Layer Deposition</b><br>Youngjun Kim <sup>1</sup> , Jeong-Gyu Song <sup>1</sup> , GyeongHee Ryu <sup>2</sup> , Sung-Hwan Hwang <sup>3</sup> , Chang Wan Lee <sup>1</sup> , Taejin Choi <sup>1</sup> , Whang Je Woo <sup>1</sup> , Hanearl Jung <sup>1</sup> , Zonghoon Lee <sup>2</sup> , Jae-Min Myoung <sup>3</sup> , Jong-Hyun Ahn <sup>1</sup> , Jusang Park <sup>1</sup> , and Hyungjun Kim <sup>1</sup><br><sup>1</sup> School of Electrical and Electronic Engineering, Yonsei University, <sup>2</sup> School of Materials Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), <sup>3</sup> Department of Materials Science and Engineering, |

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Yonsei University

TD2-D-6

14:25-14:40

**MoS<sub>2</sub> 전계효과 트랜지스터의 컨택 저항 개선 방법**

박우진, 김용훈, 이상경, 정욱진, 양진호, 조천흠, 김윤지, 임성관, 이병훈

Center for Emerging Electric Devices and Systems, School of Material Science and Engineering, Gwangju Institute of Science and Technology

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## K. Memory (Design & Process Technology) 분과

Room E  
1F / 108호

2015년 2월 12일(목) 13:10-14:40

[TE2-K] PCRAMs, SRAMs, TFET and NEM Memories

좌장: 이재규 (삼성전자), 백승재 (한경대학교)

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|---------|-------------|--|
| TE2-K-1 | 13:10-13:25 | <b>Nonvolatile Memory Application of Tunneling Field-Effect Transistors</b><br>Woo Young Cheon and Woo Young Choi<br>Department of Electronic Eng., Sogang Univ.   |
| TE2-K-2 | 13:25-13:40 | <b>New Efficient Error Control Technique for 3D-Integrated SRAM</b><br>Heung Sun Yoon, Jong Kang Park, and Jong Tae Kim<br>School of Electronic and Electrical Eng., Sungkyunkwan University   |
| TE2-K-3 | 13:40-13:55 | <b>Modeling Statistics of Data Retention in PC-RAM by Phase-Field Method</b><br>Yongwoo Kwon <sup>1</sup> and Dae-Hwan Kang <sup>2</sup><br><sup>1</sup> Department of Materials Science and Engineering, Hongik University,<br><sup>2</sup> Semiconductor R&D Center, Samsung Electronics Co., Ltd.,  |
| TE2-K-4 | 13:55-14:10 | <b>Phase Change Analysis of Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> Nanowires with Joule Heating WN Electrodes</b><br>Jun-Young Lee <sup>1,2</sup> , Jeong-Hyeon Kim <sup>1,2</sup> , Jae-Hyun Han <sup>1,2</sup> , and Jong-Souk Yeo <sup>1,2</sup><br><sup>1</sup> School of Integrated Technology, Yonsei University, <sup>2</sup> Yonsei Institute of Convergence Technology, Yonsei University |
| TE2-K-5 | 14:10-14:25 | <b>Bipolar Resistive Switching of Amorphous Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> Thin Film without Involving Phase Change</b><br>Sijung Yoo, Taeyong Eom, Taehong Gwon, and Cheol Seong Hwang<br>Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University   |
| TE2-K-6 | 14:25-14:40 | <b>Zigzag Multi-Bit Nano-Electromechanical Memory Cells</b><br>Jae Hwan Han, Yong Jun Kim, Tae Min Cha, and Woo Young Choi<br>Department of Electronic Eng., Sogang University   |

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## F. Silicon Device and Integration Technology 분과

Room G  
1F / 109호

2015년 2월 12일(목) 13:10-14:40

[TG2-F] Emerging Devices (2)

좌장: 정성웅 (SK Hynix Inc.), 이희덕 (충남대학교)

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|---------|-------------|---|
| TG2-F-1 | 13:10-13:25 | <b>Effect of Double Patterning on Performance Variation Induced by Gate Line-Edge-Roughness (LER) in Germanium FinFET</b><br>Seulki Park <sup>1</sup> , Hyun-Yong Yu <sup>2</sup> , and Changhwan Shin <sup>1</sup><br><sup>1</sup> School of Electrical and Computer Engineering, University of Seoul, <sup>2</sup> Department of Electrical Engineering, Korea University   |
| TG2-F-2 | 13:25-13:40 | <b>Heterojunction Symmetric Tunnel Field-Effect Transistor (S-TFET)</b><br>Hyohyun Nam and Changhwan Shin<br>School of Electrical and Computer Engineering, University of Seoul   |
| TG2-F-3 | 13:40-13:55 | <b>Optimal Design of an Electrically Self-Isolated GaN-on-Si Junctionless Field-Effect Transistor for Beyond-CMOS Low-Power Applications</b><br>Seongmin Lee <sup>1</sup> , Jeongmin Lee <sup>1</sup> , Jisun Lee <sup>2</sup> , Young Jun Yoon <sup>3</sup> , In Man Kang <sup>3</sup> , and Seongjae Cho <sup>1,2</sup><br><sup>1</sup> Department of IT Convergence Engineering, <sup>2</sup> Department of Electronic Engineering, Gachon University, <sup>3</sup> School of Electronics Engineering, Kyungpook National University |
| TG2-F-4 | 13:55-14:10 | <b>A Novel Sampling Method Using Confidence Ellipse Concept to Estimate the Impact of Random Variation on Static Random Access Memory (SRAM)</b><br>Sangheon Oh and Changhwan Shin<br>School of Electrical and Computer Engineering, University of Seoul  |
| TG2-F-5 | 14:10-14:25 | <b>Negative Capacitance Field-Effect Transistor for Sub-60-mV/Decade Steep Switching Device</b><br>Jaesung Jo <sup>1</sup> , Woo Young Choi <sup>2</sup> , and Changhwan Shin <sup>1</sup><br><sup>1</sup> School of Electrical and Computer Engineering, University of Seoul, <sup>2</sup> Department of Electronic Engineering, Sogang University   |
| TG2-F-6 | 14:25-14:40 | <b>Germanium-Source Vertical Tunnel Field-Effect Transistor</b><br>Hyunjae Lee and Changhwan Shin<br>School of Electrical and Computer Engineering, University of Seoul   |

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## C. Materials Growth & Characterization 분과

Room H  
1F / 110호

2015년 2월 12일(목) 13:10-14:40

[TH2-C] III-Vs and SiGe for Electronic Devices

좌장: 박진섭 (한양대학교), 박일규 (영남대학교)

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| TH2-C-1 | 13:10-13:25 | <b>Selective Area Growth of High Quality InP Layers on Si (001) by MOCVD</b><br>Sang-Moon Lee <sup>1,2</sup> , Bonyoung Koo <sup>1</sup> , Jinsub Park <sup>3</sup> , and Euijoon Yoon <sup>2</sup><br><sup>1</sup> Process Development Team, Semiconductor R&D Center, Samsung Electronics, <sup>2</sup> Department of Materials Science and Engineering, Seoul National University, <sup>3</sup> Department of Electronics and Computer Engineering, Hanyang University                                |
| TH2-C-2 | 13:25-13:40 | <b>Reduction of Dark Current in InSb Photodiode through Band Alignment Engineering of Barrier Layer</b><br>Hwanyeol Park <sup>1</sup> , Sehun Park <sup>1</sup> , Yongjo Park <sup>2</sup> , and Euijoon Yoon <sup>1, 2</sup><br><sup>1</sup> Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University, <sup>2</sup> Energy Semiconductor Research Center, Advanced Institutes of Convergence Technology, Seoul National University |
| TH2-C-3 | 13:40-13:55 | <b>Oxygen Vacancy-Nitrogen Complex in Nitrogen-Doped Hafnium Oxide</b><br>Mino Yang and Hionsuck Baik<br>Analytical research division, Korean Basic Science Institute  |
| TH2-C-4 | 13:55-14:10 | <b>Strain Measurement in MOSFET Structures with Si<sub>1-x</sub>C<sub>x</sub> S/D upon Thermal Annealing Process</b><br>Sun-Wook Kim <sup>1</sup> , Dae-Seop Byun <sup>1</sup> , Mijin Jung <sup>1</sup> , Hoo-Jeong Lee <sup>2</sup> , and Dae-Hong <sup>1</sup><br><sup>1</sup> Department of Materials Science and Engineering, Yonsei University, <sup>2</sup> Department of Advanced Materials Science and Engineering, Sungkyunkwan University   |
| TH2-C-5 | 14:10-14:25 | <b>MBE Growth of III-V based Materials and its Applications to 2D/1D/0D Structures</b><br>Jin Dong Song<br>Nano Convergence Device Center, KIST  |
| TH2-C-6 | 14:25-14:40 | <b>Interfacial Layer Control by Dry Cleaning Technology for Polycrystalline and Single Crystalline Silicon Growth</b><br>Dong-Hyun Im <sup>1,2</sup> , Kong-Soo Lee <sup>1</sup> , Yoongoo Kang <sup>1</sup> , Jinwon Ma <sup>1</sup> , Jamin Koo <sup>1</sup> ,   |

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Jun-Noh Lee<sup>1</sup>, Yoonchul Cho<sup>1</sup>, Wonseok Yoo<sup>1</sup>, Bonghyun Kim<sup>1</sup>, Hanjin Lim<sup>1</sup>,  
Seokwoo Nam<sup>1</sup>, and Jeong Yong Lee<sup>2</sup>

<sup>1</sup>Process Development Team, Semiconductor R&D Center, Samsung Electronics Co., Ltd., <sup>2</sup>Department of Materials Science and Engineering, KAIST



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J. Nano-Science & Technology 분과

Room I

1F / 111호

2015년 2월 12일(목) 13:10-14:40

[TI2-J] Graphene & 2D

좌장: 안종현 (연세대학교), 이택희 (서울대학교)

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| TI2-J-1 | 13:10-13:40 | <b>[초청] Two-Dimensional Layered Materials for Advanced Electronics</b><br>Gwan-Hyoung Lee<br>Department of Materials Science and Engineering, Yonsei University  |
| TI2-J-2 | 13:40-13:55 | <b>Polymorphous Two-Dimensional van Der Waals System of Tin-Sulfides: Controllable Synthesis and Electrical Characteristics</b><br>Ji-Hoon Ahn <sup>1</sup> , Myoung Jae Lee <sup>1</sup> , Hoseok Heo <sup>1,2</sup> , Ji Ho Sung <sup>1,2</sup> , Kyungwook Kim <sup>1,3</sup> , and Moon-Ho Jo <sup>1,2,3</sup><br><sup>1</sup> Center for Artificial Low Dimensional Electronic Systems, Institute for Basic Science (IBS), <sup>2</sup> Division of Advanced Materials Science, <sup>3</sup> Department of Materials Science and Engineering, Pohang University of Science and Technology |
| TI2-J-3 | 13:55-14:10 | <b>The Suppression of Electron Transport by Ion-Beam Irradiation on Multilayer WSe<sub>2</sub></b><br>Dahye Kim, Hyewon Du, Taekwang Kim, Somyung Shin, Hyungjun Koo, Minho Song, Sunyoung Kim, Yeonsoo Kim, Sangik Lee, and Sunae Seo<br>Department of Physics, Sejong University   |
| TI2-J-4 | 14:10-14:25 | <b>Irradiation Effects of High Energetic Proton Beams on MoS<sub>2</sub> and Pentacene Field Effect Transistors</b><br>Tae-Young Kim, Kyungjune Cho, Woanseo Park, and Takhee Lee<br>Department of Physics and Astronomy, Seoul National University  |

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## R. Semiconductor Software 분과

Room J  
1F / 113호

2015년 2월 12일(목) 13:10-14:40

[TJ2-R] Semiconductor Software 2

좌장: 박정규 (단국대학교), 김재호 (서울시립대학교)

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TJ2-R-1	13:10-13:25	<b>Efficient Virtual Machine Live Migration through Discarding Unnecessary Data Transmission</b> Mygunhoon Oh, Seungjae Baek, and Jongmoo Choi Department of Software, Dankook University
TJ2-R-2	13:25-13:40	<b>Exploring the Performance of PCM-Swap Systems</b> Yunjoo Park and Hyokyung Bahn Ewha Womans University
TJ2-R-3	13:40-13:55	<b>플래시 기반 저장장치에서 무작위 선택을 활용한 마모 평준화 기법</b> 최길모, 김세욱, 최종무 단국대학교 컴퓨터학과 컴퓨터공학
TJ2-R-4	13:55-14:10	<b>Preventing Fast Wear-out of Flash Cache with Admission Control</b> Eunji Lee <sup>1</sup> , Kern Koh <sup>2</sup> , and Hyokyung Bahn <sup>2</sup> <sup>1</sup> Chungbuk National University, <sup>2</sup> Ewha University
TJ2-R-5	14:10-14:25	<b>An Analytical Approach to Evaluation of SSD Effects under MapReduce Workloads</b> Sungyong Ahn and Sangkyu Park DS Software R&D Center, Samsung Electronics Co., Ltd.

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## M. RF Design 분과

Room K

1F / 102+103호

2015년 2월 12일(목) 13:10-14:40

[TK2-M] CMOS RF Device and Circuit Solutions

좌장: 이강윤 (성균관대학교), 박준배 (아나패스)

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TK2-M-1	13:10-13:25	<b>Circuit-Level Modeling of 10-Gbps Si-Photonic Transceiver</b> Minkyu Kim, Myungjin Shin, Tongsung Kim, and Woo-Young Choi Department of Electrical and Electronic Engineering, Yonsei University
TK2-M-2	13:25-13:40	<b>The Conducted Radiation Modeling Method for Automotive IC</b> Sanghyeon Park, Dongsoo Lee, and Kang-Yoon Lee Department of Information and Communication Engineering, SungKyunkwan University
TK2-M-3	13:40-13:55	<b>Performance Improvement of On-Chip Inductor Using Novel Patterned Ground Shield Structure and Thick Metal Layer</b> Jin-Woong Jeong, Sung-Yong Jang, Sung-Woo Lee, Sung-Kyu Kwon, Choul-Young Kim, Ga-Won Lee, and Hi-Deok Lee Dept. of Electronics Engineering, Chungnam National University
TK2-M-4	13:55-14:10	<b>Low Power, Wide Range, High Speed Digitally Controlled Ring Oscillator</b> Seong Jin Oh, Sang-Yoon Kim, and Kang-Yoon Lee College of Information and Communication Engineering, Sungkyunkwan University
TK2-M-5	14:10-14:25	<b>10bit Low Power SAR ADC Design for Multi-Channel Sensing</b> Dong-Hyeon Seo, Hyung-Gu Park, and Kang-Yoon Lee Information and Communication Engineering, Sungkyunkwan University
TK2-M-6	14:25-14:40	<b>A Third Order Active Notch Filter with Process Variation Compensation and Tunable Frequency Range for Suppressing Spurious Emission</b> Seung-Won Choi, Dong-Soo Lee, and Kang-Yoon Lee College on Information and Communication Engineering, SungKyunkwan University

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## A. Interconnect & Package 분과

Room A  
1F / 104호

2015년 2월 12일(목) 14:50-16:20

[TA3-A] Conductors, Contacts and Low-k Dielectrics

좌장: 이원준 (세종대학교), 안상훈 (삼성전자)

