

Tuesday, September 15

Opening, Award Ceremony and Plenary Session (DEJIMA MESSE NAGASAKI, Room O (2nd Floor))

Opening Session

Session Chair: Osamu Nakatsuka, Chair, Program Committee
Kosuke Nagashio, Chair, Steering Committee

Plenary Session

9:30 PL-01

CMOS 2.0: The Vertical Turn in Scaling

Julien Ryckaert, imec

10:15 PL-02

Prospects of 3D Integrated CMOS Image Sensors

Yoshihisa Kagawa, Sony Semiconductor Solutions Corporation

11:00 PL-03

Quantum Computing – Toward Large-Scale Fault-Tolerance

Heike Riel, IBM Research

Lunch

Room A (Convention Hall 1, 2nd Floor)	Room B (Convention Hall 2, 2nd Floor)	Room C (101A, 1st Floor)	Room D (101B, 1st Floor)	Room E (101C, 1st Floor)	Room F (102, 1st Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-1:DTCO (13:15-15:00) Session Chair: Kuniyuki Kakushima (Institute of Science Tokyo), Genji Nakamura (Tokyo Electron Ltd.)	02: Advanced and Emerging Memories / New Applications B-1:Ferroelectric Devices (13:15-14:45) Session Chair: Halid Mulaosmanovic (GlobalFoundries), Toshinori Numata (Toyota Technological Institute)	09: Novel Functional / Quantum / Spintronic Devices and Materials C-1:Quantum Device Technology (13:15-14:45) Session Chair: Hidehiro Asai (AIST), Toshiyuki Miyazawa (Fujitsu Ltd.)	05: Photonics: Devices / Integration / Related Technology D-1:Si Photonics and Photonic Computing (13:15-14:45) Session Chair: Mizuki Shirao (Mitsubishi Electric), Jun Ushida (National Institute of Technology, Numazu College)	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-1:Advanced Group-IV Devices (13:15-14:45) Session Chair: Taizoh Sadoh (Kyushu Univ.), Takuya Hoshi (NTT)	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process F-1:Oxide TFTs: Interface Engineering & Reliability (13:00-14:45) Session Chair: Juan Paolo Bermundo (NAIST), Keisuke Ide (Institute of Science Tokyo)
13:15 A-1-01 (Invited) Holistic System and Technology Co-Optimization for High-Performance Edge AI Computing Platforms °Youseok Suh ¹ , Jie Deng ¹ , Jun Yuan ¹ , Frank Yang ¹ , Jihong Choi ¹ , Milind Shah ¹ , Pranjal Srivastava ¹ , Giri Nallapati ¹ , PR. Chidi Chidambaram ¹ , ¹ Qualcomm (USA)	13:15 B-1-01 (Invited) Polarization Switching Dynamics of Integrated Ferroelectric DRAM Capacitors °Michael Hoffmann ¹ , Johannes Ocker ¹ , Nima Akbari Moghaddam ¹ , Thorsten Kammler ¹ , ¹ Ferroelectric Memory GmbH (FMC) (Germany)	13:15 C-1-01 Road field test of EV battery monitoring using diamond quantum sensors °Yuji Hatano ¹ , Akimichi Nakazono ¹ , Junya Tanigawa ² , Kenichi Kajiyama ¹ , Moriyoshi Haruyama ² , Hiromitsu Kato ³ , Masahiko Ogura ² , Toshiharu Makino ² , Hitoshi Noguchi ¹ , Takeharu Sekiguchi ¹ , Hiroshi Abe ² , Shinobu Onoda ² , Takeshi Ohshima ² , Naota Sekiguchi ¹ , Takayuki Iwasaki ¹ , Mutsuko Hatano ¹ , ¹ Sci. Tokyo (Japan), ² Yazaki Res. and Tech. Center, YAZAKI Corp. (Japan), ³ Advanced Power Electronics Res. Center, National Inst. of Advanced Indus. Sci. and Tech. (AIST) (Japan), ⁴ Advanced Functional Materials Res. Center, Shin-Etsu Chemical Corp., Ltd. (Japan), ⁵ Quantum Materials and Applications Res. Center (QUARC), National Inst. for Quantum Sci. and Tech. (QST) (Japan)	13:15 D-1-01 (Invited) Neural Network Computing Leveraging Silicon Photonic Integrated Circuit and Photonic-Electronic Fusion Toward Streaming Processors °Guangwei Cong ¹ , ¹ AIST (Japan)	13:15 E-1-01 (Invited) Contact Scaling for Si and Ge Nanosheet Devices: Recent Source/Drain Epitaxy and Contact Developments °Clement Porret Porret ¹ , Thomas Dursap ¹ , Anjani Akula ¹ , Bert Pollefluet ^{1,2} , Jean-Luc Everaert ¹ , Kiroubanand Sankaran ¹ , Alex Merkulov ¹ , Andrea Impagnatiello ¹ , Han Han ¹ , Paola Favia ¹ , Jishnu Ganguly ¹ , Min-Soo Kim ¹ , Naoto Horiguchi ¹ , Robert Langer ¹ , Roger Loo ^{1,3} , ¹ imec (Belgium), ² Katholieke Univ. Leuven (Belgium), ³ Ghent Univ. (Belgium)	13:00 F-1-01 (Invited) Unlocking New Possibilities of Energy-Efficient Computing Hardware through Oxide Semiconductor Technology °Xiao Gong ^{1,2} , Chen Sun ¹ , Leming Jiao ^{1,2} , Rui Shao ¹ , ¹ National Univ. of Singapore (Singapore), ² Institute of Microelectronics (IME), Agency for Science, Technology and Research (A*STAR) (Singapore)

Lunch

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04: Power / High-speed Devices and Materials G-1:Diamond and Oxide Materials (13:15-14:45) Session Chair: Koji Kita (The Univ. of Tokyo), Daisuke Tahara (Sumitomo Metal Mining)	06: Energy Harvesting and Converting Devices and Materials H-1:Thermoelectric Devices and Materials (13:15-14:45) Session Chair: Atsuko Kosuga (Osaka Metropolitan Univ.), Takuya Hoshii (Science Tokyo)	08: Low Dimensional Devices and Materials J-1:Characterization of Devices and Materials (13:15-14:45) Session Chair: Masafumi Jo (RIKEN), Takamasa Kawanago (AIST)	03: Heterogeneous and 3D Integration / Interconnect / MEMS K-1:3D Integration and Stress Optimization (13:15-14:45) Session Chair: Katsuhiko Suzuki (Samsung Japan Corp.), Daisuke Ikeno (KIOXIA Corp.)	12: Advanced and Innovative Circuits / Systems Interacting with Devices and Materials M-1:Cryo-CMOS for Quantum Computing (13:15-14:30) Session Chair: Akira Tsuchiya (Kansai Univ.), Wataru Saito (Renesas Electronics Corporation)	07: Organic / Molecular / Bio-electronics N-1:Advances in Biomedical Sensing (13:15-14:45) Session Chair: Woo-Tae Park (Seoul National Univ. of Science and Technology), Cheng-Hsien Liu (National Tsing Hua Univ.)
13:15 G-1-01 (Invited) World first free-standing (111) heteroepitaxial diamondwithout twin grown on Sapphire substrate °Seong-woo Kim ¹ , Yuki Kawamata ¹ , Kohei Hasebe ¹ ,Koji Koyama ¹ , Mariko Suzuki ¹ , ¹ Orbray Co., Ltd. (Japan)	13:15 H-1-01 (Invited) Development of Solid-State Electrochemical Thermal Transistors °Hiromichi Ohta ¹ , ¹ Hokkaido Univ. (Japan)	13:15 J-1-01 (Invited) Supersolid crystals of dipolar excitons in a lattice °Corentin Morin ^{1,2} , Camille Lagoin ^{1,2} , Tanul Gupta ³ , Nora Reinić ⁴ , Adbhut Gupta ⁵ , Kirk Baldwin ⁵ , Loren Pfeiffer ⁵ , Guido Pupillo ³ , Dubin François ^{1,2} , ¹ Univ. Côte d'Azur (France), ² CNRS-CRHEA (France), ³ Univ. of Strasbourg, CNRS, ISIS (France), ⁴ INFN, Sezione di Padova (Italy), ⁵ PRISM, Princeton Inst. for the Science and Tech. of Materials (USA)	13:15 K-1-01 (Invited) Perspectives of CoSn kagome metal as anisotropic conductor for advanced interconnects °Tomoya Nakatani ¹ , ¹ NIMS (Japan)	13:15 M-1-01 (Invited) Integrated Cryo-CMOS Circuit Systems for Quantum Computing °Jae-Yoon Sim ¹ , ¹ POSTECH (Pohang Univ. of Science and Technology) (Korea)	13:15 N-1-01 (Invited) Microneedles for Electrochemical Sensing °WonHyoung Ryu ¹ , ¹ Yonsei Univ. (Korea)