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TA3-A-1	14:50-15:05	<b>Electromigration Reliability of Silver Interconnect Fabricated by Reverse Offset Printing</b> Jae-Seon Hwang <sup>1</sup> , Na-Rae Kim <sup>1</sup> , Jae-Chan Lee <sup>1</sup> , and Young-Chang Joo <sup>1,2</sup> <sup>1</sup> Department of Materials Science & Engineering, Seoul National University, <sup>2</sup> Research Institute of Advanced Materials (RIAM), Seoul National University
TA3-A-2	15:05-15:20	<b>Interconnect Filling Improvement by Reduction of CuOx before Electroplating</b> Tighe A. Spurlin and Jonathan Reid Lam Research Corporation
TA3-A-3	15:20-15:35	<b>메모리 소자용 금속배선의 배선간 접합 변화가 일렉트로마이그레이션 신뢰성에 미치는 영향</b> 장경태 <sup>1</sup> , 박용진 <sup>1</sup> , 정민우 <sup>1</sup> , 임승민 <sup>1</sup> , 연한울 <sup>1</sup> , 조주영 <sup>1</sup> , 신진섭 <sup>2</sup> , 우병욱 <sup>2</sup> , 배장용 <sup>2</sup> , 황유철 <sup>2</sup> , 주영창 <sup>1</sup> <sup>1</sup> 재료공학부, 서울대학교, <sup>2</sup> 개발QA팀, 삼성전자
TA3-A-4	15:35-15:50	<b>The effects on the formation process and Schottky Barrier Height of Ytterbium Silicide by Alloying with Molybdenum</b> Sekwon Na, Jun-gu Kang, Juyun Choi, Hyoungsub Kim, and Hoo-Jeong Lee School of Advanced Materials Science and Engineering, Sungkyunkwan University
TA3-A-5	15:50-16:05	<b>Schottky Barrier Engineering in Ti/TiO<sub>2</sub> Metal-Insulator-Silicon Contact</b> Ryuji Tomita, Joongon lee, Kuo Tai Huang, Chulsung Kim, Sangjin Hyun, and Jahum Ku Semiconductor R&D Center, Samsung Electronics Co. Ltd.
TA3-A-6	16:05-16:20	<b>Improvement in Mechanical Properties and Reliability of Porous Low-k through Novel UV Cure Process</b> Jong Min Baek, Woo Kyung Yu, Seung Wook Choi, Seung Hyuk Choi, Kyu Hee Han, Ok Hee Park, Tae-Jin Yim, Keeyoung Jun, Sang Hoon Ahn, Byung Hee Kim, Nae-In Lee, Ja-Hum Ku, Ho-Kyu Kang, and ES Jung Semiconductor R&D Center Process Development Team, Samsung Electronics Co., Ltd.

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## L. Analog Design 분과

Room B  
1F / 105호

2015년 2월 12일(목) 14:50-16:20

[TB3-L] Analog Design

좌장: 백광현 (중앙대학교), 박재진 (삼성전자)

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TB3-L-1	14:50-15:05	<b>Multi-Channel Incremental Delta-Sigma ADC for Multi-Sensor Application</b> Eun-Taek Sung, Sangyong Park, and DonghyunBaek School of Electrical Engineering, Chung-Ang University
TB3-L-2	15:05-15:20	<b>A 10-bit Single-Ended SAR ADC for Multiple-Channel Neural Recording System</b> Seong-Jin Cho, Ju Eon Kim, Dong Ho Shin, Hong Tae Jeon, and Kwang-Hyun Baek School of Electrical and Electronics Engineering, Chung-Ang University
TB3-L-3	15:20-15:35	<b>A 3.8 MHz Wien-Bridge Oscillator with Capacitive Automatic Amplitude Control in 0.35<math>\mu</math>m CMOS</b> Hyeongyeol Park <sup>1</sup> , Seunghyun Kim <sup>1</sup> , Taemin Kim <sup>2</sup> , and Hyunchol Shin <sup>1</sup> <sup>1</sup> Kwangwoon University, <sup>2</sup> Now with LIG Nex <sup>1</sup> Communication Research Center
TB3-L-4	15:35-15:50	<b>A 12b 1.25MS/s SAR ADC Using Dual Sampling Technique and Low Switching Energy Technique</b> In-Su Cho, Min-Ki Kim, Sung-Chan Rho, and Shin-Il Lim Department of Electronics Engineering, Seokyeong University
TB3-L-5	15:50-16:05	<b>A 0.6V 1.17ps PVT Tolerant and Synthesizable Time-to-Digital Converter using a Stochastic Phase Interpolation in 14nm FinFET Technology</b> Sung-Jin Kim, Taeik Kim, Jaejin Park, and Hojin Park Department of System SLI, Samsung Electronics
TB3-L-6	16:05-16:20	<b>변이 적응성과 에너지 효율성을 갖는 NEM(Nano ElectroMechanical) 릴레이 전하펌프</b> 변상돈, 모현선, 신상학, Son Ngoc Truong, 송재상, 민경식 국민대학교 전자공학부

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## G. Device & Process Modeling, Simulation and Reliability 분과

Room C  
1F / 106호

2015년 2월 12일(목) 14:50-16:20

[TC3-G] RF and Terahertz Devices

좌장: 이정수 (포항공과대학교), 이재규 (삼성전자)

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| TC3-G-1 | 14:50-15:05 | <b>Large-Signal Simulation of Plasma Instability in 2-Dimensional Electron Gas</b><br>Sung-Min Hong and Jae-Hyung Jang<br>School of Information and Communications, Gwangju Institute of Science and Technology  |
| TC3-G-2 | 15:05-15:20 | <b>Voltage-Dependent SPICE Modeling for Gate-Drain Overlap Capacitance in RF MOSFETs</b><br>Sangjun Lee and Seonghearn Lee<br>Department of Electronic Engineering, Hankuk University of Foreign Studies   |
| TC3-G-3 | 15:20-15:35 | <b>Physical Modeling and Analysis for Performance Enhancement of Terahertz Wave Detector based on Silicon Field-Effect Transistor</b><br>Kwan Sung Kim, Min Woo Ryu, Jeong Seop Lee, and Kyung Rok Kim<br>School of Electrical and Computer Engineering, UNIST |
| TC3-G-4 | 15:35-15:50 | <b>Intrinsic Output Equivalent Circuit Modeling for RF MOSFETs</b><br>Seoyoung Hong and Seonghearn Lee<br>Department of Electronic Engineering, Hankuk University of Foreign Studies   |
| TC3-G-5 | 15:50-16:05 | <b>Amplification of Electromagnetic Waves in InAlN/AlN/GaN Grating Structures</b><br>Cho Hee Lee, Ji Hyun Hwang, Jae-Hyung Jang, and Sung-Min Hong<br>School of Information and Communications, Gwangju Institute of Science and Technology                    |
| TC3-G-6 | 16:05-16:20 | <b>The DRC-based Check Tool for New ESD Failure Mechanism</b><br>Youngchul.Kim, Euiyoun.Hong, Dongsin.Kim, Hyunkwang.Jeong, Wanchul.Kong, Kihyun.Kim, and Sungbum.Park<br>Lib& DT team, Corporate Engineering, Magnachip Semiconductor                         |

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## D. Thin Film Process Technology 분과

Room D  
1F / 107호

2015년 2월 12일(목) 14:50-16:20

### [TD3-D] Device & Process Thin Film Technologies

좌장: 윤성민 (경희대학교), 최창환 (한양대학교)

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| TD3-D-1 | 14:50-15:05 | <b>Effective Work Function Modulation of Nanoscale FinFET Devices by Plasma Treatment Method</b><br>Moonkyu Park, <sup>1</sup> Hoonjoo Na, <sup>1</sup> Ohseong Kwon, <sup>1</sup> Jinkyu Jang, <sup>1</sup> Sangjin Hyun, <sup>1</sup> Jahum Ku <sup>1</sup> , Sang-Beom Kim, <sup>2</sup> Cjay Cho, <sup>2</sup> Scott Hahn, <sup>2</sup> Jun Lee <sup>2</sup> , and Helen Maynard <sup>2</sup><br><sup>1</sup> Semiconductor R&D Center, SAMSUNG ELECTRONICS CO., LTD, <sup>2</sup> Varian Semiconductor Equipment, Applied Materials                   |
| TD3-D-2 | 15:05-15:20 | <b>A Facile Interface Passivation to Reduce Interface State (Nit) in Tunneling Field Effect Transistor (TFET) with ALD HfO<sub>2</sub> and TiN Gate Stack</b><br>Donghwan Lim, Woosuk Jung, and Changhwan Choi<br>Department of Materials Science and Engineering, Hanyang University  |
| TD3-D-3 | 15:20-15:35 | <b>Post-Cleaning Effect on the HfO<sub>2</sub> Gate Stack using NF<sub>3</sub>/NH<sub>3</sub> Plasma</b><br>Min Seon Lee <sup>1</sup> , Hoon Jung Oh <sup>2</sup> , Joo Hee Lee <sup>1</sup> , In Geun Lee <sup>1</sup> , Woo Gon Shin <sup>3</sup> , Kyu Dong Kim <sup>3</sup> , and Dae Hong Ko <sup>1,2</sup><br><sup>1</sup> Department of Materials Science and Engineering, Yonsei University, <sup>2</sup> BIO-IT Micro Fab Center, Yonsei University, <sup>3</sup> Gen Co. Ltd.  |
| TD3-D-4 | 15:35-15:50 | <b>Effect of Thermal Defects on C-V Characteristics of MO<sub>5</sub> Structure with SiO<sub>2</sub> Passivation Layer Deposited on InS<sub>5</sub> Substrate via Raman Spectroscopy</b><br>Chulkyun Seok <sup>1,2</sup> , Taekyun Gang <sup>2</sup> , Changwon Choi <sup>2</sup> , Taeyang Yoon <sup>2</sup> , Yongjo Park <sup>1</sup> , and Euijoon Yoon <sup>1</sup><br><sup>1</sup> Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, <sup>2</sup> Memory Manufacturing Operation Center, Samsung Electronics |
| TD3-D-5 | 15:50-16:05 | <b>Ferroelectric Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> Thin Films with Al<sub>2</sub>O<sub>3</sub> Interlayer as a Serial Resistor on Ferroelectric Switching</b><br>Han Joon Kim, Min Hyuk Park, Yu Jin Kim, Young Hwan Lee, Taehwan Moon, Keum Do Kim, and Cheol Seong Hwang<br>Department of Material Science & Engineering and Inter-university Semiconductor Research Center, Seoul National University   |

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**TD3-D-6      16:05-16:20      Adaptive-Learning Synaptic Device Using Organic Ferroelectric Thin Films at Low-Process Temperature**  
Eom-Ji Kim, Kyeong-Ah Kim, Jun-Yong Bak, and Sung-Min Yoon  
Department of Advanced Materials of Engineering for Information & Electronics, Kyung Hee University



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## K. Memory (Design & Process Technology) 분과

Room E  
1F / 108호

2015년 2월 12일(목) 13:10-14:40

[TE3-K] RRAM and FLASH Device, Modeling, and Process Technologies

좌장: 민경식 (국민대학교), 김수길 (SK Hynix Inc.)

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|---------|-------------|---|
| TE3-K-1 | 14:50-15:05 | <b>A Monte Carlo Simulation Model for an Anomalous ISPP Behavior in NAND Flash Memory</b><br>Jaeduk Lee, Youngwoo Park, Seong Soon Cho, Gyoyoung Jin, and Eunseung Jung<br>Semiconductor R&D Center, Samsung Electronics Co. Ltd.   |
| TE3-K-2 | 15:05-15:20 | <b>3차원 플래시 메모리를 위한 채널 두께와 고체화 결정법에 의한 결정 크기 효과에 관한 연구</b><br>김승윤 <sup>1</sup> , 박종경 <sup>1</sup> , 이승준 <sup>2</sup> , 이기홍 <sup>2</sup> , 피승호 <sup>2</sup> , 조병진 <sup>1</sup><br><sup>1</sup> 한국과학기술원전기 및 전자공학과, <sup>2</sup> SK 하이닉스 반도체 메모리 연구소  |
| TE3-K-3 | 15:20-15:35 | <b>Multi-State Resistance Controllability and Variability Analysis of Binary Oxide RRAM for Ultra-High Density Memory Applications</b><br>Amit Prakash, J-S. Park, J. Song, S-J. Lim, J-H. Park, J. Woo, E. Cha, and Hyunsang Hwang<br>Department of Materials Science and Engineering, Pohang University of Science and Technology |
| TE3-K-4 | 15:35-15:50 | <b>Sub-Oxide Dependence of Insulator Metal Transition Characteristics on 3-D Structural Niobium Oxide Selector</b><br>Jaehyuk Park, Euijun Cha, Daeseok Lee, Jiyong Woo, Sangheon Lee, Jeonghwan Song, Jaesung Park, Yunmo Koo, and Hyunsang Hwang<br>Department of MS&E, POSTECH   |
| TE3-K-5 | 15:50-16:05 | <b>Improvement in Reliability Characteristics (Retention and Endurance) of RRAM by using High-Pressure Hydrogen Annealing</b><br>Jeonghwan Song, Daeseok Lee, Jiyong Woo, Euijun Cha, Sangheon Lee, and Hyunsang Hwang<br>Department of Materials Science and Engineering, Pohang University of Science and Technology              |
| TE3-K-6 | 14:25-14:40 | <b>Selector-less ReRAM with an Excellent Selectivity by the Tunnel Barrier Engineered Multi-Layer Titanium Oxide and Triangular Shaped AC Pulse</b><br>Sangheon Lee, Jiyong Woo, Jaesung Park, Jeonghwan Song, Daeseok Lee, and Hyunsang Hwang<br>Department of Materials Science and Engineering, POSTECH                          |

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## F. Silicon Device and Integration Technology 분과

Room G

1F / 109호

2015년 2월 12일(목) 14:50-16:20

### [TG3-F] Processes and Test Methodologies for Scaled CMOS

좌장: 이성주 (성균관대학교), 조성재 (가천대학교)

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TG3-F-1	14:50-15:05	<b>TDR 분석법을 이용한 미세전계효과소자의 Effective Mobility 추출 방법</b> 김용훈, 정욱진, 강수철, 이영근, 이병훈 Center for Emerging Electric Devices and Systems, School of Material Science and Engineering, Gwangju Institute of Science and Technology
TG3-F-2	15:05-15:20	<b>In-situ Thermal Annealing and ALD SiO<sub>2</sub> Interfacial Layer as an Interface Passivation for Ge pMOSFETs</b> Min-Ho Kang <sup>1,2</sup> , Ho-Ryeong Lee <sup>1</sup> , Jae-Sub Oh <sup>2</sup> , Je-Young Kim <sup>1</sup> , Ga-Won Lee <sup>1</sup> , and Hi-Deok Lee <sup>1</sup> <sup>1</sup> Department of Electronics Engineering, Chungnam National University, <sup>2</sup> Division of Nano-Process Division, National NanoFab Center
TG3-F-3	15:20-15:35	<b>Electrical Characteristics of MOSCAP with High-<math>\kappa</math>/Metal Gateusing an Oxygen Scavenging Process</b> Junil Lee, Hyun Woo Kim, Jang Hyun Kim, Euyhwan Park, Dae Woong Kwon, Tae-Hyung Park, and Byung-Gook Park Department of Electrical and Computer Engineering, Seoul National University
TG3-F-4	15:35-15:50	<b>A Novel Processing Technique for Reducing Contact Resistance of n<sup>+</sup> Si Junctions by a High-<math>\kappa</math> Dielectric Prepared by Atomic Layer Deposition</b> Jeongmin Lee <sup>1</sup> , Seung Wook Ryu <sup>2</sup> , Seongmin Lee <sup>1</sup> , Sungjun Kim <sup>3</sup> , Seongjae Cho <sup>1,4</sup> , Hyeong Joon Kim <sup>2</sup> , and Byung-Gook Park <sup>3</sup> <sup>1</sup> Department of IT Convergence Engineering and <sup>4</sup> Department of Electronic Engineering, Gachon University, <sup>2</sup> Department of Materials Science and Engineering, Seoul National University, <sup>3</sup> Department of Electrical and Computer Engineering, Seoul National University
TG3-F-5	15:50-16:05	<b>Ni-Al Alloy Silicide to Reduce the Electron Schottky Barrier Height in Source/Drain Junction for High Performance Nano-Scale NMOSFET</b> Horyeong Lee, Meng Li, Jeyoung Kim, Ga-Won Lee, and Hi-Deok Lee Department of Electronics Engineering, Chungnam National University
TG3-F-6	16:05-16:20	<b>2-Dimensional Defect Monitoring Array with Series Testing</b> Chin Kim, In Wook Oh, Jae Seok Yang, Jong Hyun Lee, and Sun Hom Paak Samsung Electronics Co., Ltd.