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		13:30 C-1-02 Optically Detected Magnetic Resonance Spectroscopy of NV-diamonds in the VBand of Millimeter-Wave Frequency ◦ <i>Toyo Higashide¹, Kaede Miyata¹, Yuya Tojima², Nobu-Hisa Kaneko², Keiko Takase¹, Yuma Okazaki², ¹Tokyo University of Agriculture and Technology (Japan), ²National Inst. of Advanced Indus. Sci. and Tech. (Japan)</i>			13:30 F-1-02 Gate Stack Engineering with AION Insertion Layer for Bias Stability Enhancement in PEALD-InO₃ Bottom-Gate FETs ◦ <i>Chia-Tsong Chen¹, Kazuki Ishiyama^{1,2}, Kasidit Toprasertpong³, Ryutaro Nishino¹, Kenzou Manabe¹, Toshifumi Irisawa¹, Hiroyuki Ota¹, Tatsuro Maeda¹, ¹AIST (Japan), ²Nihon Univ. (Japan), ³The Univ. of Tokyo (Japan)</i>
13:45 A-1-02 DTCO Investigation of Self-Aligned Backside-Contact Monolithic CFET with BM0-signal and M0-power Routing at Standard-Cell-Library Level ◦ <i>Yuxuan Wang¹, Yaoping Xiao¹, Jinhyun Chun¹, Masaharu Kobayashi¹, ¹The University of Tokyo (Japan)</i>	13:45 B-1-02 Suppressing Oxygen-Vacancy-Mediated Reliability Degradation and Variability in HZO FeFETs with Lanthanum Oxygen Diffusion Barrier ◦ <i>jihoon CHO¹, Kyung Soo Park¹, Yoonseok Lee¹, Jin Yeong Lee¹, Yeon Woo Choi¹, Gyu Min Hwang¹, Sang Myun Lim¹, Do Hyun Lee¹, Tae Suk Kim¹, Ye Jun Park¹, Changhwan Choi¹, ¹Hanyang university (Korea)</i>	13:45 C-1-03 Impact of Device Design and Qubit-Sensor Distance on State Readout of Silicon Spin Qubits ◦ <i>Shota Iizuka¹, Hidehiro Asai¹, Kimihiko Kato¹, Takumi Inaba¹, Satoru Miyamoto¹, Hiroshi Oka¹, Takashi Nakayama¹, Takahiro Mori¹, ¹AIST (Japan)</i>	13:45 D-1-02 Voltage-Tunable and Wavelength Selective Persistent Photoconductive Characteristics in ITO/SiC Junction for Physical Reservoir Computings ◦ <i>Kento Teshima¹, Yumeng Zheng¹, Kentaro Kinoshita¹, ¹Tokyo Univ. of Sci (Japan)</i>	13:45 E-1-02 Epitaxial Growth of Silicon-Germanium on 110-Oriented Silicon Surfaces - Investigating Nanosheet Source Drain Epitaxy - ◦ <i>Kota Takahashi¹, Alexander Reznicek², Stephen W Bedell², Shintaro Arai¹, ¹Rapidus Corp. (Japan), ²IBM Research (USA)</i>	13:45 F-1-03 Dynamic Competition of NBTI Mechanisms and Anomalous Recovery Overshoot in HfO₂/AlO₃ Gated InO₃ FE/Ts ◦ <i>Zih-hao DAI¹, Kazuki Ishiyama^{2,3}, Xuanhedong Gao¹, Chia-Tsong Chen², Toshifumi Irisawa², Tatsuro Maeda², Mitsuru Takenaka¹, Kasidit Toprasertpong¹, ¹The Univ. of Tokyo (Japan), ²National Inst. of Advanced Indus. Sci. and Tech. (Japan), ³Nihon Univ. (Japan)</i>
	14:00 B-1-03 Oxygen Vacancy Dynamics Governing Wake-Up and Fatigue in Ferroelectric HfO₂ Capacitors Revealed by Depth-Resolved HAXPES ◦ <i>Hideaki Tanimura^{1,2}, Tomoya Mifune¹, Yuma Ueno², Yusuke Tani², Hironori Fujisawa¹, Seiji Nakashima¹, Ai Isohashi Osaka¹, Yasumasa Takagi³, Akira Yasui³, Jiayi Tang³, Shinichi Kato², Takumi Mikawa², ¹Univ. of Hyogo (Japan), ²SCREEN Semiconductor Solutions (Japan), ³JASRI (Japan)</i>	14:00 C-1-04 Active Silicon Interposer with Integrated CMOS ADCs for Cryogenic In Situ Waveform Monitoring of Silicon Spin Qubits ◦ <i>Yuto Arakawa¹, Riku Wada¹, Raisei Mizokuchi¹, Ryozo Takahashi², Kazuma Higashimomo², Ryota Nakamura¹, Ryutaro Matsuoka¹, Shunsuke Ota¹, Misato Taguchi², Takuji Miki², Tetsuo Kodera¹, ¹Science Tokyo (Japan), ²Kobe Univ. (Japan)</i>	14:00 D-1-03 Design of Compact and Low-Loss Silicon WDM Coupler Using CMA-ES ◦ <i>Yuto Miyatake¹, Tetsuya Iizuka¹, Mitsuru Takenaka¹, ¹The Univ. of Tokyo (Japan)</i>	14:00 E-1-03 Impact of SiGe:B Epitaxial Growth Rate on Selective S/D Formation in GAAFET ◦ <i>Naoto Kumagai¹, Yoko Tanaka¹, Hiroki Tonegawa¹, Ryutaro Nishino¹, Kazuya Uejima¹, Tetsuya Ueda¹, Chia-Tsong Chen¹, Toshifumi Irisawa¹, Atsushi Yagishita¹, Yoshihiro Hayashi¹, ¹AIST (Japan)</i>	14:00 F-1-04 Decoupling Degradation Mechanisms in ALD and PVD a-IGZO TFTs under Bias and Illumination Stress ◦ <i>Luyu Yang¹, Xiaotong Cheng¹, Lu Zhang¹, Hao Ji², Xianglong Chen^{1,3}, Dawei Gao^{1,2}, Junkang Li^{1,2}, Rui Zhang^{1,2}, ¹Zhejiang Univ. (China), ²ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), ³Qingdao SRI Intellectual Technology Co., Ltd. (China)</i>
14:15 A-1-03 Self-Heating Characterization and Thermal Network Modeling of Sequential CFET with Backside Power Delivery Network ◦ <i>Taoyu Zhou¹, Naiqi Liu¹, Yandong He¹, Gang Du^{1,2}, ¹Peking Univ. (China), ²Beijing Innovation Center of Integrated Circuits Lab. (China)</i>	14:15 B-1-04 Memory Window Evolution in Hafnia-based Ferro-Ionic-Trapping Transistors ◦ <i>Youngchan Cho¹, Changhyeon Han², Daewoong Kwon², Wonjun Shin¹, ¹Sungkyunkwan Univ. (Korea), ²Hanyang Univ. (Korea)</i>	14:15 C-1-05 Microwave varactor using quantum paraelectric Schottky junction ◦ <i>Kenta Itoh^{1,2}, Shirachi Akitomi^{2,3,4}, Motoya Shinozaki⁵, Shoichi Sato⁶, Takeshi Kumasaka¹, Tomohiro Otsuka^{2,3,4,6,7,8}, Takanobu Watanabe¹, Yusuke Kozuka^{1,2,6}, ¹Waseda Univ. (Japan), ²MANA, NIMS (Japan), ³RIEC, Tohoku Univ. (Japan), ⁴Dept. Electron. Eng., Tohoku Univ (Japan), ⁵G-QuAT, AIST (Japan), ⁶AIMR, Tohoku Univ. (Japan), ⁷CSIS, Tohoku Univ. (Japan), ⁸RIKEN-CEMS (Japan)</i>	14:15 D-1-04 Simple Method for Precise Extraction of Equivalent Refractive Index from Radius Dependence of Resonance Wavelengths in Microring Resonators ◦ <i>Tsuyoshi Horikawa¹, Nobuhiko Nishiyama¹, ¹Institute of Science Tokyo (Japan)</i>	14:15 E-1-04 Influence of Interelectrode Distance in Germanium-Based Lateral Spin Devices on Room-Temperature Spin Transport ◦ <i>Shumpei Fujii¹, Kenji Oki¹, Shuya Kikuoka², Sora Obinata¹, Keisuke Yamamoto³, Kentarou Sawano³, Dan Buca⁴, Qing-Tai Zhao¹, Kohei Hamaya^{1,5}, ¹Center for Spintronics Research Network, Graduate School of Engineering Science, The University of Osaka (Japan), ²Advanced Research Laboratories, Tokyo City University (Japan), ³Research and Education Institute for Semiconductors and Informatics, Kumamoto University (Japan), ⁴Peter Grünberg Institute 9 (PGI-9), Forschungszentrum Jülich (Germany), ⁵OTRI-Spin, The University of Osaka (Japan)</i>	14:15 F-1-05 Mechanistic Understanding of Improved PBTI Behaviors in IGZTO FETs via Channel and Gate Stack Engineering ◦ <i>Lu Zhang¹, Luyu Yang¹, Xiaotong Cheng¹, Qianwen Guo¹, Hao Ji², Dawei Gao^{1,2}, Xianglong Chen^{1,3}, Junkang Li^{1,2}, Rui Zhang^{1,2}, ¹Zhejiang Univ. (China), ²ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), ³Qingdao SRI Intellectual Technology Corp. Ltd. (China)</i>