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

Room H  
1F / 110호

2015년 2월 12일(목) 13:10-14:40

[TH3-Q] Metrology, Inspection, and Yield Enhancement

좌장: 김호섭 (선문대학교), 유형원 (SK하이닉스)

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TH3-Q-1	14:50-15:05	<b>Thermoreflectance Microscopy and Applications for Thermal Characterization of Semiconductor Devices</b> Ki Soo Chang, Dong Uk Kim, Seon Young Ryu, and Woo June Choi Center for Analytic Instrumentation Development, Korea Basic Science Institute
TH3-Q-2	15:05-15:20	<b>Quantifying Precision Limit for Multichannel Spectroscopic Ellipsometers</b> Yong Jai Cho, Won Chegal, Jeong Pyo Lee, and Hyun Mo Cho Division of Industrial Metrology, Korea Research Institute of Standards and Science
TH3-Q-3	15:20-15:35	<b>2D-Strain Measurement in Transistor by Scanning Moiré Fringe Imaging</b> Younheum Jung, Suhyun Kim, Joong Jung Kim, Sunyoung Lee, and Haebum Lee Memory Analysis Science & Engineering Group, Samsung Electronics
TH3-Q-4	15:35-15:50	<b>XPS를 이용한 Atomic Layer Deposition된 Hafnium Oxide 박막과 Aluminum Oxide 박막의 전자 구조 측정</b> JongSung Han, Junghan Lee, SungHo Lee, Taeyoung Ra, Sangik Lee, Changhyuk Ok, Sunyoung Lee, and Haebum Lee Department of Device analysis group, Samsung Electronics
TH3-Q-5	15:50-16:05	<b>고분해능 TEM 과 암시야 전자홀로그래피를 이용한 InxGa1-x N MQWs 내 In 조성 및 격자변형의 정량적 분석</b> 조영지 <sup>1,2</sup> , 양준모 <sup>1</sup> , 박경진 <sup>1</sup> , 유정호 <sup>1</sup> , 장지호 <sup>2</sup> <sup>1</sup> 나노종합기술원 특성평가실, <sup>2</sup> 한국해양대학교 응용과학과
TH3-Q-6	16:05-16:20	<b>2D Strain Measurement in Sub-10 nm SiGe Layer with Dark-Field Electron Holography</b> Van Vuong Hoang <sup>1,2</sup> , Young Ji Cho <sup>1</sup> , Jung Ho Yoo <sup>1</sup> , Soon-Ku Hong <sup>2</sup> , Yong Ho Choi <sup>3</sup> , and Jun-Mo Yang <sup>1</sup> <sup>1</sup> Department of Measurement & Analysis, National Nanofab Center, <sup>2</sup> Department of Materials Science and Engineering, Chungnam National University, <sup>3</sup> Department of High-Tech Materials Engineering, Jungwon University

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J. Nano-Science & Technology 분과

Room I

1F / 111호

2015년 2월 12일(목) 14:50-16:20

[TI3-J] Graphene& 2D

좌장: 이택희 (서울대학교), 이관형 (연세대학교)

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| TI3-J-1 | 14:50-15:05 | <b>Highly Conformal Graphene Devices on Uneven Substrate</b><br>Yong Ju Park, Seoung-Ki Lee, and Jong-Hyun Ahn<br>School of Electrical & Electronic Engineering, Yonsei University   |
| TI3-J-2 | 15:05-15:20 | <b>Nanotube-on-Graphene Heterostructures for Smart Nano/Bio-Interface</b><br>Sun Sang Kwon, Jaeseok Yi, Won Woo Lee, Sung Woong Kim, and Won Il Park<br>Division of Materials Science & Engineering, Hanyang University  |
| TI3-J-3 | 15:20-15:35 | <b>Buried Gate Graphene FET의 게이트 절연막 Scaling 연구</b><br>이상경, 김윤지, 정욱진, 김용훈, 유태진, 이병훈<br>Center for Emerging Electric Devices and Systems, School of Material Science and Engineering, Gwangju Institute of Science and Technology   |
| TI3-J-4 | 15:35-15:50 | <b>Electrical Characteristics of Graphene Field Effect Transistors on Stainless Steel (STS) Substrate</b><br>Saebyuk Jeong <sup>1</sup> , Donghoon Kim <sup>2</sup> , Minjae Kang <sup>3</sup> , and Jeong-Soo Lee <sup>1,2</sup><br><sup>1</sup> Division of IT convergence Engineering, POSTECH, <sup>2</sup> Department of Electrical Engineering, POSTECH, <sup>3</sup> National institute for nanomaterials technology (NINT) |

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## R. Semiconductor Software 분과

Room J  
1F / 113호

2015년 2월 12일(목) 14:50-16:20

[TJ3-R] Semiconductor Software 3

좌장: 안성용 (삼성전자), 이은지 (충북대학교)

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|---------|-------------|--|
| TJ3-R-1 | 14:50-15:05 | <b>Addressing Bathtub Failure Curve of SSD by FS-RAID Scheme</b><br>Jaeho Kim, Heejin Park, and Donghee Lee<br>Department of Computer Science, University of Seoul   |
| TJ3-R-2 | 15:05-15:20 | <b>Aggressively Exploiting Parity of RAID for Reliable Flash SSD</b><br>Jaeho Kim, Eunjae Lee, and Donghee Lee<br>Department of Computer Science, University of Seoul  |
| TJ3-R-3 | 15:20-15:35 | <b>Model and its Implication for PIM (Processing in Memory)</b><br>손대연, 강동우<br>Department of Computer Science, Dankook University  |
| TJ3-R-4 | 15:35-15:50 | <b>Virtual Fence for Controlling for Animals using Flash Memory Storage</b><br>Jung Kyu Park <sup>1</sup> , Cheol-Won Lee <sup>2</sup> , Daeyoung Na <sup>2</sup> , Heung Suk Jeon <sup>2</sup><br><sup>1</sup> Department of Computer Engineering, Dankook University, <sup>2</sup> Department of Computer Engineering, Konkuk University |
| TJ3-R-5 | 15:50-16:05 | <b>An Implementation of a Module for Retaining Legacy File System Compatibility while Improving I/O Performance for New Memory based Systems</b><br>Hyunsub Song, Young Je Moon, and Sam H. Noh<br>Department of Computer Engineering, Hongik University   |

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[WP1] 포스터세션 1

Room F

1F / 114+115 호

2015년 2월 11일(수) 10:40-12:00

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|-------|-------------|---|
| WP1-1 | 10:40-12:00 | <b>Packaging Completed Ultrathin Si-based Flexible NAND-Type Flash Memory</b><br>Dohyun Kim and Keonjae Lee<br>Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology  |
| WP1-2 | 10:40-12:00 | <b>Liquid Cooling System with TSV for High Power 3D Packages</b><br>Manseok Park <sup>1</sup> , Soojung Baek <sup>1</sup> , Sungdong Kim <sup>2</sup> , and Sarah Eunkyung Kim <sup>1</sup><br><sup>1</sup> Graduate School of NID Fusion Technology, Seoul Technology, <sup>2</sup> Department of Mechanical System Design Engineering, Seoul Technology |
| WP1-3 | 10:40-12:00 | <b>3D IC Thermal Management using Cu Filled TSVs</b><br>Yunhwan Shin <sup>1</sup> , Junsung Ma <sup>2</sup> , Sungdong Kim <sup>1</sup> , Sarah Eunkyung Kim <sup>2</sup><br><sup>1</sup> Department of Mechanical System Design Engineering, Seoul Tech, <sup>2</sup> Graduate School of NID Fusion Technology, Seoul Tech                               |
| WP1-4 | 10:40-12:00 | <b>The Roughness Reduction Methods using Layer-by-Layer Laminar Structures on TSV Sidewall</b><br>Daekyun Jeong, Heechul Yang, Pil-Ryung Cha, and Jaegab Lee<br>Department of Advanced Materials Engineering, Kookmin University  |
| WP1-5 | 10:40-12:00 | <b>Micro Solder Bump에서의 Ag Contents에 따른 영향성 검증</b><br>이승엽, 이미선, 박진경, 김종훈, 이웅선, 서민석, 김남석<br>SK Hynix Inc.  |
| WP1-6 | 10:40-12:00 | <b>새로운 구조의 Ground를 이용한 Crosstalk 저감 연구</b><br>박유순, 김문정<br>공주대학교 전기전자제어공학부   |
| WP1-7 | 10:40-12:00 | <b>A Study of RDL Reliability Improvement with Developing New UBM Etchant</b><br>Min Ki Son, Sung Won Yoon, Jae Yong An, Il Hwan Cho, Jae Myun Kim, and Nam Seok Kim<br>SK Hynix Inc.   |
| WP1-8 | 10:40-12:00 | <b>Investigation of the Effect of Plasma Treatment on Electrical Contacts of Graphene</b><br>Dewu Yue, Chang-Ho Ra, Xiaochi Liu, Daeyeong Lee, and Won Jong Yoo<br>SKKU Advanced Institute of Nano-Technology (SAINT), Samsung-SKKU Graphene Center (SSGC), Sungkyunkwan University   |

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- WP1-9 10:40-12:00 Thickness Control of MoS<sub>2</sub> by using O<sub>2</sub> Plasma**  
Suhhyun Kim, Deshun Qu, Changho Ra, and Won Jong Yoo  
SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University
- WP1-10 10:40-12:00 Wet Etching Process를 통한 Free-Standing EUV Pellicle Membrane 제작**  
김정환<sup>1</sup>, 이재욱<sup>1</sup>, 홍성철<sup>1</sup>, 이승민<sup>1</sup>, 김정식<sup>2</sup>, 송현민<sup>2</sup>, 안진호<sup>1,2</sup>  
<sup>1</sup>한양대학교 신소재공학과, <sup>2</sup>한양대학교 나노반도체공학과
- WP1-11 10:40-12:00 TaN/Mo 기반의 극자외선 리소그래피 용 위상 변위 마스크 제작**  
송현민<sup>1</sup>, 이재욱<sup>2</sup>, 홍성철<sup>2</sup>, 이승민<sup>2</sup>, 김정식<sup>1</sup>, 김정환<sup>2</sup>, 안진호<sup>1,2</sup>  
<sup>1</sup>한양대학교 나노반도체공학과, <sup>2</sup>한양대학교 신소재공학과
- WP1-12 10:40-12:00 Hybrid Input-Output (HIO) 알고리즘을 사용한 마스크 패턴의 이미지 재구성 연구**  
이승민<sup>1</sup>, 이재욱<sup>1</sup>, 홍성철<sup>1</sup>, 김정식<sup>2</sup>, 김정환<sup>1</sup>, 송현민<sup>2</sup>, 안진호<sup>1,2</sup>  
<sup>1</sup>한양대학교 신소재공학과, <sup>2</sup>한양대학교 나노반도체공학과
- WP1-13 10:40-12:00 Plasma Etching to forming One-Dimensional Electrical Contact to Molybdenum Disulfide**  
Zheng Yang, Xiaochi Liu, Min Sup Choi, Faisal Ahmed, Chang Ho Ra, and Won Jong Yoo  
SKKU Advanced Institute of Nano-Technology (SAINT), Samsung-SKKU Graphene Center (SSGC), Sungkyunkwan University
- WP1-14 10:40-12:00 Etch Characteristics of Magnetic Tunnel Junction Materials using Substrate Heating in Pulse-biased Inductively Coupled Plasma**  
Hyunwoo Sung<sup>1</sup>, Yangkyung Chae<sup>2</sup>, Minhwan Jeon<sup>1</sup>, Kyungnam Kim<sup>2</sup>, and Geunyoung Yeom<sup>1,2</sup>  
<sup>1</sup>SKKU Advanced Institute of Nano Technology(SAINT), Sungkyunkwan University, <sup>2</sup>Department of Materials Science and Engineering, Sungkyunkwan University
- WP1-15 10:40-12:00 RF Plasma Dielectric Etching Endpoint Detection using Optical Emission Spectroscopy with Real-Time Density Based Cluster Analysis**  
Hakseung Lee<sup>1</sup>, Haegyung Jang<sup>2</sup>, and Heeyeop Chae<sup>1,2</sup>  
<sup>1</sup>School of Chemical Engineering, Sungkyunkwan University, <sup>2</sup>SKKU Advanced Institute of Nanotechnology, Sungkyunkwan University
- WP1-16 10:40-12:00 Etch Characteristic of Si<sub>3</sub>N<sub>4</sub> Layer by Pulse-Biased Capacitively-Coupled Plasmas for Nano-Scale Patterning of Multi-Level Resist Structures**  
Gyuhyun Choi<sup>1</sup>, Sechan Kim<sup>1</sup>, Heeyeop Chae<sup>2</sup>, and Nae-Eung Lee<sup>1,3,4</sup>  
<sup>1</sup>Department of Advanced Materials Science & Engineering, Sungkyunkwan University (SKKU), <sup>2</sup>School of chemical engineering, Sungkyunkwan University (SKKU), <sup>3</sup>SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan

- University (SKKU), <sup>4</sup>Samsung Advanced Institute for Health Sciences and Technology (SAIHST), Sungkyunkwan University (SKKU)
- WP1-17 10:40-12:00 Pulse-Biased Etching of SiO<sub>2</sub> Layer in Capacitively-Coupled Plasmas for Nano-Scale Patterning of Multi-level Resist Structures**  
Sechan Kim<sup>1</sup>, Gyuhyun Choi<sup>1</sup>, Heeyeop Chae<sup>2</sup>, and Nae-Eung Lee<sup>1,3,4</sup>  
<sup>1</sup>Department of Advanced Materials Science & Engineering, Sungkyunkwan University (SKKU), <sup>2</sup>School of chemical engineering, Sungkyunkwan University (SKKU), Suwon, <sup>3</sup>SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University (SKKU), <sup>4</sup>Samsung Advanced Institute for Health Sciences and Technology (SAIHST), Sungkyunkwan University (SKKU)
- WP1-18 10:40-12:00 Pt Nanoparticles Generated from Plasma-Sputtered Pt Films and their Use in Enhancement of Sensing Characteristics in SnO<sub>2</sub> Nanowires**  
Hyoun Woo Kim, Han Gil Na, Yong Jung Kwon, and Hong Yeon Cho  
Division of Materials Science and Engineering, Hanyang University
- WP1-19 10:40-12:00 Inductively Coupled Plasma Reactive Ion Etching of Ru Thin Films Using CH<sub>4</sub>/O<sub>2</sub>/Ar Gas Mixture**  
Su Min Hwang, Adrian Adalberto Garay, and Chee Won Chung  
Department of Chemistry and Chemical Engineering, Center for Design and Applications of Molecular Catalysts, Inha University
- WP1-20 10:40-12:00 Inductively Coupled Plasma Reactive Ion Etching of Nanometer-Size Patterned Magnetic Tunnel Junction Stacks using C, H, O Containing Gases**  
Adrian Adalberto Garay Dixon, Su Min Hwang, Ji Hyun Choi, and Chee Won Chung  
Department of Chemistry and Chemical Engineering, Center for Design and Applications of molecular Catalysts, Inha University
- WP1-21 10:40-12:00 The Transition from Ion Flux Limited to Neutral Flux Limited Process Regime in High Aspect Ratio Contact Etching**  
Hyun Woo Lee, Ken Tokashiki, Sung-Il Cho, Seok Hyun Lim, Young Sik Seo, and Seok Woo Nam  
Semiconductor R&D Center Process Development Team, Samsung Electronics Co., Ltd.
- WP1-22 10:40-12:00 Variation of Bottom Critical Dimension Induced by Reactive Ion Etching Lag in High Aspect Ratio Contact Etching Process**  
Hyun Sung Kim, Sang Wuk Park, Suji Sunwoo, Hyun Jin Cho, Ho Gil Jung, Dae Young Im, Byung Jae Park, Jin Kwan Lee, Du Hyun Cho, Sung il Cho, Kyung Sub Shin, Ki Hyun Hwang, and Ho Kyu Kang  
Semiconductor R&D Center Process Development Team, Samsung Electronics