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13:45 G-1-02 Depletion-mode r-GeO₂ MOSFETs Fabricated by Selective Area Growth via Atmospheric Pressure Chemical Vapor Deposition with Ultrasonic Transducers °Kazuyoshi Norimatsu ¹ , Takayoshi Oshima ² , Yuri Shimizu ¹ , Ai Kono ¹ , Shinpei Matsuda ¹ , ¹ Patentix Inc. (Japan), ² NIMS (Japan)	13:45 H-1-02 Performance Enhancement of Multistage Silicon Micro Thermoelectric Devices Using Nickel Silicide Interconnects °Kaichi Takayama ¹ , Tatsuya Hayashi ¹ , Yusuke Kozuka ^{1,2} , Makoto Kashiwagi ¹ , Takayoshi Shimura ¹ , Momoko Deura ¹ , Takayoshi Katase ³ , Piotr Pokryszka ⁴ , Karolina Laszczyk ⁴ , Takanobu Watanbe ¹ , ¹ Waseda Univ. (Japan), ² NIMS (Japan), ³ Inst. of Science Tokyo (Japan), ⁴ Wroclaw Univ. of Sci. and Tech. (Poland)	13:45 J-1-02 Overcoming the Schottky Barrier in Large-Bandgap Aligned CNTs via Self-Aligned MoO₃ Nanoparticle Charge-Transfer Doping °Chen-Han Chou ^{1,2} , Han-Yi Huang ¹ , Qing-Yu Wu ¹ , Zheng-Hao Luo ¹ , Yi-Wen Hsu ¹ , Hai-Ming Sun ¹ , Yi-Ting Hsieh ¹ , Pei-Lun Chiu ¹ , Bo-Heng Liu ² , Chi-Chung Ke ³ , Chao-Hsin Chien ¹ , ¹ National Yang Ming Chiao Tung Univ. (Taiwan), ² National Center for Instrumentation Res., National Institutes of Applied Res. (Taiwan)	13:45 K-1-02 Investigation of Laser-Induced Crack Deflection in Through-Glass Vias °Wei Feng ¹ , Yusuke Takeji ¹ , Takeshi Kobayashi ¹ , ¹ Natl. Inst. Adv. Indus. Sci. & Tech. (Japan)	13:45 M-1-02 (Invited) Development of Scalable Highly Integrated Quantum Bit Error Correction System °Kazutoshi Kobayashi ¹ , ¹ Kyoto Inst. of Tech. (Japan)	13:45 N-1-02 CMOS sensing & processing core for optoelectronic distributed BMI system °Yusuke Akagi ¹ , Atsunori Sakata ¹ , Masato Saito ² , Yasufumi Yokoshiki ² , Tokuda Takashi ¹ , ¹ Science Tokyo (Japan), ² Aoyama Gakuin Univ. (Japan)
14:00 G-1-03 Formation and Evaluation of n-type Conductive Films on r-GeO₂ Bulk Substrates °Kentaro Kawanishi ¹ , Yuri Shimizu ¹ , Toyosuke Ibi ¹ , Shinpei Matsuda ¹ , ¹ Patentix inc. (Japan)	14:00 H-1-03 Site-Selective Design for Low Lattice Thermal Conductivity in NiSn- and CoSb-Based Half-Heusler Compounds °Tika Restianingsih ¹ , Yoshihiro Gohda ¹ , ¹ Science Tokyo (Japan)	14:00 J-1-03 Systematic investigation of substrate-induced polarity control in p-type FETs based on CVD-grown WSe₂ °Toshimasa Ishii ¹ , Ryuichi Nakajima ¹ , Keisuke Atsumi ¹ , Tomonori Nishimura ¹ , Kaito Kanahashi ¹ , Takahiro Endo ² , Yasumitsu Miyata ² , Kosuke Nagashio ¹ , ¹ Univ. of Tokyo (Japan), ² NIMS (Japan)	14:00 K-1-03 Development of a Stress Suppression Liner Formed from a Negative Thermal Expansion Material for Through-Silicon Via (TSV) Applications °Yiqing Xu ¹ , Ruobo Lan ¹ , Hisashi Kino ¹ , ¹ Kyushu Univ. (Japan)		14:00 N-1-03 Experimental Study of Venous Thrombosis Detection Using a Trans-nail PPG Sensor and Reservoir Computing °Yukino Sakurai ¹ , Aoi Kataura ¹ , Yuqi Duan ¹ , Ryotaro Kawashima ¹ , Akihiro Suzuki ¹ , Kotaro Torazawa ¹ , Pattaramon Thianmontri ¹ , Takafumi Fukushima ¹ , Koji Kiyoyama ² , Tetsu Tanaka ¹ , ¹ Tohoku University (Japan), ² Nagasaki Institute of Applied Science (Japan)
14:15 G-1-04 Structural Properties of High-Density Nitrogen-Doped Ga₂O₃ Thin Films Grown by Plasma-Assisted Molecular Beam Epitaxy °Toshiki Nakaoka ¹ , Kohki Tsujimoto ¹ , Yusuke Teramura ¹ , Shoma Takeda ¹ , Satoko Honda ¹ , Masataka Higashiwaki ¹ , ¹ Osaka Metropolitan Univ. (Japan)	14:15 H-1-04 Epitaxial Growth and Ag Doping Mechanism of Mg₂Sn Thermoelectric Thin Films Gardin Muhammad Andika Saputra ^{1,2} , °Nicha Hirankarn ^{1,2} , Takashi Atzawa ² , Isao Ohkubo ^{1,2} , Takeaki Sakurai ³ , Takao Mori ^{1,2} , ¹ The Univ. of Tsukuba (Japan), ² National Inst. of Material Science (Japan)	14:15 J-1-04 Impact of Dielectric-Induced Remote Phonon Scattering on Carrier Transport in Monolayer MoS₂ MOSFETs °Marco Introna ^{1,2} , Xiangyu Wu ¹ , Daire Cot ¹ , Pawan Kumar ¹ , Henry Medina Silva ¹ , Pierre Morin ¹ , Gouri Sankar Kar ¹ , Valeri Afanas'ev ^{1,2} , Kaustuv Banerjee ¹ , Cesar Javier Lockhart de la Rosa ¹ , Dennis Lin ¹ , ¹ IMEC (Belgium), ² KU Leuven, Department of Physics and Astronomy (Belgium)	14:15 K-1-04 Development of the Underfill with Negative Thermal Expansion Materials to Suppress Local Thermal Stress in 3D ICs °RUOBO LAN ¹ , Yiqing Xu ¹ , Hisashi Kino ¹ , ¹ Kyushu Univ. (Japan)	14:15 M-1-03 Cryogenic Characterization and Circuit-Level Validation of MOM Capacitor Arrays for Switched-Capacitor DACs in Silicon Qubit Control Circuits °Ryuto Katsura ¹ , Miu Teramoto ¹ , Haruka Kashima ¹ , Ryozo Takahashi ¹ , Misato Taguchi ¹ , Takuji Miki ¹ , ¹ Kobe Univ. (Japan)	14:15 N-1-04 Development of 3D Stacking Process with Thinned Foundry Chip for Fully Implantable Retinal Prosthesis °Hirotaki Nakamura ¹ , Yuji Kato ¹ , Yuki Sakamoto ¹ , Sota Koyama ¹ , Takafumi Fukushima ^{1,2} , Tetsu Tanaka ^{1,2} , ¹ Department of Mechanical Systems Engineering, Graduate School of Engineering, Tohoku Univ. (Japan), ² Department of Biomedical Engineering, Graduate School of Biomedical Engineering, Tohoku Univ. (Japan)

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14:30 A-1-04 A DTCO Examination and Optimization on PowerVia Technology on GAA °Chuangxin Zhou ¹ , Feiyu Teng ¹ , Xiangyu Yan ¹ , Rui Guo ¹ , Ziqiao Xu ¹ , Runsheng Wang ¹ , Ming Li ¹ , Heng Wu ¹ , ¹ Peking University (China)	14:30 B-1-05 Enhanced Radiation Tolerance in HZO FeCAPs Using ZrN Interfacial Engineering and Microwave Annealing °Jung Ting Chang ¹ , Ching-Hsien Wang ¹ , Chun-Yi Kuo ¹ , Yung-Hsien Wu ¹ , ¹ National Tsing Hua Univ. (Taiwan)	14:30 C-1-06 Energy-Efficient III-V RAM with Resonant Tunneling Structure for Cryogenic Quantum Computing °Yen Chi Chen ² , Chang Fu Chang ¹ , Sheng Ming Tsao ² , En Shou Chang ² , E Ray Hsieh Hsieh ¹ , Pei-Wen Li ¹ , Jen-Inn Chyi ² , ¹ National Yang-ming Chiao Tung University (Taiwan), ² National Central University (Taiwan)	14:30 D-1-05 Low temperature PVD SiN for optical waveguide applications: process tuning and integration flow optimization °Laura Sauze ¹ , Samia Belancen ² , Eleonora Garoni ² , Quentin Wilmart ³ , Benjamin Dey ² , Shruba Gangopadhyay ³ , Frederico Nardi ⁴ , Guillaume Rodriguez ³ , Lavinia Elena Nistor ⁴ , ¹ Applied Materials France (France), ² Univ. Grenoble Alpes, CEA, LETI (France), ³ Applied Materials Inc (USA), ⁴ Applied Materials Italia (Italy)	14:30 E-1-05 (Late News) Assessment of Green Manufacturing in SiGe/Si Epitaxial Growth Process °Noriyuki Uchida ¹ , Shinji Migita ¹ , Toshifumi Irisawa ¹ , Naoto Kumagai ¹ , Misako Morota ¹ , Takehiro Yamaki ² , Sho Kataoka ^{2,3} , ¹ AIST SFRC (Japan), ² AIST Research Institute for Chemical Process Technology (Japan), ³ AIST CCUS (Japan)	14:30 F-1-06 Breaking the Mobility–Reliability Trade-Off in IGZO Transistors Via Interfacial Ga ₂ O ₃ Engineering Toward Next-Generation DRAM Cell Transistors °Taeyoon Lee ^{1,2} , Ho Won Jang ¹ , ¹ Seoul Natl. Univ. (Korea), ² Samsung Electronics Co., Ltd. (Korea)
14:45 A-1-05 Geometry-Dependent Thermal Network Model for Flip-FET °Naiqi Liu ¹ , Taoyu Zhou ¹ , Yandong He ¹ , Gang Du ¹ , ¹ School of Integrated Circuits, Peking Univ. (China)					

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14:30 G-1-05 Effects of Pre-Deposition Surface Treatments on ALD-Al ₂ O ₃ /β-Ga ₂ O ₃ MOS Interface Characteristics: Impact of TMAH Etching and O ₂ Surface Oxidation ^o Hayama Imaida ¹ , Atsushi Tamura ¹ , Koji Kita ¹ , ¹ The Univ. of Tokyo (Japan)	14:30 H-1-05 Effect of Si Deposition Rate on the Room-Temperature Thermoelectric Properties of Ba ₂ AgSi ₃ Thin Films ^o Kimimaru Kajihara ¹ , Taiga Shinohara ¹ , Yoichiro Koda ² , Masami Mesuda ² , Kaoru Toko ³ , Takashi Suemasu ³ , ¹ Graduate School of Sci. and Tech., Univ. of Tsukuba (Japan), ² Advanced Materials Res. Lab., Tosoh Corp. (Japan), ³ Dept. of Applied Physics, Inst. of Pure and Applied Sci., Univ. of Tsukuba (Japan)	14:30 J-1-05 Channel Width Dependence of Molecular Doping in 1L MoS ₂ Using Structurally Similar Amines ^o Takashi Kobayashi ¹ , Daisuke Kiriya ¹ , ¹ The Univ. of Tokyo (Japan)	14:30 K-1-05 Investigation of Thermal Warpage of Thinned Foundry Chips in Multichip to Wafer 3D Integration ^o Sota Koyama ¹ , Yuki Sakamoto ¹ , Hiroki Nakamura ¹ , Takafumi Fukushima ^{1,2} , Tetsu Tanaka ^{1,2} , ¹ Department of Mechanical Systems Engineering, Graduate School of Engineering, Tohoku Univ. (Japan), ² Department of Biomedical Engineering, Graduate School of Biomedical Engineering, Tohoku Univ. (Japan)		14:30 N-1-05 Process Optimization of Nanometer-Scale Grating Coupler Integrated with SU-8 Waveguide for Wireless and Fibreless Optogenetic Neural Probe ^o Keigo Kitta ¹ , Kazushi Tsuji ¹ , Naoki Iwanuma ² , Takafumi Fukushima ^{1,2} , Tetsu Tanaka ^{1,2} , ¹ Department of Biomedical Eng., Graduate School of Biomedical Eng., Tohoku Univ. (Japan), ² Department of Mechanical Systems Eng., Graduated School of Eng., Tohoku Univ. (Japan)