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- Co., Ltd.
- WP1-23 10:40-12:00 Low Afterpulse Noise Single-Photon Detector with Detrap Schemers**  
Minki Woo, Sang Wook Han, and Sung Moon  
Korea Institute of Science and Technology
- WP1-24 10:40-12:00 민감도 향상을 위한 NDIR [CO]<sub>2</sub> Sensor 연구**  
Minki Woo, Sang Wook Han, and Sung Moon  
Korea Institute of Science and Technology
- WP1-25 10:40-12:00 프렌즈 간섭계의 비대칭성을 이용한 두-광자 간섭 특성 분석**  
권오성, 김용수, 한상욱, 문성욱  
Center for nano & quantum information research, KIST
- WP1-26 10:40-12:00 Observation of Two-Photon Interference with Continuous-Wave Operating Coherent Light**  
Yong-Su Kim  
Center for nano & quantum information research, KIST
- WP1-27 10:40-12:00 Characteristics of Strained InGaAs Quantum Well Infrared Photodetector for Gas Sensor Applications**  
Dong-Hwan Jun<sup>1</sup>, Youngjo Kim<sup>1</sup>, Won-Kyu Park<sup>1</sup>, Sang Wook Han<sup>2</sup>, Sung Moon<sup>2</sup>, and Young Min Song<sup>3</sup>  
<sup>1</sup> Korea Advanced Nano-Fab Center, <sup>2</sup> Korea Institute of Science and Technology, <sup>3</sup> Pusan National University
- WP1-28 10:40-12:00 Detection of Hepatitis B Surface Antigen using Dual-Gate EGFET**  
In-Kyu Lee, Cheol-Min Im, and Won-Ju Cho  
Department of Electronic Materials Engineering, Kwangwoon University
- WP1-29 10:40-12:00 Detection of HBs Auto-Antibody using Extended-Gate Field-Effect Transistors**  
Sung-Wan Moon and Won-Ju Cho  
Department of Electronic Materials Engineering, Kwangwoon University
- WP1-30 10:40-12:00 Sensitivity Enhancement of Dual Gate EGFET by Control of Channel Thickness of SOI Transistor**  
Cheol-Min Lim, In-Kyu Lee, and Won-Ju Cho  
Kwangwoon University
- WP1-31 10:40-12:00 Development of Interdigitated Ring Electrode Array for Electric Cell Impedance Sensing**  
Jinsoo Park<sup>1</sup> and Sungbo Cho<sup>1</sup>  
Department of Biomedical Engineering, Gachon University
- WP1-32 10:40-12:00 Dependence of Hydrophilic Microchannel Length by O<sub>2</sub> Plasma Treatment on Microchannel Width and Entrance Hole Diameter of PDMS Mask**

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Yuntae Kim and Sungbo Cho

Department of Biomedical Engineering, Gachon University

**WP1-33 10:40-12:00 Arbitrary Vibration Driven Piezoelectric Energy Harvester using Curled and Elongated Cantilever**

Hyunok Cho, Jongcheol Park, and Jae Yeong Park

Department of Electronic Engineering, Kwangwoon University

**WP1-34 10:40-12:00 Dielectrophoretic On-Chip for Simultaneous Detection of Live Cell Responses to Small Molecule Drugs**

In Soo Park<sup>1</sup>, Kwan Hwi Ko<sup>1</sup>, Seungyeop Choi<sup>1</sup>, Dae Sung Yoon<sup>2</sup>, Sei-Young Lee<sup>1</sup>, and Sang Woo Lee<sup>1</sup>

<sup>1</sup>Department of Biomedical Engineering, Yonsei University, <sup>2</sup>School of Biomedical Engineering, Korea University

**WP1-35 10:40-12:00 Direct Measurement of Frequency-Dependent Dielectrophoresis Force in Various Medium Condition**

Seungyeop Choi<sup>1</sup>, Min Hyung Kim<sup>1</sup>, Myeonggu Son<sup>1</sup>, Sei-Young Lee<sup>1</sup>, Dae Sung Yoon<sup>2</sup>, and Sang Woo Lee<sup>1</sup>

<sup>1</sup>Department of Biomedical Engineering, Yonsei University, <sup>2</sup>Department of Biomedical Engineering, Korea University

**WP1-36 10:40-12:00 Fabrication of Micro-Probe Sensor Array using Copper TGV(Through Glass Via)**

Young-Min Shin<sup>1</sup>, Yong-Kweon Kim<sup>1</sup>, Seung-Ki Lee<sup>2</sup>, and Jae-Hyoung Park<sup>2</sup>

<sup>1</sup>Department of Electrical Engineering and Computer Science, Seoul National University, <sup>2</sup>Department of Electronics and Electrical Engineering, Dankook University

**WP1-37 10:40-12:00 Surface Potential Characterization of Original and Regrown Amyloid Fibrils**

Wonseok Lee<sup>1</sup>, Hyungbeen Lee<sup>1</sup>, Myeonggu Son<sup>1</sup>, Gyudo Lee<sup>1</sup>, Sang Woo Lee<sup>1</sup>, and Dae Sung Yoon<sup>2</sup>

<sup>1</sup>Department of Biomedical Engineering, Yonsei University, <sup>2</sup>School of Biomedical Engineering, Korea University

**WP1-38 10:40-12:00 Characterization of DNA- Gold Nanoparticle Conjugates Surface Potential with Various Substrates via Kelvin Probe Force Microscopy**

Hyungbeen Lee<sup>1</sup>, Wonseok Lee<sup>1</sup>, Sang Won Lee<sup>1</sup>, Sang Woo Lee<sup>1</sup>, and Dae Sung Yoon<sup>2</sup>

<sup>1</sup>Department of Biomedical Engineering, Yonsei University, <sup>2</sup>Department of Biomedical Engineering, Korea University

**WP1-39 10:40-12:00 Influence of Reduced Graphene Oxide-Nanoparticle Layers on Indium Tin Oxide Electrode in Electrical Cell-Substrate Impedance Sensing**

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Yonghyun Choi, Ajay Kumar Yagati, and Sungbo Cho

Department of Biomedical Engineering, Gachon University

**WP1-40 10:40-12:00 A Pressure Driven Flow Control Apparatus for Microfluidic Application**

Tae Gyu Park<sup>1,2</sup>, Geunyoung Kim<sup>2</sup>, Kwang Kyu Park<sup>2</sup>, and Dong-Chul Han<sup>2</sup>

<sup>1</sup>Korea Bio-IT Foundry Center, IAMD, Seoul National University, <sup>2</sup>AMED Inc.

**WP1-41 10:40-12:00 Structure Optimization of THz Modulator based on a Uniform Graphene**

허형준, 김명환, 김상인

Department of Electrical and Computer Engineering, Ajou University

**WP1-42 10:40-12:00 Plasmon-Induced Transparency in a Graphene Grating**

김명환, 허형준, 김상인

Department of Electrical and Computer Engineering, Ajou University

**WP1-43 10:40-12:00 Taste Sensor based on Cascoded Compatible Lateral Bipolar Transistor (C-CLBT) for Detection of Sweetness**

Jin-Bum Kwon, Hyun-Min Jeong, Sang-Won Lee, Jae-Sung Lee, Hyurk-Choon Kwon, and Shin-Won Kang

School of Electronics Engineering, College of IT Engineering, Kyungpook National University

**WP1-44 10:40-12:00 Fabrication of Silicon Microlens Array on Flexible Substrates using a Transfer Printing**

Hyungi Park, Myunggyu Shin, and Young Min Song

Department of Electronic Engineering, Pusan National University

**WP1-45 10:40-12:00 Electrical Determination of NT-proBNP Utilizin the Competitive Assay Method for Biosensor Application**

Hoseok Lee<sup>1</sup>, Jaeheung Lim<sup>1</sup>, Seok Hyang Kim<sup>1</sup>, Junho Chung<sup>2</sup>, and Young June Park<sup>1</sup>

<sup>1</sup>Department of electrical and computer engineering, Seoul National University,

<sup>2</sup>Department of Biochemistry and Molecular Biology & Cancer Research Institute, Seoul National University College of Medicine

**WP1-46 10:40-12:00 Detection of E-Coli in Solution by using Quartz Crystal Microbalance**

Hyunseok Lee and Sungbo Cho

Department of Biomedical Engineering, Gachon University

**WP1-47 10:40-12:00 Edge Contacts of Graphene Formed by Using Controlled Plasma Treatment**

Dewu Yue, Chang-Ho Ra, Xiaochi Liu, Daeyeong Lee, and Won Jong Yoo

SKKU Advanced Institute of Nano-Technology (SAINT), Samsung-SKKU Graphene Center (SSGC), Sungkyunkwan University

**WP1-48 10:40-12:00 Synthesis of SnS Nanomaterials in Aqueous Solution and their Morphology Control**

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Heeseung Yang, Yuho Min, and Unyong Jeong

Department of Materials Science and Engineering, Yonsei University

**WP1-49 10:40-12:00 Highly Effective Piezoelectric Nanogenerator and Self-Powered Pressure Sensor using Micro-Patterned Film**

Hong-Joon Yoon<sup>1</sup>, Ju-Hyuck Lee<sup>2</sup>, and Sang-Woo Kim<sup>1,2</sup>

<sup>1</sup>School of Advanced Materials Science and Engineering, Sungkyunkwan University, <sup>2</sup>SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University

**WP1-50 10:40-12:00 Flexible One Diode-One Block Copolymer Incorporated Phase Change Memories Array on Plastic Substrates**

Beom Ho Mun, Byoung Kuk You, Se Ryeun Yang, Hyeon GyunYoo, Myunghwan Byun, Yeon Sik Jung, and Keon Jae Lee

Department of Materials Science and Engineering, KAIST

**WP1-51 10:40-12:00 A Study of Passivation affecting Power Output of Zinc Oxide Based Piezoelectric Nanogenerators**

H. Ryu<sup>1</sup>, D. Kim<sup>2</sup>, and S.-W. Kim<sup>1,2</sup>

<sup>1</sup>Sungkyunkwan University, <sup>2</sup>SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University

**WP1-52 10:40-12:00 Development of Real-Time Resynchronization System for Plug and Play Quantum Key Distribution**

박병권, 이민수, 우민기, 김용수, 한상욱, 문성욱

한국과학기술원 나노양자정보연구센터

**WP1-53 10:40-12:00 플러그 앤 플레이 측정 장비 무관 양자키분배 실험**

김용수<sup>1</sup>, 최유준<sup>1,2</sup>, 권오성<sup>1</sup>, 한상욱<sup>1</sup>, 문성욱<sup>1</sup>

<sup>1</sup>한국과학기술연구원 나노양자정보연구센터, <sup>2</sup>연세대학교 물리학과

**WP1-54 10:40-12:00 Quick Chemical Synthesis of Molybdenum Disulphide Nanosheets, Microplates and Thin Films**

Anupam Giri and Unyong Jeong

Department of Materials Science and Engineering, Yonsei University

**WP1-55 10:40-12:00 Graphene/Hexagonal Boron Nitride Heterostructure-Based Transparent Flexible Microheater**

Tae-Ho Kim<sup>1</sup>, Usman Khan<sup>2</sup>, Kang Hyuck Lee<sup>1</sup>, Christian Falconi<sup>2</sup>, and Sang-Woo Kim<sup>1</sup>

<sup>1</sup>School of Advanced Materials Science and Engineering, Sungkyunkwan University, <sup>2</sup>Department of Electronic Engineering, University of Tor Vergata, Italy

**WP1-56 10:40-12:00 Photoresponse Characteristics of MoS<sub>2</sub> Field Effect Transistors under Gate-Bias Stress Conditions**

# 제22회 한국반도체학술대회

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- Kyungjune Cho, Tae-Young Kim, Woanseo Park, and Takhee Lee  
Department of Physics and Astronomy, Seoul National University
- WP1-57 10:40-12:00 Modulating the Energy-Band Structure of Hybrid Heterojunctions with Self-Organized P(VDF-TrFE) Nanomaterials**  
Kyung-Sik Shin, Sanghyun Kim, and Sang-Woo Kim  
School of Advanced Materials Science and Engineering, Sungkyunkwan University
- WP1-58 10:40-12:00 Neutralization Effect of Acceptor Dopants on the Enhanced Piezoelectric Potential of ZnO Nanowires**  
Tae Yun Kim<sup>1</sup> and Sang-Woo Kim<sup>1,2</sup>  
<sup>1</sup>Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University,  
<sup>2</sup>School of Advanced Materials Science & Engineering, Sungkyunkwan University
- WP1-59 10:40-12:00 Transparent, Flexible Graphene Triboelectric Nanogenerators**  
Seongsu Kim, Keun Young Lee, and Sang-Woo Kim  
School of Advanced Materials Science and Engineering, Sungkyunkwan University
- WP1-60 10:40-12:00 Air 및 Argon 분위기에 따른 2차원 물질 n-type 도핑**  
류정진, 이대영, 최민섭, 유원종  
Department of Mechanical Engineering, Sungkyunkwan University
- WP1-61 10:40-12:00 Vertical Stacking Methods for Two-Dimensional Heterostructures**  
Jun-Young Kwon and Gwan-Hyoung Lee  
Department of Material Science & Engineering, Yonsei University
- WP1-62 10:40-12:00 Top Gate Graphene FET의 Fermi level과 계면결함 밀도의 상관관계 연구**  
정욱진, 김윤지, 김용훈, 김소영, 이병훈  
Center for Emerging Electric Devices and Systems, School of Material Science and Engineering, Gwangju Institute of Science and Technology
- WP1-63 10:40-12:00 Influence of Surfactant-Treated PEDOT:PSS on Graphene Electrode**  
Jae-Bok Lee<sup>1</sup>, Kuldeep Rana<sup>1</sup>, Byung Hwa Seo<sup>1</sup>, Jin Young Oh<sup>2</sup>, Unyong Jeong<sup>2</sup>, and Jong-Hyun Ahn<sup>1</sup>  
<sup>1</sup>Department of Electrical & Electronic Engineering, Yonsei University,  
<sup>2</sup>Department of Material Science and Engineering, Yonsei University
- WP1-64 10:40-12:00 High-Speed Baseband Modem for 60 GHz Proximity Wireless Communications**  
Ik-Jae Chun<sup>1</sup>, Hoo-Sung Lee<sup>1</sup>, Moon-Sik Lee<sup>1</sup>, and Ji-Hoon Kim<sup>2</sup>  
<sup>1</sup>Wireless Proximity Communications Research Section, ETRI, <sup>2</sup>Division of Electrical and Information Technology Engineering, Chungnam National University

The 22<sup>nd</sup> Korean Conference on Semiconductors (KCS 2015)

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- WP1-65**    **10:40-12:00**    **Hardware Implementation of a Real-time Central Point Detection for Motion Recognition System**  
Hosang Cho, Geun-Jun Kim, Changhun Kim, and Bongsoon Kang  
Department of Electronic Engineering, Dong-A University
- WP1-66**    **10:40-12:00**    **A Noise-Resilient and Ditherless Lock Detection Scheme for Bang-Bang Controlled Calibration Loops**  
Seuk Son and Jaeha Kim  
Department of Electrical and Computer Engineering, Seoul National University
- WP1-67**    **10:40-12:00**    **Adaptive Voltage Scaling in the Near-Threshold Voltage Regime Using Current Sensing Completion Detection**  
Pierre Nicolas-Nicolas and Kiyoung Choi  
Department of ECE, Seoul National University
- WP1-68**    **10:40-12:00**    **Sensorless BLDC Motor Drive in Methods of Sliding Mode Observer with Resistance Estimation in FPGA**  
Jimin Oh, Minki Kim, Sewan Heo, Jung-Hee Suk, and Yilsuk Yang  
Electronics and Telecommunications Research Institute
- WP1-69**    **10:40-12:00**    **High Performance Memory Controller Processing Multiple Requests**  
Chanho Lee and Gilhwan Kim  
School of Electronic Enigneering, Soongsil University
- WP1-70**    **10:40-12:00**    **The Fabrication of Nanocrystal based Metamaterial by Nanoimprinting**  
Sung-Hoon Hong <sup>1,2</sup> and In-Kyu You<sup>1</sup>  
<sup>1</sup>Components & Materials Research Laboratory, Electronics and Telecommunication Research Institute (ETRI), <sup>2</sup>Department of Advanced Device Technology, UST

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[WP2] 포스터세션 2

Room F

1F / 114+115 호

2015년 2월 11일(수) 14:40-16:00

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- WP2-1 14:40-16:00 Electrical Characteristics of GaNSchottkyBarrier Diode with Variety Buffer Thicknesses**  
Jihyun Yu<sup>1</sup>, Yeji Lee<sup>1</sup>, Changju Youn<sup>1</sup>, Cheoljung Choi<sup>1</sup>, and Kyuhan Shim<sup>1,2</sup>  
<sup>1</sup>Department of Semiconductor and Chemical engineering, Semiconductor Physics Research Center, Chonbuk National University, <sup>2</sup>R&D Division, Sigetronics, Inc.
- WP2-2 14:40-16:00 Fabrication of Ambipolar Transistors and Inverters based on Single-Walled Carbon Nanotube-InGaZnO Hybrid Structure using Microwave Irradiation**  
Kwang-Won Jo, Tae-Jun Ha, and Won-Ju Cho  
Department of Electrical Material Engineering, Kwangwoon University
- WP2-3 14:40-16:00 Investigations of Baking Temperature on Solution Processed In-Ga-Zn-O Thin Film Transistor**  
Kwang-Won Jo and Won-Ju Cho  
Department of Electrical Material Engineering, Kwangwoon University
- WP2-4 14:40-16:00 Improvement of Electrical Characteristics of Solution Processed In-Ga-ZnO TFTs by Double Side Irradiation**  
Sung-Wan Moon and Won-Ju Cho  
Department of Electronic Materials Engineering, Kwangwoon University
- WP2-5 14:40-16:00 GaAs Single Junction Solar Cell on Si Substrate with Direct Wafer Bonding**  
SangHyeon Kim<sup>1</sup>, Min-Su Park<sup>1</sup>, Dae-Myeong Geum<sup>1</sup>, Changzoo Kim<sup>2</sup>, and Won Jun Choi<sup>1</sup>  
<sup>1</sup>Center for Opto-electronic convergence systems, Korea Institute of Science and Technology, <sup>2</sup>Korea Advanced Nano Fab Center
- WP2-6 14:40-16:00 GaAs on Si Substrate Realized by Wafer Bonding and Epitaxial Lift-Off**  
Dae-Myeong Geum<sup>1</sup>, Sang Hyeon Kim<sup>1</sup>, Min-Su Park<sup>1</sup>, Hyunduk Yang<sup>1</sup>, Geunhwan Ryu<sup>1</sup>, Hosung Kim<sup>1</sup>, Jindong Song<sup>1</sup>, Changzoo Kim<sup>2</sup>, Sang Hyuck Kim<sup>1</sup>, and Won Jun Choi<sup>1</sup>  
<sup>1</sup>Center for Opto-electronic convergence, Korea Institute of Science and Technology, <sup>2</sup>Korea Advanced Nano Fab Center
- WP2-7 14:40-16:00 Low-Noise Microwave Performance of AlGaIn/GaN HEMTs on SiC with Wide Head T-Shaped Gate**

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- Hyung Sup Yoon, Byoung Gue Min, Ho Kyun Ahn, Jong Min Lee, Dong Min Kang, Sung Il Kim, Chul Won Ju, Hae Cheon Kim, and Jong Won Lim  
RF Convergence Components Research Section, IT Components & Materials Research Laboratory, Electronics and Telecommunications Research Institute
- WP2-8 14:40-16:00 X-Band 40W Pulsed Power Amplifier using 0.2um AlGaIn/GaN HEMT**  
강동민, 이종민, 민병규, 윤형섭, 안호균, 김성일, 주철원, 김해천, 임종원  
한국전자통신연구원 RF융합부품연구실
- WP2-9 14:40-16:00 Surface Passivation Oxide Study of 4H-SiC Bipolar Junction Transistors**  
Hyung-Seok Lee<sup>1</sup>, Martin Domeij<sup>2</sup>, Carl-Mikael Zetterling<sup>3</sup>, Mikael Östling<sup>3</sup>, Sang Choon Ko<sup>1</sup>, and Eun Soo Nam<sup>1</sup>  
<sup>1</sup>GaN Power Electronics Research Section, ETRI, <sup>2</sup>Fairchild Semiconductor, Stockholm-Kista, Sweden, <sup>3</sup>Royal Institute of Technology (KTH), Stockholm-Kista, Sweden
- WP2-10 14:40-16:00 Improvement in Highmobility of Indium Zinc Oxide Transistor by Metal Capping Method**  
Hyuk Ji<sup>1</sup>, Ah Young Hwang<sup>1</sup>, Chang Kyu Lee<sup>1</sup>, Pil Sang Yun<sup>2</sup>, Jong Uk Bae<sup>2</sup>, and Jae Kyeong Jeong<sup>1</sup>  
<sup>1</sup>Department of Materials Science and Engineering, Inha University, <sup>2</sup>R&D Center, LG Display Company
- WP2-11 14:40-16:00 CLGO계 기반 Sm<sup>3+</sup> 이온 도핑된 형광체의 주황색 발광 특성**  
전용일, L. Krishina Bharat, 유재수  
경희대학교 전자전파공학과
- WP2-12 14:40-16:00 Fabrication of GaN-based UV Active Pixel Sensor**  
Yi-Sak Koo, Chang-Ju Lee, Chul-Ho Won, Sang-Bum Kang, Jung-Hee Lee, and Sung-Ho Hahm  
School of Electronics Engineering, College of IT Engineering, Kyungpook National University
- WP2-13 14:40-16:00 A GaN MSM UV Photodiode Using Multi-layer Graphene as a Schottky Electrode**  
Sang-Bum Kang<sup>1</sup>, Chang-Ju Lee<sup>1</sup>, Yi-Sak Koo<sup>1</sup>, Seul-Ki Hong<sup>2</sup>, Byung-Jin Cho<sup>2</sup>, Jung-Hee Lee<sup>1</sup>, and Sung-Ho Hahm<sup>1</sup>  
<sup>1</sup>Kyungpook National University, <sup>2</sup>Korea Advanced Institute of Science and Technology
- WP2-14 14:40-16:00 Investigation of Electrical Performance Degradation in p-AlGaIn Gate Heterostructure Field Effect Transistors under Various Off-Stress Conditions**  
Hyo-Seung Choi<sup>1</sup>, Hun Jeong<sup>1</sup>, Seung Yup Jang<sup>2</sup>, Hong Chang Yeoh<sup>3</sup>, Sang-Hun Song<sup>1</sup>, and Hyuck-In Kwon



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- <sup>1</sup>School of Electrical and Electronics Engineering, Chung-Ang University, <sup>2</sup>MHS Team, System IC R&D Laboratory, LG Electronics, <sup>3</sup>Analog Devices Inc.
- WP2-15 14:40-16:00 Interface Engineering for InGaAs MIS Capacitor with Al<sub>2</sub>O<sub>3</sub> Employing PEALD-SiNx as an Interfacial Layer**  
Myoung-Jin Kang, Min-Seok Kim, and Kwang-Seok Seo  
Department of Electrical Engineering and Computer Science, Seoul National University
- WP2-16 14:40-16:00 Trapping and Detrapping Characteristics of TFT with P-Type Tin Oxide Channel for Nonvolatile Memory Application**  
Duc-Tai Tong, Manh-Cuong Nguyen, Seung-Won You, Donghwi Lee, Hyunjoon Bang, and Rino Choi  
Department of Material Science and Engineering, Inha University
- WP2-17 14:40-16:00 Effect of In-situ Deposited Silicon Carbon Nitride Capping Layer Thickness on the Characteristics of AlGaIn/GaN HEMTs**  
Jae-Hong Lee<sup>1</sup>, Hee-Sung Kang<sup>1</sup>, Young-Jo Kim<sup>1</sup>, Jae-Hoon Lee<sup>2</sup>, Dong-Gi Lee<sup>1</sup>, Young-Woo Jo<sup>1</sup>, Dong-Seok Kim<sup>1</sup>, Chul-Ho Won<sup>1</sup>, Jun-Hyeok Lee<sup>1</sup>, Ji-Hyun Kim<sup>1</sup>, and Jung-Hee Lee<sup>1</sup>  
<sup>1</sup>School of Electronics Engineering, Kyungpook National University, <sup>2</sup>Samsung Electronics Co., Ltd
- WP2-18 14:40-16:00 AlGaIn/GaN HEMT Using the Thick Metal Pad on 3D-BCB Structure**  
Raseong Ki, Min-Seong Lee, and Kwang-Seok Seo  
Department of Electrical Engineering and Computer Science, Seoul National University
- WP2-19 14:40-16:00 Improvement of Transconductance by Damage Curing on AlGaIn/GaN Normally-on MIS-HEMT for RF Application**  
Il-Hwan Hwang, Dong-Hwan Kim, and Kwang-Seok Seo  
Electrical Engineering and Computer Science, Seoul National University
- WP2-20 14:40-16:00 애노드 구조 변화와 Al<sub>2</sub>O<sub>3</sub> passivation을 통한 쇼트키 배리어 다이오드의 전기적 특성 분석**  
이현수<sup>1,2</sup>, 김정진<sup>1</sup>, 장현규<sup>1</sup>, 정동윤<sup>1</sup>, 나제호<sup>1</sup>, 박영락<sup>1</sup>, 장우진<sup>1</sup>, 전치훈<sup>1</sup>, 류상욱<sup>2</sup>, 문재경<sup>1</sup>, 고상춘<sup>1</sup>, 남은수<sup>1</sup>  
<sup>1</sup>한국전자통신연구원, 정보통신 부품소재연구소, GaN전력소자연구실,  
<sup>2</sup>단국대학교, 전자전기공학과
- WP2-21 14:40-16:00 Study the Breakdown Voltage Characteristics of the SBD Floating Metal Ring with Mo Schottky Metal**  
Teajin Nam, Sinsu Kyoung, Taiyoung Kang, and Eygoo Kagn  
Powercubesemi Inc

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- WP2-23 14:40-16:00 GaN-based LEDs with Subwavelength Structures for Enhanced Extraction Efficiency and Uniform Far-Field Patterns**  
Gil Ju Lee and Young Min Song  
Department of Electronics Engineering, Pusan National University
- WP2-24 14:40-16:00 Extraction of Location and Energy Level of Oxide Trap Leading to Random Telegraph Noise in Gate-Induced Drain Leakage of p-MOSFET**  
Hyunsoo Kim, Sung-Won Yoo, Youngsoo Seo, and Hyungcheol Shin  
Inter-university Semiconductor Research Center (ISRC) and School of Electrical Engineering and Computer Science, Seoul National University
- WP2-25 14:40-16:00 The Comparison of Electrical Characteristics Between Nanoplate Fet and FinFET for 5 nm node Technology**  
Duckseoung Kang, Jong-su Kim, and Hyungcheol Shin  
Inter-university Semiconductor Research Center (ISRC) and School of Electrical Engineering and Computer Science, Seoul National University
- WP2-26 14:40-16:00 Investigation of Work-Function Variation for Germanium-Source Tunnel Field-Effect Transistor**  
Youngtaek Lee, Hyohyun Nam, and Changhwan Shin  
School of Electrical and Computer Engineering, University of Seoul
- WP2-27 14:40-16:00 Device design of P-N Tunneling Field-Effect Transistor based on AlGaSb/InGaAs Heterojunction**  
Hye Rim Eun<sup>1</sup>, Young Jun Yoon<sup>1</sup>, Jae Hwa Seo<sup>1</sup>, Young In Jang<sup>1</sup>, Jin Su Kim<sup>1</sup>, Jung-Hee Lee<sup>1</sup>, and In Man Kang<sup>1</sup>  
<sup>1</sup>School of Electronics Engineering, Kyungpook National University
- WP2-29 14:40-16:00 Graphene Barristor 를 이용한 Ternary Inverter**  
심창후, 노진우, 장경은, 김윤지, 김소영, Abdul Karim Khan, 이병훈  
School of Material Science and Engineering, Gwangju Institute of Science and Technology
- WP2-30 14:40-16:00 DIBL Suppression in Edge-Over Schottky Barrier Field Effect Transistor**  
Jung-Yong Lee<sup>1</sup>, Sungchul Jung<sup>1</sup>, and Kibog Park<sup>1,2</sup>  
<sup>1</sup>Department of Physics, Ulsan National Institute of Science and Technology,  
<sup>2</sup>School of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology
- WP2-31 14:40-16:00 Effects of Oxygen Adatoms on the Atomic and Electronic Structures of Various Ge Surfaces by Ab-Initio Study**  
Liu Kai<sup>1,2</sup>, Cheol Seong Hwang<sup>2</sup>, and Jung-Hae Choi<sup>1</sup>  
<sup>1</sup>Electronic Materials Research Center, Korea Institute of Science and Technology,  
<sup>2</sup>Department of Materials Science and Engineering, Seoul National University