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-2:Gate Stack Engineering 1 (15:30-17:00) Session Chair: Genji Nakamura (Tokyo Electron Ltd.), Woo Young Choi (Seoul National Univ.)	02: Advanced and Emerging Memories / New Applications B-2:3D NAND Flash Memory (15:30-17:15) Session Chair: Keiji Hosotani (KIOXIA Corporation), Jayavel Pachamuthu (Sandisk)	09: Novel Functional / Quantum / Spintronic Devices and Materials C-2:Qubit and Related Technology (15:30-17:15) Session Chair: Jun Yoneda (The Univ. of Tokyo), Kazuyuki Kuroyama (The Univ. of Tokyo)	05: Photonics: Devices / Integration / Related Technology D-2:Nanostructured Telecom Devices (15:30-17:15) Session Chair: Xuejun Xu (Nippon Telegraph and Telephone Corporation), Jun Ushida (National Institute of Technology, Numazu College)	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-2:Ge and Related Materials (15:30-17:00) Session Chair: Katsunori Makihara (Nagoya Univ.), Yosuke Shimura (imec)	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process F-2:Oxide TFTs: Process Integration & Applications (15:30-17:15) Session Chair: Chia-Tsong Chen (National Institute of Advanced Industrial Science and Technology (AIST)), Yusaku Magari (Kochi Univ. of Technology)
15:30 A-2-01 Decoupling of Time to Breakdown and Charge to Breakdown via Area Scaling in HfO₂ Gate Stacks with TiAlC and Bottom TiN Insertion °Hiroyuki Ota ¹ , Yukinori Morita ¹ , Kenzo Manabe ¹ , Misako Morota ¹ , Naoya Okada ¹ , Kazuya Uejima ¹ , Shinji Migita ¹ , Yoshihiro Hayashi ¹ , ¹ AIST (Japan)	15:30 B-2-01 (Invited) Bandgap-Engineered Gate Stack Using BN-Based Dielectric for 3D V-NAND Flash Memory °Dae Hyun Kang ¹ , Jaejoong Jeong ¹ , Youngkeun Park ¹ , Yungjun Kim ¹ , Dong Hun Sin ² , Soo Kyeom Yong ² , Bio Kim ² , Han Mei Choi ² , Byung Jin Cho ¹ , ¹ KAIST (Korea), ² Samsung Electronics (Korea)	15:30 C-2-01 (Invited) Design and Control of Silicon Spin Qubit Devices for Scalable Quantum Computing °Takashi Nakajima ¹ , ¹ RIKEN (Japan)	15:30 D-2-01 (Invited) Room-temperature telecom-band optical devices based on InP/InAs nanowires °Guoqiang Zhang ^{1,2} , Hideki Gotoh ^{3,1} , Haruki Sanada ¹ , ¹ Basic Research Laboratories, NTT Inc. (Japan), ² NTT Nanophotonics Center, NTT, Inc. (Japan), ³ Hiroshima Univ. (Japan)	15:30 E-2-01 (Invited) Interface engineering for high-performance energy harvesting material °Takafumi Ishibe ^{1,2} , ¹ The Univ. of Osaka (Japan), ² Spin, OTRI, The Univ. of Osaka (Japan)	15:30 F-2-01 (Invited) Electrical Characteristics of Enhancement-mode Ultra-Thin InGaSnO_x (IGTO) Channel Thin-Film Transistors °Chun-Hsiung Lin ¹ , Ching-Hua Chiu ^{2,4} , Tzu-Hsuan Li ¹ , Hsu-Yuan Wu ³ , Yu-Ying Lin ¹ , Guan-Han Lin ^{2,4} , Tsung-Te Chou ¹ , ¹ Int'l College of Semiconductor Tech., National Yang Ming Chiao Tung Univ. (NYCU) (Taiwan), ² Industry Academia Innovation School, National Yang Ming Chiao Tung Univ. (Taiwan), ³ Department of Electrophysics, National Yang Ming Chiao Tung Univ. (Taiwan), ⁴ National Center for Instrumentation Res., National Inst. of Applied Res. (Taiwan)
15:45 A-2-02 Impact of Ultrathin Oxygen-Passivated Interfacial Layer on Electron Mobility of MOSFETs in Scaled CET Regime °Yukinori Morita ^{1,6} , Takamasa Kawanago ^{1,6} , Takefumi Kamioka ^{1,2,6} , Yuichiro Mitani ^{2,6} , Toshihide Nabatame ^{3,6} , Takashi Onaya ^{3,6} , Naoki Fukata ^{3,6} , Wipakorn Jevasuwan ^{3,6} , Kazuhito Tukagoshi ^{3,6} , Takuya Hoshii ^{4,6} , Kasidit Toprasertpong ^{5,6} , Atsushi Tamura ^{5,6} , Koji Kita ^{5,6} , Naoya Okada ^{1,6} , Kenzo Manabe ^{1,6} , Wataru Mizubayashi ^{1,6} , Hiroyuki Ota ^{1,6} , Takashi Matsukawa ^{1,6} , Shinji Migita ^{1,6} , ¹ AIST (Japan), ² Tokyo City Univ. (Japan), ³ NIMS (Japan), ⁴ Sci. Tokyo (Japan), ⁵ The Univ. Tokyo (Japan), ⁶ LSTC (Japan)	16:00 B-2-02 Demonstration of Airgap-First Process for Replacement Metal Gate 3D-NAND °Sana Rachidi ¹ , Tathagata Paul ¹ , Jana Loyo ¹ , Daniel Montero Alvarez ¹ , Devin Verreck ^{1,2} , Wei Zheng ¹ , Geert Van den bosch ¹ , Maarten Rosmeulen ^{1,2} , ¹ imec (Belgium), ² KU Leuven (Belgium)	16:00 C-2-02 Disentangling and Mitigating Packaging-Induced Loss in a Large-Scale Superconducting Quantum Processor °Rui Wang ^{1,2} , Yu Zhou ^{1,2} , Shinya Sasaki ^{1,2} , Toru Abe ^{1,2} , Shu Watanabe ^{1,2} , Tsuyoshi Takahashi ^{1,2} , Shuhei Tamate ² , Yasunobu Nakamura ^{2,3} , Norinao Kouma ^{1,2} , Shintaro Sato ^{1,2} , ¹ Fujitsu Limited (Japan), ² RIKEN Center for Quantum Computing (Japan), ³ Department of Applied Physics, Graduate School of Engineering, The University of Tokyo (Japan)	16:00 D-2-02 Design of Self-Frequency Quadrupler Based on Asymmetric Colliding-Pulse Mode-Locking with Highly Stacked Quantum Dots °Satoshi Yanase ^{1,2} , Kouichi Akahane ² , Atsushi Matsumoto ² , Toshimasa Umezawa ² , Naokatsu Yamamoto ³ , Satoshi Shinada ² , Tomohiro Maeda ^{1,2} , Hideyuki Sotobayashi ¹ , ¹ Aoyama Gakuin Univ. (Japan), ² National Inst. of Info. and Communications Tech. (Japan)	16:00 E-2-02 SiGe on Nothing (SGON): an Alternative Template for SiGe Strain Relaxed Buffers °Yosuke Shimura ¹ , Hajime Kuwazuru ^{1,2,3} , Valerie Depauw ^{1,4,5} , Clement Porret ¹ , Momcilo Milosavljevic ^{3,1} , Myriam Moelants ¹ , Emma Vecchio ¹ , Antonio Palombizio ¹ , Palaniappa Subramaniam ¹ , Ewen Morvan ¹ , Dong Wang ² , Keisuke Yamamoto ^{6,2} , Roger Loo ^{1,7} , ¹ imec (Belgium), ² Kyushu Univ. (Japan), ³ KU Leuven (Belgium), ⁴ UHasselt (Belgium), ⁵ EnergyVille (Belgium), ⁶ Kumamoto Univ. (Japan), ⁷ Ghent Univ. (Belgium)	16:00 F-2-02 Enhancing the Electrical Characteristics of InGaSnO_x (IGTO) Channel Thin-Film Transistors with Millisecond Flash Annealing °Ching-Hua Chiu ^{1,4} , Yuma Ueno ² , Tzu Hsuan Li ³ , Kenji Inoue ² , Yu Ying Lin ³ , Tsung-Te Chou ¹ , Chi-Chung Kei ¹ , Katsuhiko Mitsuda ² , Shinichi Kato ² , Chun-Hsiung Lin ^{1,3} , ¹ Industry Academia Innovation School, National Yang Ming Chiao Tung Univ. (Taiwan), ² SCREEN Semiconductor Solutions Co., Ltd. (Japan), ³ Int'l College of Semiconductor Tech., National Yang Ming Chiao Tung Univ. (Taiwan), ⁴ National Center for Instrumentation Res., National Inst. of Applied Res. (Taiwan)

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04: Power / High-speed Devices and Materials G-2:GaN Devices and Characterization (15:30-16:45) Session Chair: Koji Kita (The Univ. of Tokyo), Masashi Kato (Nagoya Institute of Technology)	06: Energy Harvesting and Converting Devices and Materials H-2:Energy Harvesting Materials (15:30-17:00) Session Chair: Yoshitaro Nose (Kyoto Univ.), Shunsuke Yamada (Kyushu Institute of Technology)	08: Low Dimensional Devices and Materials J-2:Growth & Fabrication (15:30-17:15) Session Chair: Satoshi Hiura (Hokkaido Univ.), Shinjiro Hara (NIMS)	03: Heterogeneous and 3D Integration / Interconnect / MEMS K-2:Novel Materials and Advanced Process Technologies (15:30-17:15) Session Chair: Mayumi B. Takeyama (Kitami Inst. of Technology), Takashi Matsumoto (Tokyo Electron Technology Solutions Ltd.)	12: Advanced and Innovative Circuits / Systems Interacting with Devices and Materials M-2:Bio and Healthcare Circuits and Systems (15:30-17:00) Session Chair: Yasuhiro Ogasahara (AIST), Yitao Ma (Zhejiang Univ.)	07: Organic / Molecular / Bio-electronics N-2:Organic and Biomedical Sensors and Devices (15:30-17:15) Session Chair: Seiya Yokokura (Hokkaido Univ.), Huang-Ming Philip Chen (NYCU)
15:30 G-2-01 (Invited) Performance Enhancement of GaN Power Electronics for Harsh Environment Applications <i>°Shu Yang¹, Xuan Xie¹, Zaitian Han¹, Yawen Zhang¹, Chuang Guo¹, Jingtao Zhang¹, ¹Univ. of Sci.and Tech. of China (China)</i>	15:30 H-2-01 Phonon-Drag-Enhanced Thermopower in Phosphorus-Doped Si Films on FZ-Si(001) Substrates <i>°Yuki Kimura¹, Shigehisa Shibayama¹, Mitsuo Sakashita¹, Osamu Nakatsuka^{1,2}, Yasuyoshi Kurokawa³, Noritaka Usami^{1,2,4}, Takayoshi Katase⁵, Masashi Kurosawa¹, ¹Graduate School of Eng., Nagoya Univ. (Japan), ²Inst. of Materials and Systems for Sustainability, Nagoya Univ. (Japan), ³Faculty of Eng. Sci., Kansai Univ. (Japan), ⁴Inst. of Innovation for Future Society, Nagoya Univ. (Japan), ⁵Materials and Structures Lab., Inst. of Integrated Res., Inst. of Sci. Tokyo (Japan)</i> 15:45 H-2-02 Seebeck Coefficient Measurements of GeSn-Based Group IV Alloys <i>°Jhonny Tiscareno Ramirez¹, Marisol Carmona Sanchez^{1,2}, Rafael Ramos³, Víctor Leborán³, Francisco Rivadulla³, Patrizio Graziosi⁴, Masashi Kurosawa⁵, Osamu Nakatsuka⁵, Detlev Grützmacher⁴, Dan Buca⁴, ¹PGI-9 Forschungszentrum Jülich (Germany), ²National Inst. of Astrophysics, Optics and Electronics (Mexico), ³Univ. de Santiago de Compostela (Spain), ⁴CNR - Inst. of Nanostructured Materials (Italy), ⁵Nagoya Univ. (Japan)</i>	15:30 J-2-01 (Invited) Growth of 2-Dimensional Quantum-Dot Network Structures by MBE and Their Optoelectronic Characteristics <i>°Koichi Yamaguchi¹, Ryoga Kai¹, Yoshihiro Naruko¹, Sim Jui Oon¹, Mitsuya Arao¹, ¹The Univ. of Electro-Communications (Japan)</i>	15:30 K-2-01 (Invited) The properties of SnO₂ as a channel layer for advanced semiconductor device <i>Taeyoon Lee¹, Woo-Hee Kim², °Hyeonstag Jeon¹, ¹Hanyang Univ. (Korea), ²Hanyang Univ.ERICA (Korea)</i>	15:30 M-2-01 (Invited) Optically-powered microelectronics platform for IoT and Biomedical applications <i>°Takashi Tokuda¹, ¹Science Tokyo (Japan)</i>	15:30 N-2-01 (Invited) Development of Polymer-Blend Organic Electrochemical Transistors Based on Structure-Property Relationships <i>°Shunsuke Yamamoto¹, ¹Kyoto University (Japan)</i>
16:00 G-2-02 1.716 THz Cutoff Frequency GaN-on-Si Quasi-Vertical Schottky Barrier Diode En-abled by an Electroplated Air-Bridge Structure <i>°YEKE LIU¹, Po-Yen Huang², I-Huai Wang¹, Haoran Wang¹, Roy K.-Y. Wong^{1,2}, Shawn S.H. Hsu^{1,2}, ¹Inst. of Electronics Eng., National Tsing Hua Univ. (Taiwan), ²College of Semiconductor Res., National Tsing Hua Univ. (Taiwan)</i>	16:00 H-2-03 Fabrication and Characterization of InGaN Epilayer Thermoelectric Devices <i>°Momoko Deura¹, Junnosuke Nobe¹, Takiya Hoshi², Mai Awata¹, Takiya Miura¹, Tsutomu Araki³, Takanobu Watanabe¹, ¹Waseda Univ. (Japan), ²Inst. Science Tokyo (Japan), ³Ritsumeikan Univ. (Japan)</i>	16:00 J-2-02 Wafer-Scale Transfer of 2D Materials and Residue Mitigation Thereof <i>°Souvik Ghosh¹, Sven Dekelver¹, Rajat Gujrati¹, Henry Medina Silva¹, Pawan Kumar¹, Tom Schram¹, Quentin Smets¹, Benjamin Groven¹, Pierre Morin¹, Cesar Lockhart de La Rosa¹, Steven Brems¹, ¹imec (Belgium)</i>	16:00 K-2-02 Self-Activated Wafer Bonding with Ultra-thin ALD Films for BSPDN Integration <i>°Taisuke Yamamoto¹, Hayato Kitagawa¹, Hyuga Ishii¹, Ryota Ogata¹, Jenyu Lee², Minh Ohi², Shuntaro Machida², Kazuhiro Yuasa³, Fumihiko Inoue¹, ¹Yokohama National Univ. (Japan), ²KOKUSAI ELECTRIC Corp. (Japan)</i>	16:00 M-2-02 A Spike-to-Digital Converter for Energy-Efficient Biological Neural Network Processors <i>°Katsuki Ishigami¹, Ryuki Ikemoto¹, Kotaro Naruse¹, Jun Shiomi¹, Yoshihiro Midoh¹, Yuya Sato², Koki Ito³, Hideaki Yamamoto³, Noriyuki Miura¹, ¹The Univ. of Osaka (Japan), ²Waseda Univ. (Japan), ³Tohoku Univ. (Japan)</i>	16:00 N-2-02 Single-Crystal OFET Characteristics of a π-Conjugated Molecule with Frontier-Orbital Proximity <i>°Hiromu Negishi¹, Seiya Yokokura^{1,2}, Hiroki Waizumi^{1,2}, Toshihiro Shimada^{1,2}, ¹Graduate School of Chemical Science and Engineering, Hokkaido Univ. (Japan), ²Division of Applied Chemistry, Faculty of Engineering, Hokkaido Univ. (Japan)</i>