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- WP2-32 14:40-16:00 A Study of the Effects of the Surface Roughness and Temperature of Magnetic Tunnel Junctions on Resistance Drift**  
Chulmin Choi, Youngtaek Oh, Jungmin Lee, and Yunheub Song  
Department of Electronic Engineering, Hanyang University
- WP2-33 14:40-16:00 Effect of Stacking Sequence on the Electronic Properties of Layered MoS<sub>2</sub>: Polytypism and Heterostructure**  
Jaehong Park<sup>1,2</sup>, Cheol Seong Hwang<sup>2</sup>, and Jung-Hae Choi<sup>1</sup>  
<sup>1</sup>Electronic Materials Research Center, Korea Institute of Science and Technology,  
<sup>2</sup>Department of Materials Science and Engineering, Seoul National University
- WP2-34 14:40-16:00 Effect of Program/Erase Cycling Stress on Reliability Properties in MONOS Memory Devices**  
Jinho Oh, Heedo Na, Ju-Young Jeong, Youngjae Kim, Taeho Kim, and Hyunchul Sohn  
Department of Materials Science and Engineering, Yonsei University
- WP2-35 14:40-16:00 Border Trap Change of Solution Processed ZrO<sub>2</sub> Layer with Bias-Temperature Stress**  
Jae-Hee Cho and Byoungdeog Choi  
Department of Electronic Electrical and Computer Engineering, Sungkyunkwan University
- WP2-36 14:40-16:00 A Study on Threshold Voltage Control of Lateral DMOS**  
Kuemju Lee, Joowon Park, Kwangsik Ko, Soonyeol Park, Jina Eum, Sanghyun Lee, Inwook Cho, and Kyungdong Yoo  
Technology Development team, SK Hynix Inc.
- WP2-37 14:40-16:00 Analysis of Reliability for Different Device Type in 65nm CMOS Technology**  
Chang-Su Kim, Sung-Kyu Kwon, Jae-Nam Yu, Sun-Ho Oh, and Hi-Deok Lee  
Department of Electronics Engineering, Chungnam National University
- WP2-38 14:40-16:00 Amorphous-Si TFT Design에 따른 Photo Leakage 특성 분석**  
김기환, 정금동, 장진혁, 서미선, 이주연, 박문수  
CAE team, Samsung Display Co. Ltd.
- WP2-39 14:40-16:00 Geometrical Effect of Silicon Nanostructures on Absorption Efficiency**  
Won Il Nam<sup>1</sup>, Young Jin Yoo<sup>1</sup>, and Young Min Song<sup>1</sup>  
<sup>1</sup>Department of Electronics Engineering, Pusan National University
- WP2-40 14:40-16:00 Numerical Analysis of the Variation of the Band-to-band Tunneling Current by Acoustic Waves Effect**  
Nakwon Yoo, Seongwook Choi, and Young June Park  
Department of Electrical and Computer Engineering, Seoul National University
- WP2-41 14:40-16:00 ReRAM Crossbar Array: Reduction of Access Time by Reducing Parasitic**

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## Capacitance of Selector Device

Hyein Lim<sup>1</sup>, Wookyung Sun<sup>1</sup>, Wootae Lee<sup>2</sup>, and Hyungsoon Shin<sup>1</sup>

<sup>1</sup>Department of Electronics Engineering, Ewha Womans University, <sup>2</sup>SK Hynix Inc.

- WP2-42 14:40-16:00 Analysis of Read Preferred SRAM Bit-Cells in 22nm FinFET Technology**  
Kyoman Kang, Kiryong Kim, Hanwool Jeong, Younghwi Yang, Juhyun Park, Taewoo Oh, and Seong-Ook Jung  
School of Electrical and Electronic Engineering, Yonsei University
- WP2-43 14:40-16:00 Illumination Effect on the Nonvolatile Memory Device based on a-InGaZnO Thin-Film Transistors with Ag Nanoparticle Storage**  
Min-Ju Ahn and Won-Ju Cho  
Department of Electrical Material Engineering, Kwangwoon University
- WP2-44 14:40-16:00 Resistive Switching Characteristics in HfO<sub>x</sub> - PMMA Blend Thin-Film**  
Il Jin Baek, Jang-Han Kim, and Won-Ju Cho  
Department of Electronic Materials Engineering, Kwangwoon University
- WP2-45 14:40-16:00 Resistive Switching in Ta<sub>2</sub>O<sub>5</sub>/IGZO Double Layer for System on Panel Applications**  
Jang-Han Kim, Il-Jin Baek, ki-Hyun Nam, Won-Ju Cho, and Hong-Bay Chung  
Department of Electronic Materials Engineering, Kwangwoon University
- WP2-46 14:40-16:00 Asymmetric Bipolar Resistive Switching in a Pt/Ta<sub>2</sub>O<sub>5</sub>/ZrO<sub>2</sub>/TiN Structure**  
Taehyung Park, Seul Ji Song, Dong Gun Kim, Young Jae Kwon, Jun Yeong Seok, Jung Ho Yoon, Kyung Jean Yoon, Dae Eun Kwon, Hae Jin Kim, and Cheol Seong Hwang  
Department of Material Science and Engineering, Seoul National University
- WP2-47 14:40-16:00 Effect of Physical/Chemical Characteristics of Electrolyte on the Cation Migration in Electro-Chemical Metallization Cell**  
Hae Jin Kim, Kyung Jean Yoon, Seul Ji Song, Jung Ho Yoon, Dae Eun Kwon, Tae Hyung Park, Yeong Jae Kwon, and Cheol Seong Hwang  
Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University
- WP2-48 14:40-16:00 A PRAM-aware Modification of Linux Operating System**  
Sungkwang Lee, Sungjoo Yoo, and Sunggu Lee  
Department of Electrical Engineering, POSTECH
- WP2-49 14:40-16:00 Pt/SiNx/Pt and TiN/SiNx/Pt for ReRAM device**  
Dae Eun Kwon, Jung Ho Yoon, Seul Ji Song, Jun Yeong Seok, Kyung Jean Yoon, Tae Hyung Park, Hae Jin Kim, Xinglong Shao, Young Jae Kwon, and Cheol Seong Hwang  
Department of Materials Science and Engineering and Inter-university

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- Semiconductor Research Center, Seoul National University
- WP2-50 14:40-16:00 Doping Effect in Space Region of 16 nm NAND Flash Memory Cell String**  
Sung Yun Woo, Sung-Min Joe, and Jong-Ho Lee  
Department of Electrical and Computer Engineering, Seoul National University
- WP2-51 14:40-16:00 Characterization and Modeling of Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> Crystallization Time in Phase Change Random Access Memory Operation**  
Sanghyeon Lee and Seung Jae Baik  
Department of Electrical, Electronic, and Control Engineering, Hankyong National University
- WP2-52 14:40-16:00 Resistive Switching Characteristics Depending on Defects in Silicon nitride-based RRAM**  
Sungjun Kim<sup>1</sup>, Sunghun Jung<sup>1</sup>, Min-Hwi Kim<sup>1</sup>, Seongjae Cho<sup>2</sup>, and Byung-Gook Park<sup>1</sup>  
<sup>1</sup>Inter-university Semiconductor Research Center (ISRC) and the Department of Electrical and Computer Engineering, Seoul National University, <sup>2</sup>Department of Electronic Engineering, Gachon University
- WP2-53 14:40-16:00 Programming Pulse Width Variation and Its Microstructural Model of Phase-Change Memory**  
Gwihyun Kim, Sanghyeon Lee, and Seung Jae Baik  
Department of Electrical, Electronic, and Control Engineering, Hankyong National University
- WP2-54 14:40-16:00 Influence of Electron and Hole Distribution on Embedded SONOS Nonvolatile Memory**  
Da Som Kim<sup>1</sup>, Tae Ho Lee<sup>2</sup>, Young Jun Kwon<sup>2</sup>, Jae Gwan Kim<sup>2</sup>, Sung Kun Park<sup>2</sup>, In Wook Cho<sup>2</sup>, Kyung Dong Yoo<sup>2</sup>, Gyu Han Yun<sup>1</sup>, and Woo Young Choi<sup>1</sup>  
<sup>1</sup>Department of Electronic Engineering, Sogang University, <sup>2</sup>System IC Division, SK Hynix Inc.
- WP2-55 14:40-16:00 A 1.5-Gb/s Analog Pre-Emphasis Driver with 40-dB Cable Loss Compensation**  
Kyungmin Lee, Chaerin Hong, Hanbyul Choi, Xiao Ying, Seung-Hoon Kim, and Sung Min Park  
Department of Electronics Engineering, Ewha Womans University
- WP2-56 14:40-16:00 A 1-Gb/s Digital Transmitter with 3-tap FIR Pre-Emphasis in 0.13- $\mu$ m CMOS**  
Chaerin Hong, Kyungmin Lee, Xiao Ying, Hanbyul Choi, Seung-Hoon Kim, and Sung Min Park  
Department of Electronics Engineering, Ewha Womans University
- WP2-57 14:40-16:00 A Switching-based Fast Li-Ion Battery Charger by Continuously**

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## Compensating Built-In Resistance for Mobile Devices

Kwang-Yoon Lee, Hyun-A Ahn, Young-Ho Jung, Seong-Kwan Hong, and Oh-Kyong Kwon

Department of Electronic Engineering, Hanyang University

**WP2-58 14:40-16:00 A 1.5-Gb/s Equalizer and Limiting Amplifier for 33-dB Cable Loss Compensation**

Hanbyul Choi, Xiao Ying, Chaerin Hong, Kyungmin Lee, Seung-Hoon Kim, and Sung Min Park

Department of Electronics Engineering, Ewha Womans University

**WP2-59 14:40-16:00 Switched-Capacitor Reconstruction Filter with Reduced Sensitivity to Reference Noise for Sigma-Delta Audio DAC**

Sunsik Woo and Je-Kwang Cho

Mixed Circuit and System Team, System IC Laboratory, LG Electronics

**WP2-60 14:40-16:00 A Spread Spectrum Clock Generator Using the Clock-Clipping Technique for Reduction of Time Interval Errors**

Taiming Piao, Jae-Kyung Wee, and Inchaee Song

School of Electronic Engineering, Soongsil University

**WP2-61 14:40-16:00 Bootstrapping Technique with PWM/PFM Dual Mode for Wide load Range High Efficiency Buck Converter**

Joo Young Lee, Young Joon Park, Joo Young Jun, and Kang Yoon Lee

Information and communication college, SungKyunKwan University

**WP2-62 14:40-16:00 Standby Power Reduction Technique due to the Minimization of Voltage Difference between Input and Output in AC 60Hz input**

Kilsoo Seo, Kihyun Kim, Hyungwoo Kim, Kyungho Lee, and Jonghyun Kim

Power Semiconductor Research Center, KERI

**WP2-63 14:40-16:00 Portable Sensor Platform using Constant Current Source**

Yongjun Hwang, Seongwook Choi, Sangwoo Lee, and Youngjune Park

Department of Electrical and Computer Engineering, Seoul National University

**WP2-64 14:40-16:00 A Mutual Capacitive Touch Controller Robust to Display Noise for Ultrathin Displays Based on Differential Sensing**

Sanho Byun, Junchul Park, Chadong Kim, Minchull Lee, Hosuk Na, Youngtae Son, Keonhyoung Kwon, Mingun Baek, Yoonkyung Choi

Next Gen. Products Development Team, S.LSI

**WP2-65 14:40-16:00 A Compact Frequency Quadrupler With Subharmonic Injection-Locked Ring Oscillator**

Sungwoo Kim, Sungchun Jang, and Deog-Kyoon Jeong

Department of Electrical and Computer Engineering, Seoul National University

# 제22회 한국반도체학술대회

2015년 2월 10일(화) - 12일(목), 인천 송도컨벤시아

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- WP2-66 14:40-16:00 Clock and Data Recovery System with Digitally Controlled Phase Interpolator**  
Chang Soo Yoon, Woorham Bae, and Deog-Kyoon Jeong  
Department of Electrical and Computer Engineering, Seoul National University
- WP2-67 14:40-16:00 Event-Driven Simulation of Input-Dependent Nonlinear Behaviors**  
Jieun Jang and Jaeha Kim  
Department of Electrical and Computer Engineering, Inter-university Semiconductor Research Center, Seoul National University
- WP2-68 14:40-16:00 Delay Defect Localization by Silicon Data Mining**  
Taehwan Shin and Jaeyong Chung  
Department of Electronic Engineering, Incheon National University
- WP2-69 14:40-16:00 High-Performance of Piezoelectric Nanogenerator using Depletion Width Engineering of Surface Treatment**  
곽성수<sup>1</sup>, 이근영<sup>1</sup>, 김상우<sup>1,2</sup>  
<sup>1</sup>성균관대학교 신소재공학과, <sup>2</sup>성균관대학교 나노과학기술학과
- WP2-70 14:40-16:00 Chemically-Sintered, Binder-Free TiO<sub>2</sub> Films for Low-Temperature Photoelectrodes**  
Jaewon Jang and Moon-Ho Ham  
School of Materials Science and Engineering, Gwangju Institute of Science and Technology
- WP2-71 14:40-16:00 무반사 나노구조 PDMS 필름 코팅을 이용한 염료감응형 태양전지의 효율 향상 연구**  
임주호, 임정우, 유재수  
경희대학교 전자전파공학과
- WP2-72 14:40-16:00 Flexible Piezoelectric / Photovoltaic Hybrid Device for Energy Harvesting Applications**  
Seung Woo Hong, Chansoo Moon, Wonki Jo, and Seung Jae Baik  
Department of Electrical, Electronic and Control Engineering, Hankyong National University
- WP2-73 14:40-16:00 JBS구조의 p-grid 영역과 FLR 간격에 따른 4H-탄화규소(SiC) 쇼트키 장벽 다이오드(SBD)의 전기적 특성 분석**  
박힘찬<sup>1,2</sup>, 강인호<sup>2</sup>, 한상보<sup>1</sup>  
<sup>1</sup>경남대학교 첨단공학과, <sup>2</sup>한국전기연구원 전력반도체연구센터
- WP2-74 14:40-16:00 Normally-off AlGaIn/GaN MOSFETs의 Differential Subthreshold Ideality Factor Technique을 통한 Interface Trap Density 추출**  
최준영<sup>1</sup>, 강영진<sup>1</sup>, 최성주<sup>2</sup>, 김대환<sup>2</sup>, 차호영<sup>1</sup>, 김형탁<sup>1</sup>  
<sup>1</sup>전자 전기 공학부, 홍익대학교, <sup>2</sup>전기 공학과, 국민대학교

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- WP2-75 14:40-16:00 Thermoelectric Devices based on H<sub>2</sub>SO<sub>4</sub>-treated Poly(3,4-ethylenedioxythiophene):Poly(styrenesulfonate) Thin Films**  
Eunho Yang, Jaeyun Kim, and Jeonghun Kwak  
Department of Electronic Engineering, Dong-A University
- WP2-76 14:40-16:00 High Performance Organic Photovoltaics with Gold Nanoparticle Clusters**  
Hyung Il Park<sup>1,2</sup>, Seunghoon Lee<sup>1,3</sup>, Ju Min Lee<sup>1,2</sup>, Soo Ah Nam<sup>1,2</sup>, Taewoo Jeon<sup>1,2</sup>, Sang Woo Han<sup>1,3</sup>, and Sang Ouk Kim<sup>1,2</sup>  
<sup>1</sup>Center for Nanomaterials and Chemical Reactions, Institute for Basic Science (IBS), <sup>2</sup>Department of Materials Science and Engineering, KAIST, <sup>3</sup>Department of Chemistry and KI for the NanoCentury, KAIST
- WP2-78 14:40-16:00 Optimization of InGaP/InGaAs/Ge Solar Cells by InGaAs Middle Cell Growth Temperature**  
Sang Hyun Jung<sup>1,2</sup>, Chang Zoo Kim<sup>1</sup>, Youngjo Kim<sup>1,2</sup>, Kangho Kim<sup>1,2</sup>, Dong Hwan Jun<sup>1</sup>, Hyeong-Ho Park<sup>1</sup>, Hyun-Beom Shin<sup>1</sup>, JeHyuk Choi<sup>1</sup>, Won-Kyu Park<sup>1</sup>, Jaejin Lee<sup>2</sup>, and Ho Kwan Kang<sup>1</sup>  
<sup>1</sup>Device Technology Division, Korea Advanced Nano Fab. Center, <sup>2</sup>Department of Electrical and Computer Engineering, Ajou University
- WP2-79 14:40-16:00 Enhanced Field-Effect Passivation Performance of Atomic-Layer-Deposited Al<sub>2</sub>O<sub>3</sub> Layer for Si Nanostructured Solar Cells using Interface S Incorporation**  
Daewoong Kim<sup>1</sup>, Jaewon Song<sup>2</sup>, Jung-Ho Lee<sup>2</sup>, and Tae Joo Park<sup>1</sup>  
<sup>1</sup>Department of Materials Science and Engineering, Hanyang University, <sup>2</sup>Department of Chemical Engineering, Hanyang University