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-2:Gate Stack Engineering 1	02: Advanced and Emerging Memories / New Applications B-2:3D NAND Flash Memory	09: Novel Functional / Quantum / Spintronic Devices and Materials C-2:Qubit and Related Technology	05: Photonics: Devices / Integration / Related Technology D-2:Nanostructured Telecom Devices	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-2:Ge and Related Materials	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process F-2:Oxide TFTs: Process Integration & Applications
16:15 A-2-04 TiN Thickness Scaling as a Lever for Interlayer Scavenging: Gate Stack Performance and Reliability Perspectives °Elhadji Alhousseyni Diallo ¹ , Tadeu Mota Frutuoso ¹ , William Vandendaele ¹ , Remy Gassilloud ¹ , Elise Arnoux ¹ , Laurent Brevard ¹ , Claire Fenouillet-Beranger ¹ , Marie-claire Cyrille ¹ , Xavier Garros, ¹ Univ. Grenoble Alpes, CEA-Leti (France)	16:15 B-2-03 Defect Spectroscopy Revealing Interfacial-Trap-Dominance in HfO₂-based Charge-Trap Layers for Advanced NAND Flash Application °Woojae Jang ^{1,2,3} , Yusuke Higashi ¹ , Laurent Breuil ¹ , Haengha Seo ¹ , João Bastos ¹ , Geert Van den bosch ¹ , Maarten Rosmeulen ^{1,2} , ¹ imec (Belgium), ² KU Leuven (Belgium), ³ Samsung Electronics (Korea)	16:15 C-2-03 Strain Tensor Mapping of Si/ SiGe Heterostructures for Spin-Qubit Applications by Scanning Diffraction X-Ray Microscopy °Momcilo Milosavljevic Milosavljevic ^{1,2} , Yosuke Shimura ² , Cedric Corley-Wiciak ³ , Arne Loenders ^{1,2} , Clement Godfrin ² , Oji Ugwumsinachi ³ , Steven Leake ³ , Tobias Schüllfi ³ , Roger Loo ^{2,4} , Kristiaan de Greve ^{2,1} , ¹ KU Leuven (Belgium), ² IMEC (Belgium), ³ ESRF (France), ⁴ Ghent Univ. (Belgium)	16:15 D-2-03 Anisotropic Optical Properties of InAs Quantum Dot Lasers on Metamorphic Buffer Layers °Jinkwan Kwoen ^{1,2} , Hiroki Inoue ² , Masahiro Kakuda ² , Atsushi Matsumoto ¹ , Naokatsu Yamamoto ¹ , Kouichi Akahane ¹ , Yasuhiko Arakawa ² , ¹ NICT (Japan), ² The Univ. of Tokyo (Japan)	16:15 E-2-03 Beyond GeSn: Stabilizing Carbon in Group-IV Diamond Alloys °Ambrishkumar Jayantilal Devaiya ^{1,2} , Shunda Chen ^{3,7} , Benjamin Klingebiel ⁸ , Omar Concepción ¹ , Thomas Fischer ² , Sebastian Koelling ¹ , Marvin Hartwig Zoellner ⁸ , Jin-Hee Bae ¹ , Yuki Imai ⁸ , Giovanni Capellini ^{5,8} , Oussama Moutanabbir ¹ , Tianshu Li ³ , Katsunori Makihara ⁴ , Detlev Grützmacher ¹ , Sanjay Mathur ² , Dan Buca ¹ , ¹ PGL-9 Forschungszentrum Jülich (Germany), ² Univ. of Cologne (Germany), ³ George Washington Univ. (USA), ⁴ Polytechnique Montréal (Canada), ⁵ IHP - Leibniz Inst. for High Performance Microelectronics (Germany), ⁶ Nagoya Univ. (Japan), ⁷ Univ. of California Davis (USA), ⁸ Univ. degli Studi Roma Tre (Italy), ⁹ IMD-3 Forschungszentrum Jülich (Germany)	16:15 F-2-03 Low Temperature (< 200 °C) Fabrication of InGaSnO₃ (IGTO) TFTs for Integration on Low-Thermal Budget Platforms °Guan-Han Lin ^{1,3} , Dai Loi Vu ² , Yu-Ying Lin ² , Kai-Sheng Lin ² , Hsiang-Chao Yang ¹ , Tsung-Te Chou ¹ , Chi-Chung Kei ³ , Wen-Yueh Jang ¹ , Shou-Zen Chang ¹ , Chun-Hsiung Lin ² , ¹ Industry Academia Innovation School, National Yang Ming Chiao Tung University (Taiwan), ² International College of Semiconductor Technology, National Yang Ming Chiao Tung University (Taiwan), ³ National Center for Instrumentation Research, National Institutes of Applied Research, Hsinchu (Taiwan), ⁴ Powerchip Semiconductor Manufacturing Corporation (Taiwan)
16:30 A-2-05 Mitigating BTI Degradation in HKMG Transistors via Oxygen Reservoir Layer Engineering °Kyungwook Park ^{1,2} , Changhwan Choi ¹ , Sangkuk Han ¹ , Wonjae Choi ¹ , Haesoo Jang ¹ , Jaewon Chung ¹ , Sangmyun Lim ¹ , Sangwoo Jung ¹ , Soyoung Park ¹ , ¹ Hanyang Univ. (Korea), ² Samsung Electronics Corp., Ltd. (Korea)	16:30 B-2-04 Interpell Engineering for Lateral Migration Improvement in QLC NAND-Type 3D Flash Memory °Smriti Shukla ^{1,2} , Abhisek Dixit ¹ , Sainath Viswasara ² , Bijay J ² , Akash Nigam ² , ¹ Indian Inst. of Tech. Delhi (India), ² Sandisk (India)	16:30 C-2-04 Electrode Engineering in Material-Defined Germanium Double Quantum Dots with Electrically and Physically Tunable Coupling Strength °Hao-Yun Cheng ¹ , Yu-Wen Chiu ¹ , Horng-Chih Lin ¹ , Pei-Wen Li ¹ , ¹ Inst. of Electronics, National Yang Ming Chiao Tung Univ. (Taiwan)	16:30 D-2-04 Impact of Tapered Multimode Interference Waveguide Structures for Saturated Output Power in Quantum Dot Semiconductor Optical Amplifiers °Naoya Chiyo ^{1,2} , Atsushi Matsumoto ² , Shinya Nakajima ² , Toshimasa Umezawa ² , Kouichi Akahane ² , Satoshi Shinada ² , Tomohiro Maeda ^{1,2} , Hideyuki Sotobayashi ¹ , ¹ Aoyama Gakuin Univ. (Japan), ² National Inst. of Info. and Communications Tech. (Japan)	16:30 E-2-04 Crystallinity improvement of high Sn-composition Ge_{0.9}Sn_{0.2} epitaxial layer on Si substrate grown by a sputtering method °Kousaku Goto ¹ , Shigehisa Shibayama ¹ , Tomo Tanaka ² , Yasutomo Omori ² , Rahmat Hadi Saputro ³ , Hiroyuki Ishii ² , Tatsuro Maeda ³ , Mitsuo Sakashita ¹ , Masashi Kurosawa ¹ , Osamu Nakatsuka ^{1,4} , ¹ Nagoya Univ. (Japan), ² NEC Corp. (Japan), ³ National Inst. of Advanced Indus. Sci. and Tech. (AIST) (Japan), ⁴ Inst. of Materials and Systems for Sustainability, Nagoya Univ. (Japan)	16:30 F-2-04 A Dual-Gate IGZTO-Si 2T0C Cell with Enhanced V_{th}-Variation Immunity for Robust DRAM Applications °Xiaotong Cheng ¹ , Luyu Yang ¹ , Lu Zhang ¹ , Hao Ji ² , Dawei Gao ^{1,2} , Xianglong Chen ^{1,3} , Junkang Li ^{1,2} , Rui Zhang ^{1,2} , ¹ Zhejiang University (China), ² ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), ³ Qingdao SRI Intellectual Technology Company Limited (China)
	16:45 B-2-05 A Novel Architecture with a Dual-Channel to Improve Cell Current in 3D NAND Flash Daewoong Kang ¹ , °Hojun Lee Lee ² , Siwon Park ^{1,3} , Hoyeon Ko ^{1,2} , Jeongnam Youn ¹ , Youngho Jung ¹ , ¹ Seoul National University (Korea), ² Chung-Ang University (Korea), ³ Soongsil Univ. (Korea), ⁴ Daegu University (Korea)	16:45 C-2-05 Ray-Based Sampling for Efficient Extraction of Transition Lines in Double Quantum Dot Stability Diagrams °Ehsan Alizadeh Kashtiban ¹ , Takafumi Fujita ¹ , Akira Oiwa ¹ , ¹ The University of Osaka (Japan)	16:45 D-2-05 (Invited) Quantum Key Distribution Using Dual-Wavelength Laser Diodes °Gong-Ru Lin ¹ , ¹ National Taiwan Univ. (Taiwan)	16:45 E-2-05 High-Crystallinity Relaxed GeSn (~ 16 at%) by High-Growth-Rate MBE Using Graded Buffers °Yuta Goto ^{1,2} , Ryo Matsumura ¹ , Naoki Fukata ^{1,2} , ¹ NIMS (Japan), ² Univ. of Tsukuba (Japan)	16:45 F-2-05 Semicylindrical Curved Thin-Film Image Sensors for Distortion-Free Panoramic Imaging °Koki Imamura ¹ , Hiroki Kobayashi ¹ , Hiroto Sato ¹ , ¹ NHK Sci. & Tech. Res. Labs. (Japan)
	17:00 B-2-06 Novel Antiferroelectric Si-Doped HfO₂ Blocking Layer for Low-Voltage (<= 15 V) Charge-Trapping Flash with a 6.90 V Memory Window °Kaiyi Li ^{1,2,3} , Yuanyuan Zhao ^{1,3} , Mingkai Bai ^{1,3} , Xinpei Jia ^{1,3} , Tao Hu ^{1,3} , Yajing Ding ^{1,3} , Ruoyao Ji ^{1,3} , Haofeng Wang ^{1,3} , Mengjie Zhao ^{1,3} , Xiaoping Sun ^{1,3} , Junshuai Chai ^{1,3} , Hao Xu ^{1,3} , Xiaolei Wang ^{1,3} , ¹ State Key Lab. of Fabrication Tech. for Integrated Circuits, Inst. of Microelectronics of the Chinese Academy of Sci. (IMECAS) (China), ² School of Advanced Interdisciplinary Sci., Uni. of Chinese Academy of Sci. (China), ³ The School of Integrated Circuits, Univ. of Chinese Academy of Sci. (China)	17:00 C-2-06 Characterization of gate-defined quantum devices based on GeSn quantum wells °Prateek Kaul ^{1,2} , Jiayuan Zhang ^{1,2} , Jingxuan Sun ^{1,2} , Detlev Grützmacher ^{1,2} , Qing-Tai Zhao ¹ , Makoto Kohda ³ , Katsushi Hashimoto ³ , Thomas Schäpers ^{1,2,3} , Dan Buca ¹ , ¹ Peter Grünberg Inst. 9 (PGL-9), Forschungszentrum Jülich (Germany), ² JARA-Fundamentals of Future Information Technology, Jülich-Aachen Research Alliance, Forschungszentrum Jülich and RWTH Aachen University (Germany), ³ Department of Material Science, Tohoku University (Japan)			17:00 F-2-06 Room-Temperature Hydrogen Sensing Using Pd/a-IGZO Thin-Film Transistors °Atsushi Shimizu ¹ , Keisuke Ide ¹ , Katsumi Abe ¹ , Masato Sasase ² , Takayoshi Katase ¹ , Hidenori Hiramatsu ¹ , Hideo Hosono ¹ , Toshio Kamiya ¹ , ¹ Institute of Science Tokyo (Japan), ² Kogakuin University (Japan)