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[TP1] 포스터세션 3

Room F

1F / 114+115 호

2015년 2월 12일(목) 10:30-12:10

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|-------|-------------|---|
| TP1-1 | 10:30-12:10 | <b>반도체소자 배선을 위해 직접전해도금에 의한 구리-은 합금 박막 형성 연구</b><br>김강오, 김선정<br>울산대학교 첨단소재공학부  |
| TP1-2 | 10:30-12:10 | <b>Characterization of Mn-based Self-Forming Barriers on Low-k Samples with or without UV Curing Treatment</b><br>Jae-Hyung Park <sup>1</sup> , Min-Soo Kang <sup>1</sup> , Dong-Suk Han <sup>1</sup> , and Jong-Wan Park <sup>2</sup><br><sup>1</sup> Division of Nanoscale Semiconductor Engineering, Hanyang University, <sup>2</sup> Division of Materials Science & Engineering, Hanyang University  |
| TP1-3 | 10:30-12:10 | <b>Atomic Layer Deposition of Mo<sub>2</sub>N Thin Film as a Diffusion Barrier against Cu</b><br>Yujin Jang <sup>1</sup> , Sun Ju Lee <sup>2</sup> , Teak-Mo Chung <sup>2</sup> , Chang Gyoung Kim <sup>2</sup> , Tae Eun Hong <sup>3</sup> , and Soo-Hyun Kim <sup>1</sup><br><sup>1</sup> School of Materials Science and Engineering, Yeungnam University, <sup>2</sup> Thin Film Materials Group, Korea Research Institute of Chemical Technology, <sup>3</sup> Busan Center, Korea Basic Science Institute   |
| TP1-4 | 10:30-12:10 | <b>Atomic Layer Deposition of Ru Thin Films using New Zero Valent Ru Precursors</b><br>Min Young Lee <sup>1</sup> , Seung-Joon Lee <sup>1</sup> , Seungmin Yeo <sup>1</sup> , Taehoon Cheon <sup>1,2</sup> , Tae Eun Hong <sup>3</sup> , Won Seok Han <sup>4</sup> , and Soo-Hyun Kim <sup>1</sup><br><sup>1</sup> School of Materials Science and Engineering, Yeungnam University, <sup>2</sup> Center for Core Research Facilities, Deagu Gyeonbuk institute of Science & Technology, <sup>3</sup> Busan Center, Korea Basic Science Institute, <sup>4</sup> UP Chemical |
| TP1-5 | 10:30-12:10 | <b>Ultralow Interlayer Dielectrics for the Next Generation System LSI</b><br>Sung-Min Cho and Hee-Woo Rhee<br>Department of Chemical and Biomolecular Engineering, Sogang University  |
| TP1-6 | 10:30-12:10 | <b>다층그래핀 성장과 EM 특성분석</b><br>최동철, 윤기호, 윤지수, 정종완<br>세종대학교 나노신소재공학과  |
| TP1-7 | 10:30-12:10 | <b>Cobalt-based Bi-Functional Layer for Cu Interconnect by Atomic Layer Deposition</b><br>Soohyeon Kim <sup>1</sup> , Jaehong Yoon <sup>1</sup> , Hyungjun Kim <sup>1</sup> , and Han-Bo-Ram Lee <sup>2</sup><br><sup>1</sup> Department of Electrical and Electronics Engineering, Yonsei University, <sup>2</sup> Department of Materials Science and Engineering, Incheon National University  |

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- TP1-8 10:30-12:10 TiO<sub>2</sub>-SiO<sub>2</sub> Laminated Films Grown by Plasma Enhanced Atomic Layer Deposition.**  
SeungJu Chun, Hak-Joo Lee, Dae-Young Ahn, Young-Jae Kim, Seung-Woo Choi, ChoongMan Lee, and Yong-Min Yoo  
Process Development Team, R&D center of ASM Genitech Korea
- TP1-9 10:30-12:10 A Study of Current Crowding and its Effects on the Carrier Spill-Over in InGaN/GaN Blue Light Emitting Diodes.**  
Hye-Jung YU, Tae-Soo KIM, Nan-Cho OH, and Jung-Hoon SONG  
Department of Physics, Kongju National University
- TP1-10 10:30-12:10 Effect of p-AlGaN Electron Blocking Layer on Efficiency Droop and Identification of the Dominant Mechanism for the Droop in InGaN/GaN MQW LEDs**  
Nan-Cho Oh, Hye-Jung Yu, Tae-Soo Kim, and Jung-Hoon Song  
Department of Physics, Kongju Nat'l University
- TP1-11 10:30-12:10 Identification Technique of Grain Boundaries in Large-Scale Chemical Vapor Deposited Graphene**  
Jong-Young Lee, and Gwan-Hyoung Lee  
Department of Materials Science & Engineering, Yonsei University
- TP1-12 10:30-12:10 Theoretical Analysis of Silica Nanosphere Effects on Light Extraction of Light Emitting Diode by FDTD Simulation**  
Dong-Su Shin, Taekgon Kim, and Jinsub Park  
Department of electronics and computer engineering, Hanyang University
- TP1-13 10:30-12:10 Synthesized ZnSnO<sub>3</sub> Nanoparticles by Reflux Condensation Method and Application to LEDs**  
TaekGon Kim, Dong Su Shin and Jinsub Park  
Department of Electronic Engineering, Hanyang University
- TP1-14 10:30-12:10 Variation of Electrical Characteristics in AlGaIn/GaN Schottky Diode with Graphene/Ni/Au Electrodes via Plasma Treatments**  
Yoonhyung Kim and Jinsub Park  
Department of Electronics & Computer Engineering, Hanyang University
- TP1-15 10:30-12:10 Correlated Visible-Light Absorption and Intrinsic Magnetism of SrTiO<sub>3</sub> due to Oxygen Deficiency: Bulk or Surface Effect?**  
Heechae Choi<sup>1</sup>, Jin Dong Song<sup>2</sup>, Kwang-Ryeol Lee<sup>1</sup>, and Seungchul Kim<sup>1</sup>  
<sup>1</sup>Center for Computational Science, KIST, <sup>2</sup>Center for Opto-electronics Convergence System, KIST
- TP1-16 10:30-12:10 Optimization of Silicon Doped InGaAs Grown by MOCVD for Source/Drain Contact of III-V n-MOSFET**

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Young-Dae Cho<sup>1,2</sup>, In-Geun Lee<sup>1,2</sup>, Dong-Hwan Jun<sup>2</sup>, Hyuk-Min Kwon<sup>2</sup>, In-Hye Choi<sup>2</sup>, Chan-Soo Shin<sup>2</sup>, Kyung-Ho Park<sup>2</sup>, Won-Kyu Park<sup>2</sup>, Tae-Woo Kim<sup>3</sup>, Dae-Hyun Kim<sup>3</sup>, and Dae-Hong Ko<sup>1</sup>

<sup>1</sup>Department of Materials Science and Engineering, Yonsei University, <sup>2</sup>Korea Advanced Nano Fab Center, <sup>3</sup>SEMATECH

- TP1-17 10:30-12:10 CVD Grown MoS<sub>2</sub> Transistors with High-K Dielectrics**  
윤지수, 최동철, 윤기호, 정종완  
나노신소재공학과, 세종대학교
- TP1-18 10:30-12:10 Effect of Growth Condition on Carbon Concentration of Si<sub>1-y</sub>Cy Films by UHV-CVD**  
Sungyeol Yoon, Youngmo Kim, Kyumin Lee, and Hyunchul Sohn  
Department of Materials Science and Engineering, Yonsei University
- TP1-19 10:30-12:10 The Growth of GaSb on Silicon (100) with AlGaSb/GaSb SPS Buffer Layers for Converting from Threading Dislocation to Misfit Dislocation**  
Kyu-Hyoek Yoen<sup>1,2</sup>, Hye-Joung Jang<sup>2</sup>, Eun-Hye Lee<sup>2</sup>, and Jin-Dong Song<sup>1,2</sup>  
<sup>1</sup>Nano-electronic Engineering, University of Science & Technology, <sup>2</sup>Center for Opto-Electronic Convergence Systems, Korea Institute of Science and Technology
- TP1-20 10:30-12:10 Formation of InGaAs Nanowires on (111) Si for Antireflection**  
E. H. Lee<sup>1,2</sup>, J. D. Song<sup>1</sup>, I. K. Han<sup>1</sup>, W. J. Choi<sup>1</sup>, and S. K. Chang<sup>2</sup>  
<sup>1</sup>Center for Opto-Electronic Convergence Systems, Korea Institute of Science and Technology, <sup>2</sup>Department of Physics, College of Science, Yonsei University
- TP1-21 10:30-12:10 High Mobility InAs/AlSb 2DEG HEMT on GaAs for SPIN-FET and Effect of p-/n- Doping on InSb/GaAs**  
S. H. Shin and J. D. Song  
Center for Opto-Electronic Convergence Systems, Korea Institute of Science and Technology
- TP1-22 10:30-12:10 Novel Methodology to Fill Nano-Size Trenches by VS Growth of Te-rich SbTe Nanowires for Three-Dimensional PCRAM Devices**  
Jin Hwan Jeong, Si Jung Park, Su Bin An, and Doo Jin Choi  
Department of Material Science and Engineering, Yonsei University
- TP1-23 10:30-12:10 The Effects of Plasma Frequency on High-k Film Properties in Plasma Enhanced Atomic Layer Deposition**  
Il-Kwon Oh<sup>1</sup>, Gilsang Yoo<sup>1,2</sup>, Changwan Lee<sup>1</sup>, Tae Hyung Kim<sup>3</sup>, Geun Young Yeom<sup>3</sup>, Hyungjun Kim<sup>1</sup>, and Han-Bo-Ram Lee<sup>4</sup>  
<sup>1</sup>School of Electrical and Electronic Engineering, Yonsei University, <sup>2</sup>Samsung Electronics Co., LTD. <sup>3</sup>Department of Advanced Materials Engineering, Sungkyunkwan University, <sup>4</sup>Department of Material Science Engineering, Incheon

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- National University
- TP1-24 10:30-12:10 ALD-like Growth Behavior of Ru Thin Film with RuO<sub>4</sub> Precursor**  
Cheol Hyun An, Woojin Jeon, Woongkyu Lee, Min Jung Chung, and Cheol Seong Hwang  
Department of material Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University
- TP1-25 10:30-12:10 Comparison of H<sub>2</sub>O and O<sub>3</sub> as Oxidant in Atomic Layer Deposition of STO Films**  
Min Jung Chung, Woongkyu Lee, Woojin Jeon, Cheol Hyun An, and Cheol Seong Hwang  
Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University
- TP1-26 10:30-12:10 Stretchable Thin-Film Transistors Fabricated on Elastomer Substrate**  
Soon-Won Jung, Jeong-Seon Choi, Jae Bon Koo, Chan Woo Park, Bock Soon Na, Ji-Young Oh, Sang Seok Lee, and Hye Yong Chu  
Information & Communications Core Technology Research Laboratory, Electronics and Telecommunications Research Institute
- TP1-27 10:30-12:10 Simple Control of V<sub>TH</sub> in a-IGZO TFTs by Rapid Thermal Annealing**  
Do-Hoon Kim and Won-Ju Cho  
Department of Electronic Materials Engineering, Kwangwoon University
- TP1-28 10:30-12:10 저전력 Barristor 소자 집적 공정 개발과 특성**  
장경은, 노진우, 심창후, 김소영, 이병훈  
Center for Emerging Electric Devices and Systems, School of Material Science and Engineering, Gwangju Institute of Science and Technology
- TP1-29 10:30-12:10 Investigation on the Effect of Post Deposition Annealing on the Sn-Doped In<sub>2</sub>O<sub>3</sub> Thin Film Transistor**  
Eun Suk Hwang, Un Ki Kim, Lee, Seung-Jun, Jun Shik Kim, Younjin Jang, and Cheol Seong Hwang  
WCU Hybrid Materials Program, Department of Materials Science and Engineering and Inter-university Semiconductor Research Center, Seoul National University
- TP1-30 10:30-12:10 Atomic Layer Deposited WN<sub>x</sub> Thin Films using a New F-free Tungsten Metallorganic Precursor as a Diffusion Barrier against Cu**  
Junbeom Kim and Soo-Hyun Kim  
School of Materials Science and Engineering Yeungnam University
- TP1-31 10:30-12:10 Scavenging of Native Oxide on Semiconductors in Metal-Oxide-Semiconductor with Metal Electrodes**  
Taehoon Lee<sup>1</sup>, Yong Chan Jung<sup>1</sup>, Sejong Seong<sup>1</sup>, In-Sung Park<sup>1,2</sup>, Sung Bo Lee<sup>3</sup>,

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and Jinho Ahn<sup>1</sup>

<sup>1</sup>Division of Materials Science and Engineering, Hanyang University, Seoul,

<sup>2</sup>Institute of Nano Science and Technology, Hanyang University, Seoul,

<sup>3</sup>Department of Materials Science and Engineering, Seoul National University

- TP1-32 10:30-12:10 The Study on Increment of Non-Lattice Oxygen Defects by O<sub>2</sub>/Ar Ratio Variation in Sputtered HfO<sub>2</sub>**  
Heedo Na, Jinho Oh, Jimin Lee, Kyumin Lee, and Hyunchul Sohn  
Department of Materials Science and engineering, Yonsei University
- TP1-33 10:30-12:10 Improved Electrical Performance of Amorphous Oxide TFTs Using Solution-Processed Dual Active Layer Structure**  
Jongmin Kim and Byoungdeog Choi  
Department of Electrical and Computer Engineering, Sungkyunkwan University
- TP1-34 10:30-12:10 Effect of Ge Doping on Structural and Electrical Properties of Ge-Doped ZrO<sub>2</sub> Films by Atomic Layer Deposition**  
Ju-Young Jeong, Jinho Oh, Taeho Kim, Jimin Lee, and Hyunchul Sohn  
Department of Materials Science and Engineering, Yonsei University
- TP1-35 10:30-12:10 Comparison of Contact Resistance Properties in Solution Processed IGZO TFTs with Top-Contact and Bottom-Contact S/D Structures**  
Ji-Hwan Kim, Eung-Kyu Park, Jin-Ho Kim, Dong-Hoon Lee, and Yong-Sang Kim<sup>1</sup>  
School of Electronic and Electrical Engineering, Sungkyunkwan University
- TP1-36 10:30-12:10 High quality LT-SiO<sub>2</sub> Film Deposition Process on MAHA PECVD System**  
Soyeon Park<sup>1</sup>, Yoosung Jang<sup>1</sup>, Juho Shin<sup>1</sup>, Junkyung Eom<sup>1</sup>, Youngsoo Kwon<sup>1</sup>, Hyoungchan Ha<sup>1</sup>, Xiao Manchao<sup>2</sup>, Mallikarjunan Anupama<sup>2</sup>, and Han Bing<sup>2</sup>  
<sup>1</sup>Advanced Development Team, Wonik IPS, <sup>2</sup>Air Products and Chemicals, Inc.
- TP1-37 10:30-12:10 Reaction Mechanism Study on Atomic Layer Deposition of Silicon Nitride Films Using Silicon Chlorides and Ammonia**  
Jae-Min Park, Luchana L. Yusup, Byeol Han, and Won-Jun Lee  
Department of Nanotechnology and Advanced Materials Engineering, Sejong University
- TP1-38 10:30-12:10 Nitride 막의 Anneal 전/후 Stress 변화 개선 연구**  
강승현, 송병호, 최영철, 권영수, 하형찬  
Department of Advanced Development Team, WONIK IPS
- TP1-39 10:30-12:10 Controlling Structural and Electrical Properties by Dispersing Metallic Nanoparticle into Dielectric Thin Films for ReRAM application**  
Jae Ho Lee and Byung Joon Choi  
Department of Materials Science and Engineering, Seoul National University of Science and Technology