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04: Power / High-speed Devices and Materials G-2:GaN Devices and Characterization	06: Energy Harvesting and Converting Devices and Materials H-2:Energy Harvesting Materials	08: Low Dimensional Devices and Materials J-2:Growth & Fabrication	03: Heterogeneous and 3D Integration / Interconnect / MEMS K-2:Novel Materials and Advanced Process Technologies	12: Advanced and Innovative Circuits / Systems Interacting with Devices and Materials M-2:Bio and Healthcare Circuits and Systems	07: Organic / Molecular / Bio-electronics N-2:Organic and Biomedical Sensors and Devices
16:15 G-2-03 Contact/Access-Resistance Artifacts and R_{ac}-Separated Correction in Al₂O₃/GaN MOS Admittance Characterization Jiawei Cao ¹ , Qianwen Guo ¹ , Xianglong Chen ¹ , Xugang Ke ¹ , Dawei Gao ^{1,2,3} , Jungkang Li ^{1,2,3} , °Rui Zhang ^{1,2,3} , ¹ Zhejiang Univ. (China), ² Zhejiang ICsprout Semiconductor Corp., Ltd. (China), ³ ZJU-Hangzhou Global Scientific and Technological Innovation Center (China)	16:15 H-2-04 (Invited) Future Prospects of III-V Compound Thin-Film Multi-junction Solar Cells °Tatsuya Takamoto ¹ , ¹ Univ. of Miyazaki (Japan)	16:15 J-2-03 Twist Formation in CVD-Grown Bilayer Graphene via Surface-Controlled Nucleation °Shengnan Wang ¹ , Hiroki Hibino ² , Yoshitaka Taniyasu ¹ , ¹ Basic Research Laboratories, NTT, Inc. (Japan), ² Kwansei Gakuin University (Japan)	16:15 K-2-03 Extreme memory hole diameter shrinkage for High Aspect Ratio via patterning °Daniel Montero ¹ , Senne Fransen ¹ , Kruti Trivedi ¹ , Igor Belov ¹ , Mattia Pasquali ¹ , Murat Pak ¹ , Jeongsoo Kim ¹ , Geert van den Bosch ¹ , Christophe Lorant ¹ , Maarten Rosmeulen ^{1,2} , ¹ imec (Belgium), ² KU Leuven (Belgium)	16:15 M-2-03 A Multi-Channel Wireless 2D Material-based Sensor Array With in-Pixel Calibration for Quantitative Mixed-Gas Analysis °MINHSUN CHUANG ¹ , ZiJie Lin ¹ , YueDer Chih ² , Yih Wang ² , Jonathan Chang ² , YuLun Chueh ¹ , ChrongJung Lin ¹ , YaChin King ¹ , ¹ National Tsing Hua University (Taiwan), ² Taiwan Semiconductor Manufacturing Company (Taiwan)	16:15 N-2-03 Slip-Dependent Organization of Intermolecular Electronic Coupling in Isoxindigo-Based Oligomers °Hayato Taguchi ¹ , Seiya Yokokura ^{1,2} , Hiroki Waizumi ^{1,2} , Toshihiro Shimada ^{1,2} , ¹ Hokkaido Univ. Grad. Sch. of Chem. Sci. and Eng. (Japan), ² Hokkaido Univ. Fac. of Eng (Japan)
16:30 G-2-04 (Late News) Wavelength-Dependent Photoresponse and Trap-Filling Dynamics in High-Purity Single-Crystal Diamond Photoconductive Switches °Zheng Fan ¹ , Min Xie ¹ , Yuxin Mao ¹ , Ning Zhou ² , Qingsong Tao ² , Shuangyue Li ² , Xiaohua Ma ¹ , ¹ Xidian Univ. (China), ² Hangzhou Inst. for Advanced Study, Univ. of Chinese Academy of Sci. (China)	16:45 H-2-05 (Late News) Dipole Engineering of P(VDF-TrFE) Copolymers via CsF Nanoparticles for High-Performance Piezoelectric Nanogenerators °Tzu-Chuan Yang ¹ , Ting-Han Lin ¹ , Chen-Yang Tseng ¹ , Hong-Jun Chen ¹ , Karthekeyan Periasamy ² , Ming-Chung Wu ^{1,3} , Jer-Chyi Wang ^{1,3,4} , ¹ Chang Gung Univ. (Taiwan), ² Aalto Univ. (Finland), ³ Chang Gung Memorial Hospital (Taiwan), ⁴ Ming Chi Univ. of Tech. (Taiwan)	16:30 J-2-04 Toward Substitutional Degenerate Doping in Monolayer WSe₂ through Nb Post-Doping and Se Annealing °Itsuki TANAKA Tanaka ¹ , Tomonori Nishimura ¹ , Kaito Kanahashi ¹ , Mai Nakashima ² , Naofumi Kakeya ² , Kohei Aso ² , Yoshifumi Oshima ² , Ryotaro Sakakibara ² , Yasumitsu Miyata ³ , Jui-Han Fu ¹ , Tung Vincent ¹ , Koji Kita ¹ , Kousuke Nagashio ¹ , ¹ The Univ. of Tokyo (Japan), ² JAIST (Japan), ³ NIMS (Japan)	16:30 K-2-04 Atomic Layer Deposition of MoSi/Mo for Low-resistivity Contacts in Advanced Logic and DRAM Applications Yuan Li ¹ , Sam Zhu ² , Yufeng Zhuang ² , Shuliang Lv ² , °Xun Gu ² , ¹ Fudan Univ. (China), ² AMEC (China)	16:30 M-2-04 0.1 nJ·s Low-EDP Wireless-Data-Security Engine With Elliptic Curve Scalar Multiplication and Dual-Field Reconfigurable SQR/QUAD-Assisted Architecture for Data Storage and Transmission in Wearable Healthcare Monitoring Systems °Xuean Hu ¹ , Li Zhang ¹ , Xinhuang Yang ¹ , Zhuoran Li ¹ , Rui Zhang ^{1,2,3} , Yitao Ma ^{1,2,3} , ¹ Zhejiang Univ. (China), ² ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), ³ Zhejiang ICsprout Semiconductor Corp., Ltd (China)	16:30 N-2-04 Application of Machine Learning for Multi-Virus Detection by Graphene FET Biosensor Modified with Various Antibodies °Kazuhiko Matsumoto ¹ , Kaori Yamamoto ¹ , Daisuke Hirose ² , Yuzuru Takamura ² , Kiyoji Sakano ¹ , Mamiko Yano ¹ , Eriko Ohnishi ¹ , Ayano Fukumura ¹ , Shota Ushiba ¹ , Shinsuke Tani ³ , Masahiko Kimura ¹ , ¹ The University of Osaka (Japan), ² JAIST (Japan), ³ Murata Manufacturing Co. (Japan)
		16:45 J-2-05 Spatially Controllable p-type Doping in MoS₂ via Laser-Assisted Metal Reduction for p-n Diodes °Younghoon Cho ¹ , Jungon Yu ¹ , Kyunghoon Kim ¹ , ¹ Sungkyunkwan Univ. (Korea)	16:45 K-2-05 Particle-Free Metal-Complex Inks for Low-Temperature Printed Electronics °Lingying Li ¹ , Wanli Li ² , Takeo Minari ¹ , ¹ NIMS (Japan), ² Jiangnan University (China)	16:45 M-2-05 A Lightweight, Wireless Real-Time Intracortical Recording System with Minimally Invasive Si microelectrodes in Mice °Jiaxuan Gu ¹ , Hiroki Ito ¹ , Koji Yamashita ¹ , Rika Numano ¹ , Kowa Koida ² , Takeshi Kawano ¹ , ¹ Toyohashi Univ. of Tech. (Japan), ² Tohoku Univ. (Japan)	16:45 N-2-05 Sensing performance of co-sputtered ScTiO₃ film-based EIS arrays for pH detection and heart failure biomarker monitoring Tung-Ming Pan ^{1,2} , °Tzu-Ching Lu ¹ , Chia-Yu Kuo ¹ , Jim-Long Her ¹ , ¹ Chang Gung University (Taiwan), ² Chang Gung Memorial Hospital (Taiwan)
		17:00 J-2-06 Thermodynamically Designed Functional Si and Ge Buffer Layers for Organic-Free VLSI-Compatible FET Integration °Tomonori Nishimura ¹ , Naoya Okada ² , Tetsuhiko Tanikawa ^{2,3} , Kaito Kanahashi ¹ , Wenhsin Chang ² , Akiko Ueda ² , Takashi Matsumoto ⁴ , Hirokazu Fukidome ⁵ , Ryu Hasunuma ⁶ , Takeo Matsuk ⁶ , Takahiro Iizuka ⁷ , Toshifumi Irisawa ² , Yoshiki Sakuma ⁸ , Takahiro Nagata ⁸ , Kosuke Nagashio ¹ , ¹ The Univ. of Tokyo (Japan), ² JAIST (Japan), ³ Nihon Univ. (Japan), ⁴ Tokyo Electron Technology Solutions Limited (Japan), ⁵ Tohoku Univ. (Japan), ⁶ Univ. of Tsukuba (Japan), ⁷ Hiroshima Univ. (Japan), ⁸ NIMS (Japan)	17:00 K-2-06 Investigation of Deposition-dependent Electrical Resistivity of Indium Wires for Cryogenic Interconnects in Quantum Computing Applications °Yuki Sakamoto ¹ , Yuji Kato ¹ , Sota Koyama ¹ , Hiroki Nakamura ¹ , Hisashi Kino ³ , Takafumi Fukushima ^{1,2} , Tetsu Tanaka ^{1,2} , ¹ Department of Mechanical Systems Engineering, Graduate School of Engineering, Tohoku University (Japan), ² Department of Biomedical Engineering, Graduate School of Biomedical Engineering, Tohoku University (Japan), ³ Department of Information Electronics, Faculty of Information Science and Electrical Engineering, Kyushu University (Japan)		17:00 N-2-06 (Late News) Reduced-Wiring Multi-Point Sensing via Analog Signal Encoding and Machine Learning °Kazumori KURIBARA ¹ , Hisashi Shima ¹ , Yasuyuki Kusaka ¹ , ¹ AIST (Japan)