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- TP1-40 10:30-12:10 Interface Sulfur Passivation using H<sub>2</sub>S Pre-Deposition Annealing for Atomic-Layer-Deposited HfO<sub>2</sub> Film on Ge Substrate**  
Taejun Seok, Hyunsoo Jin, and Tae Joo Park  
Department of Materials Science and Engineering, Hanyang University
- TP1-41 10:30-12:10 Improved Interface Properties of Atomic-Layer-Deposited HfO<sub>2</sub> Film on InP using Interface Sulfur Passivation with H<sub>2</sub>S Pre-Deposition Annealing**  
Hyunsoo Jin, Taejun Seok, and Tae Joo Park  
Department of Materials Science and Engineering, Hanyang University
- TP1-42 10:30-12:10 FinFET의 AC Stress Reliability 특성**  
강수철, 이영곤, 김용훈, 정욱진, 박우진, 김윤지, 이병훈  
School of Material Science and Engineering, Gwangju Institute of Science and Technology
- TP1-43 10:30-12:10 Effects of Electrostatic Discharges Stress On Bidirectional Flip Chip Transient Voltage Suppression Diodes**  
Sakhone Pharkphoumy<sup>1</sup>, Daoheung Boungeune<sup>2</sup>, Sang-Sik Choi<sup>3</sup>, Deok-Ho Cho<sup>3</sup>, Ceol-Jong Choi<sup>1</sup>, and Kyu-Hwan Shim<sup>1</sup>  
<sup>1</sup>School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, <sup>2</sup>Automation Division, Technology Computer and Electronic Institute, <sup>3</sup>R&D Division, Sigetronics, Inc.
- TP1-44 10:30-12:10 ESD Robustness of Bidirectional Flip Chip TVS Diodes**  
Sang-Sik Choi<sup>1</sup>, Sakhone Pharkphoumy<sup>1</sup>, Moon-Ho Lee<sup>2</sup>, Dae-Gi Kim<sup>3</sup>, Deok-Ho Cho<sup>4</sup>, and Kyu-Hwan Shim<sup>1</sup>  
<sup>1</sup>School of Semiconductor and Chemical Engineering, Semiconductor Physics Research Center, Chonbuk National University, <sup>2</sup>The 4th R&D Institute, <sup>3</sup>Defence R&D Center, Hanwha Corporation, <sup>4</sup>R&D Division, Sigetronics, Inc.
- TP1-45 10:30-12:10 Nano Imprint로 형성된 Synaptic 소자 및 Spike Time Dependent Plasticity (STDP) 특성 평가**  
Youngin Gil and Changhwan Choi  
Division of Materials Science and Engineering, Hanyang University
- TP1-46 10:30-12:10 Investigation of Oxide Layer Appropriate for 3D NAND structure with Vertical Channel Fabricated Using Gate-first Channel-last Process**  
Ho-Seung Jeon, Wan-Gyu Lee, and Jeoung Woo Kim  
National NanoFab Center
- TP1-47 10:30-12:10 마이크로솔더링을 이용한 자외선 LED 광원모듈 제작**  
박종민, 카완 안일, 유순재  
Department of Electronic Engineering, Sunmoon University
- TP1-48 10:30-12:10 Controlled Zr Doping for Inkjet-printed ZTO TFTs**

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- Hunho Kim and Woon-Seop Choi  
Department of Display Engineering, Hoseo University
- TP1-49 10:30-12:10 XPS analyses of ALD-Prepared Titanium-dioxide Thin Films With Oxygen Sources And Their Annealing Effect**  
Woon-Seop Choi  
Department of Display Engineering, Hoseo University
- TP1-50 10:30-12:10 Floor Plane Subtraction using Parallel Operation for Indoor Applications**  
Geun-Jun Kim, Kyoungsoon Jang, Dae-Sung Choi, and Bongsoon Kang  
Department of Electronic Engineering, Dong-A University
- TP1-51 10:30-12:10 Influence on Conduction Band Offset-controlled Dielectric Surface on the Performance of Low-temperature Photochemically-annealed IGZO TFTs**  
Jaekyun Kim and Sung Kyu Park  
School of Electrical and Electronics Engineering, Chung-Ang University
- TP1-52 10:30-12:10 Structure and Electrical Properties of Nitrogen Doped ZnO Thin Film by Atomic Layer Deposition**  
김수현, 편정준, 조철진, 김성근, 김진상  
한국과학기술연구원 전자재료연구센터
- TP1-53 10:30-12:10 1-D Fiber-based Thin-Film-Transistors and Their Integration for Large Area 2 or 3-D Applications**  
Chang jun Park, Gyeong min Yi, Jae sang Heo, and Sung kyu Park  
School of Electrical and Electronics Engineering, Chung-Ang University
- TP1-54 10:30-12:10 Electrochromic Mirror using Viologen-Anchored Nanoparticle**  
Han Na Kim<sup>1,2</sup>, Seong-Mok Cho<sup>1</sup>, Chil Seong Ah<sup>1</sup>, Juhee Song<sup>1</sup>, Hojun Ryu<sup>1</sup>, and Tae-Youb Kim<sup>1,2</sup>  
<sup>1</sup>ETRI, <sup>2</sup>University of Science and Technology
- TP1-55 10:30-12:10 Analysis of Injection Mechanism in Organic Light-Emitting Diodes with Changing Thickness of LiF Interlayer**  
Moonsoo Kim and Byoungdeog Choi  
Department of Electrical and Computer Engineering, Sungkyunkwan University
- TP1-56 10:30-12:10 A/D converter with Oxide Thin Film Transistor**  
Jun Young Hwang, Kyeong Min Yu, Jae-Pyo Lee, and Byung Seong Bae  
Department of Display Engineering, Hoseo University
- TP1-57 10:30-12:10 Functionalized Nanoporous Thin Films via Supramoleuclar Assembly of End-Functionalized Polymer Blends**  
Giyong Song, Suk Man Cho, Ju Han Lee, and Cheolmin Park  
Department of Materials Science and Engineering, Yonsei University
- TP1-58 10:30-12:10 Size-Cntrollable Functionalized Nanoporous Thin Film by Noncovalent**

# 제22회 한국반도체학술대회

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## Bonding Graft Polymers

Suk Man Cho, Giyoung Song, and Cheolmin Park

Department of Materials Science & Engineering, Yonsei University

**TP1-59 10:30-12:10 Mutual Interaction Observed in Hydrothermal Growth of One-Dimensional ZnO Nanorod Arrays**

Jung Min Lee, Won Woo Lee, Sungwoong Kim, Su Han Kim, and Won Il Park

Division of Materials Science and Engineering, Hanyang University

**TP1-60 10:30-12:10 Quantum Transport Simulation of Spin-Transfer Torque (STT): Nonequilibrium Green's Function Approach**

Seongcheol Noh and Mincheol Shin

Department of Electrical Engineering, KAIST

**TP1-61 10:30-12:10 Al<sub>2</sub>O<sub>3</sub> Scaling을 통한 압전 폴리머/그래핀 터치 소자의 Sensitivity 개선 연구**

양진호, 이병훈

School of Material Science and Engineering, Gwangju Institute of Science and Technology

**TP1-62 10:30-12:10 Asymmetric Electrical Characteristics of Graphene-Pentacene-Metal Heterostructure**

Wang-Taek Hwang, Misook Min, Hyunhak Jeong, Dongku Kim, and Takhee Lee

Department of Physics and Astronomy, Seoul National University

**TP1-63 10:30-12:10 Inorganic-based Flexible Electronics for System on Plastic**

Hyeon Gyun Yoo, Seungjun Kim, and Keon Jae Lee

Department of Materials Science and Engineering, KAIST

**TP1-64 10:30-12:10 Uncertainty of Contact Properties between Titanium and Naturally Occurring MoS<sub>2</sub>**

Seong Yeoul Kim, Seon Young Park, and Woong Choi

School of Advanced Materials Engineering, Kookmin University

**TP1-65 10:30-12:10 Simple Solution-Processed AC Driven Polymer Electroluminescence Device using Silver Nanoparticles in Hole Injection Layer.**

Ju Han Lee, Sung Hwan Cho, Beom Jin Jeong, Ihn Hwang, and Cheolmin Park

Department of Materials Science and Engineering, Yonsei University

**TP1-66 10:30-12:10 Effect of Channel Length, Thickness and Annealing Temperature on Nanoscale GIZO Thin Film Transistor Performance**

Yogeenth Kumaresan, Yusin Pak, Namsoo Lim, and Gun Young Jung

Gwangju Institute of Science and Technology

**TP1-67 10:30-12:10 Advanced Method for Preparing Silicon Nanopores Array using AAO Stencil and Polymer Interlayer**

Namsoo Lim and Gunyoung Jung



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School of materials Science and Engineering, Gwangju Institute of Science and Technology

**TP1-68 10:30-12:10 Inkjet-Printed Source/Drain Contact for Solution-Processed Single-Walled Carbon Nanotube Thin-Film Transistors**

Hyeonggyu Kim, Taehoon Kim, Narkhyeon Seong, Jewook Ha, and Yongtaek Hong  
Department of Electrical and Computer engineering and Inter-University Semiconductor Research Center (ISRC), Seoul National University

**TP1-69 10:30-12:10 Nanoscale Metal Pillar Arrays on Elastomeric Substrates for Surface-enhanced Raman Spectroscopy Platform**

Sungwong Kim, Sehyun Park, Sun Sang Kwon, William T. Nichols, and Won Il Park  
Division of Materials Science and Engineering, Hanyang University

**TP1-70 10:30-12:10 Design of Thin Film Color Filters with Highly Absorbing Dielectrics**

Jinha Lim, Hyungi Park, and Young Min Song  
Department of Electronic Engineering, Pusan National University

**TP1-71 10:30-12:10 Design of Hollow Silica Nanospheres in Antireflection Coating for High Efficiency Optical Devices Applications**

Young Jin Yoo and Young Min Song  
Pusan National University

**TP1-72 10:30-12:10 Colloidal Beads Fabricated Printing and Rubbing Processes for Efficient Light Extraction from Polymer Light-Emitting Diodes**

Seunghwan Lee<sup>1</sup>, Jongjang Park<sup>1</sup>, Jewook Ha<sup>1</sup>, Kunsuk Koh<sup>2</sup>, Donghyun Kim<sup>1</sup>,  
Unyong Jeong<sup>2</sup>, and Yongtaek Hong<sup>1</sup>

<sup>1</sup>Department of Electrical and Computer Engineering and Inter-University Semiconductor Research Center (ISRC), Seoul National University, <sup>2</sup>Department of Materials Science and Engineering, Yonsei University

**TP1-73 10:30-12:10 Quantitative Analysis of Scanning Electron Microscope Images by using Monte Carlo Simulation Technique**

Myeong Chun Song<sup>1</sup>, Sung Hyon Kim<sup>1</sup>, Jin Seung Kim<sup>1</sup>, and Byong Chon Park<sup>2</sup>

<sup>1</sup>Department of Nano- Science and Technology, Chonbuk National University,  
<sup>2</sup>Korea Research Institute of Standards and Science

**TP1-74 10:30-12:10 Wafer Defect Inspection using Component Tree of SEM Images**

Sunghyon Kim<sup>1</sup>, Minwoo Kim<sup>2</sup>, and Il-seok Oh<sup>1,2</sup>

<sup>1</sup>Department of Nano Technology, Chonbuk National University, <sup>2</sup>Department of Computer Engineering Graduate School, Chonbuk National University

**TP1-75 10:30-12:10 Dopant Depth Profiling on the Small Pattern by using Nano-SIMS**

Mirang Byeon, E. D. Jeong, and T. E. Hong  
Busan Center, Korea Basic Science Institute

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- TP1-76 10:30-12:10 Color-Offset Analysis Methods to Enhance the Overlay Control**  
Jeongjin Lee, Chan Hwang, Seungyeon Lee, and Gilheyun Choi  
Samsung Electronics Co., Ltd.
- TP1-77 10:30-12:10 Fabrication Process of Modified Source Lens Structure for High Resolution Electron Optical Microcolumn**  
Anjli Sharma, Young Book Lee, Sung Woong Choi, Hae Sung We, Dae-Wook Kim, Tae-Sik Oh, and Ho-Seob Kim  
Department of Physics and Nanoscience, College of Engineering, Sun Moon University
- TP1-78 10:30-12:10 A Nano-Focus X-ray Source using Carbon Nanotube Field Emitters for Semiconductor Inspections**  
Yoon-Ho Song<sup>1, 2</sup>, Jae-Woo Kim<sup>1,2</sup>, Min-Sik Shin<sup>1,2</sup>, Hyojin Jeon<sup>1,2</sup>, Jin-Woo Jeong<sup>1</sup>, Jun-Tae Kang<sup>1</sup>, Sungyoul Choi<sup>1</sup>, Sora Park<sup>1</sup>, Young Chul Choi<sup>1</sup>, Ji-Hwan Yeon<sup>1</sup>, SungHee Kim<sup>1</sup>, and Sung-Jun Ahn<sup>1,3</sup>  
<sup>1</sup>Nano Electron-Source Creative Research Center, ETRI, <sup>2</sup>School of Advanced Device Eng., University of Science & Technology, <sup>3</sup>Department of Information Display, Sun Moon University
- TP1-79 10:30-12:10 2D CNT tip을 이용한 초소형 전자칼럼의 전자빔 특성 연구**  
이영복, 김형우, 안승준, 김대욱, 오태식, 김호섭  
Department of Physics and Nanoscience, College of Engineering, Sun Moon University
- TP1-80 10:30-12:10 전자 빔을 이용한 미세 오정렬 계측 시스템**  
김형복<sup>1</sup>, 박민웅<sup>1</sup>, 조중휘<sup>1</sup>, 강명주<sup>2</sup>, 오승철<sup>3</sup>  
<sup>1</sup>인천대학교, <sup>2</sup>서울대학교, <sup>3</sup>오로스테크놀로지
- TP1-81 10:30-12:10 영상 내 물체 경계에서의 밝기 구배를 이용한 주사전자현미경의 분해능 측정**  
김성현<sup>1</sup>, 박병천<sup>2</sup>, 오일석<sup>1,2</sup>  
<sup>1</sup>전북대학교 나노과학기술학과, <sup>2</sup>한국표준과학연구원 나노측정센터
- TP1-82 10:30-12:10 Impurity Barrier 역할로써의Barrier Metal TiN의 특성 평가**  
Jinki Kim, Seungju Park, SangMi Choi, Eunseon Cha, Sangik Lee, Changhyuk Ok, and Sunyoung Lee  
Department of Device analysis group, Samsung Electronics Co., Ltd.