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Room A (Convention Hall 1, 2nd Floor)	Room B (Convention Hall 2, 2nd Floor)	Room C (101A, 1st Floor)	Room D (101B, 1st Floor)	Room E (101C, 1st Floor)	Room F (102, 1st Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-3:Gate Stack Engineering 2 (8:30-10:00) Session Chair: Hiroyuki Ogawa (Rapidus Corporation), Shibun Tsuda (Renesas Electronics Corporation)	02: Advanced and Emerging Memories / New Applications B-3:DRAM 1 (8:30-10:00) Session Chair: Kazuyuki Kouno (Nuvoton Technology Corporation Japan), Takayuki Iwaki (Micron Memory Japan K.K.)	09: Novel Functional / Quantum / Spintronic Devices and Materials C-3:Spintronics (8:30-9:45) Session Chair: Shutaro KARUBE (Kyoto Univ.), Motoya Shinozaki (Tohoku Univ.)	05: Photonics: Devices / Integration / Related Technology D-3:Metaoptics and Nanophotonics (8:30-9:45) Session Chair: Atsushi Ono (Shizuoka Univ.), Ming-Hsiu Lee (Macronix International Co., Ltd.)	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-3:Group-IV 2D Materials (8:30-9:45) Session Chair: Yuji Yamamoto (IHP), Kentaro Watanabe (Shinshu Univ.)	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process F-3:Oxide TFTs: Scaling & Nanoscale Devices (8:30-10:00) Session Chair: Jun Koyama (Semiconductor Energy Laboratory Co., Ltd.), Hiroyuki Nishinaka (Kyoto Institute of Technology)
8:30 A-3-01 Quantitative Evaluation of the Effect of Spike RTA and Cyclic DHF/O₃ Cleaning on Ge Residue and Device Properties for GAAFET Performance Enhancement °Ryutaro Nishino ¹ , Chia-Tsong Chen ¹ , Yukinori Morita ¹ , Naoto Kumagai ¹ , Hiroyuki Ota ¹ , Kazuya Uejima ¹ , Atsushi Yagishita ¹ , Toshifumi Irisawa ¹ , Yoshihiro Hayashi ¹ , ¹ ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY (Japan)	8:30 B-3-01 N-Rich Interface-Control Nitride Metal Interlayer for Improved HZO MPB Dielectrics and Reliability in DRAM Capacitors °Jaewon Chung ¹ , Sangkuk Han ¹ , Wonjae Choi ¹ , Haesoo Jang ¹ , Sangmyun Lim ¹ , Kyungwook Park ¹ , Sangwoo Jeong ¹ , Soyoung Park ¹ , Kanghyeok Lee ¹ , Changhwan Choi ¹ , ¹ Hanyang Univ. (Korea)	8:30 C-3-01 (Invited) Efficient spin-charge conversion at room temperature with ferroelectrics: Enabling FESO °Manuel Bibes ^{1,2} , Ruchi Tomar ¹ , Anouk Goossens ^{1,2} , Jean-Philippe Attané ² , Laurent Vila ² , ¹ Laboratoire Albert Fert (France), ² NELLOW (France)	8:30 D-3-01 (Invited) Tunable and Reconfigurable Metaoptics °Jing Hua Teng ¹ , ¹ A*STAR, IMRE (Singapore)	8:30 E-3-01 (Invited) Single Crystals of Graphene, Graphene Nanoribbons, and hBN on Ge and Ge-on-Si via Chemical Vapor Deposition and Related Device Applications °Micheal S. Arnold ¹ , ¹ Univ. of Wisconsin-Madison (USA)	8:30 F-3-01 Crystal Indium-Oxide FET with 21.7-nm Gate Length and 27.2-nm Channel Width Enabling High Switching Performance °Yuzuki yanagiya ¹ , Satoru Saito ¹ , Takanori Matsuzaki ¹ , Motomu Kurata ¹ , Yoshikatsu Okubo ¹ , Takahiro Arai ¹ , Naoki Okuno ¹ , Yoshikazu Hiura ¹ , Etsuko Asano ¹ , Yuto Yakubo ¹ , Kenichi Okazaki ¹ , Shunpei Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co.,Ltd (Japan)
8:45 A-3-02 Effects of Nitrogen Radical Treatment on the Reliability of High-k Gate Dielectrics Contributing to Gate-All-Around Technology °Honoka Kido ¹ , Mizuki Yano ¹ , Hiroki Kondo ¹ , ¹ Kyushu Univ. (Japan)	8:45 B-3-02 Gas-phase Doping for Enhanced Dual Work Function BCAT in 10-nm node DRAM Dongkyu Jang ¹ , °Taehoon Park ¹ , Inkyum Lee ¹ , Yongmin Jung, ¹ Samsung Electronics (Korea)	9:00 C-3-02 Single-Layer Spin–Orbit Torque Magnetization Switching in Compressively Strained SrRuO₃ on a Distorted Perovskite Substrate °Hiroto Horiuchi ¹ , Jeyoung Yi ¹ , Yuki K Wakabayashi ² , Yukio Sato ³ , Yoji Kunihashi ² , Yoshiharu Krockenberger ² , Masaaki Tanaka ^{1,4,5} , Shinobu Ohya ^{1,4,5} , ¹ Dept. of Electrical Eng. and Info. Systems, The Univ. of Tokyo (Japan), ² Basic Res. Labs, NTT, Inc. (Japan), ³ Res. and Edu. Inst. for Semiconductors and Informatics, Kumamoto Univ. (Japan), ⁴ CSRN, The Univ. of Tokyo (Japan), ⁵ Inst. for Nano Quantum Info. Electronics, The Univ. of Tokyo (Japan)	9:00 D-3-02 Assembly of Non-Uniformly Slotted Nanobeam Lasers into Silicon Waveguides °Tsan-Wen Lu ¹ , Hsi-Wen Huang ¹ , Chia-Ruei Yang ¹ , Po-Tsung Lee ¹ , ¹ National Yang Ming Chiao Tung Univ. (Taiwan)	9:00 E-3-02 Vertically Oriented Multilayer Graphene via Layer Exchange for High-Performance Lithium-Ion Batteries °Kazushi Yabuki ¹ , Koki Nozawa ¹ , Takashi Suemasu ¹ , Kaoru Toko ¹ , ¹ The Univ. of Tsukuba (Japan)	9:00 F-3-03 Nanoscale InGaZnO Thin-Film Transistors Fabricated with a Novel Metal-Bridging-Free Lift-off Scheme °Chao-Chieh Chang ¹ , Mao-Cheng Yu ¹ , Guo-Wei Huang ² , Pei-Wen Li ¹ , Horng-Chih Lin ¹ , ¹ Inst. of Electronics, National Yang Ming Chiao Tung Univ. (Taiwan), ² Taiwan Semiconductor Res. Inst., National Applied Res. Labs. (Taiwan)
9:00 A-3-03 Dual WFM Patterning in mCFET RMG: Understanding Patterning Limitations and Enabling Scalable Solutions °Camila Toledo de Carvalho Cavalcante ¹ , Hiroaki Arimura ¹ , Pallavi Puttarame Gowda ¹ , Kenneth Lai ¹ , Efrain Altamirano Sanchez ² , Dmitry Batuk ¹ , Thomas Chiarella ¹ , Jerome Mitard ¹ , Violeta Georgieva ¹ , Harinarayanan Puliyalil ¹ , Sujith Subramanian ¹ , Lucas Petersen Barbosa Lima ¹ , Steven Demuycnck ¹ , Naoto Horiguchi ¹ , Serge Biesemans ¹ , ¹ imec (Belgium)	9:00 B-3-03 Low Damaged Bit-line Contact for Excellent Epitaxial Regrowth for Silicon Junction in D1b-nm DRAM °Dongkyu Jang ¹ , Taewook Kim ¹ , Seungchul Yang ¹ , Minjoo Oh ¹ , Changmin Kim ¹ , Goeun Heo ¹ , Taehoon Park ¹ , ¹ Samsung Electronics (Korea)	9:15 C-3-03 Thickness Dependence of Magnetic Damping and Spin Transport in Topological Insulator Bi₂Te₃/Ferromagnetic CoFeB °Misako Morota ¹ , Shugo Yoshii ² , Masashi Shiraishi ² , Wipakorn Jevasuwan ² , Naoki Fukata ² , Shogo Hatayama ¹ , ¹ AIST (Japan), ² Kyoto Univ. (Japan), ³ NIMS (Japan)	9:15 D-3-03 Enhancement of Stimulated Raman Scattering in Diamond Photonic Crystal Slabs via Doubly Resonant Bound States in the Continuum °Sangmin Ji ¹ , Satoshi Iwamoto ² , Hideki Gotoh ¹ , ¹ Hiroshima Univ. (Japan), ² The Univ. of Tokyo (Japan)	9:15 E-3-03 Formation and Transfer of Methylated Germanane Films from CaGe₂ Precursor Films °Kaito Nakajima ¹ , Yuji Yamamoto ² , Shigehisa Shibayama ¹ , Mitsuo Sakashita ¹ , Osamu Nakatsuka ^{1,3} , Masashi Kurosawa ¹ , ¹ Graduate School of Eng., Nagoya Univ. (Japan), ² IHP – Leibniz-Institut für innovative Mikroelektronik (Germany), ³ IMaSS, Nagoya Univ., Nagoya (Japan)	9:15 F-3-04 Phase-Engineered Ferroelectric Gate Stacks for High-Performance BEOL Oxide Thin-Film Transistors °Ankita Vasnani ¹ , Sidhant V. Vazarkar ¹ , Abdullah M.H. Cachhi ¹ , Girish Pahlwa ¹ , ¹ National Yang Ming Chiao Tung Univ. (Taiwan)
9:15 A-3-04 Flat-Band Voltage Control and Variability Using an Ultra-Thin Al₂O₃ Dipole Layer: Analysis of Dipole and Fixed Charges °Takefumi Kamioka ^{1,6} , Toshihide Nabatame ^{2,6} , Hiroki Matsukawa ^{3,6} , Takamasa Kawanago ^{1,6} , Yukinori Morita ^{1,6} , Kasidit Toprasertpong ^{1,6} , Yuichiro Mitani ^{1,6} , Takashi Onaya ^{2,6} , Naoki Fukata ^{2,6} , Wipakorn Jevasuwan ^{2,6} , Kazuhito Tsukagoshi ^{2,6} , Takuya Hoshii ^{1,6} , Atsushi Tamura ^{3,6} , Koji Kita ^{3,6} , Naoya Okada ^{1,6} , Kenzou Manabe ^{1,6} , Wataru Mizubayashi ^{1,6} , Hiroyuki Ota ^{1,6} , Takashi Matsukawa ^{1,6} , Shinji Migita ^{1,6} , ¹ AIST (Japan), ² NIMS (Japan), ³ The Univ. of Tokyo (Japan), ⁴ Tokyo City Univ. (Japan), ⁵ Science Tokyo (Japan), ⁶ LSTC (Japan)	9:15 B-3-04 Fringing-Capacitance Induced Sensing-Margin Loss in Scaled BEOL 2T-DRAM and Its Mitigation °Rui-Tong Hu ¹ , Pin Su ¹ , ¹ National Yang Ming Chiao Tung Univ. (Taiwan)				

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04: Power / High-speed Devices and Materials G-3:Si Power Devices (8:30-9:45) Session Chair: Tsuyoshi Kachi (Toshiba Device & storage), Masashi Kato (Nagoya Institute of Technology)	06: Energy Harvesting and Converting Devices and Materials H-3:Photovoltaics (8:30-9:45) Session Chair: Haeseok Lee (Korea Univ.), Md. Shahiduzzaman (Kanazawa Univ.)	08: Low Dimensional Devices and Materials J-3:2D Devices (8:30-9:45) Session Chair: Souvik Ghosh (imec), Shu Nakaharai (Tokyo Univ. of Tech.)	03: Heterogeneous and 3D Integration / Interconnect / MEMS K-3:Thermal Management and Multidimensional Device Technologies (8:45-9:45) Session Chair: Yoshiyuki Oba (Sony Semiconductor Manufacturing Corp.), Takeo Minari (NIMS)		07: Organic / Molecular / Bio-electronics N-3:Emerging Technologies in Organic and Biomedical (8:30-9:45) Session Chair: Takashi Tokuda (Science Tokyo), Yoshiaki Hattori (Kobe Univ.)
8:30 G-3-01 Simultaneous Turn-off Loss Reduction and Surge Voltage Suppression in SDG-IGBTs with independently controllable multiple gates <i>◦Kota Kato¹, Takato Yamamoto², Ryohei Gejo¹, Yusuke Kobayashi², Tomoko Matsuda¹, ¹Toshiba Electronic Devices & Storage Corp. (Japan), ²Toshiba Corp. (Japan)</i>	8:30 H-3-01 (Invited) Gamma-ray tolerant, ultrathin flexible perovskite solar cells for space applications <i>◦Hiroaki Jinno^{1,2}, Tomoyuki Yokota², Dou Zhao², Daisuke Kobayashi^{1,2}, Takahiro Makino³, Akinori Takeyama³, ¹ISAS/JAXA (Japan), ²The Univ. of Tokyo (Japan), ³QST (Japan)</i>	8:30 J-3-01 (Invited) Subband, moiré, and symmetry engineering using van der Waals junctions of 2D materials <i>◦Tomoki Machida¹, ¹University of Tokyo (Japan)</i>			8:30 N-3-01 (Invited) MicroLED-Based Neural Interfaces for Spatially Resolved Optogenetic Stimulation and Recording <i>◦Hiroto Sekiguchi¹, Takuya Sasaki², ¹Meijo University (Japan), ²Tohoku University (Japan)</i>
8:45 G-3-02 1200V Wide pillar SuperJunction IGBT(WSJ-IGBT), with high dV/dt contorollability <i>◦Masahiro Tanaka¹, Naoki Abe¹, Akio Nakagawa², ¹Nihon Synopsys G.K. (Japan), ²Nakagawa Consulting Office, LLC. (Japan)</i>			8:45 K-3-01 Miniaturization of Highly Sensitive Single-Axis Gold Proof-mass MEMS Accelerometer for Wearable Device <i>◦Torauto Yamada¹, Chihaya Mukaide¹, Tomoyuki Kurioka¹, Gen Hikosaka¹, Katsuyuki Machida¹, Tso-Fu Mark Chang¹, Yoshihiro Miyake¹, Masato Sone¹, Hiroyuki Ito¹, ¹Inst. of Science Tokyo (Japan)</i>		
9:00 G-3-03 TCAD Study on the Mechanism of Current Filament Hopping in IGBTs <i>◦Takeshi Suwa¹, Kazutoshi Nakamura¹, Yusuke Kawaguchi¹, Norio Yasuhara¹, Yasunori Iwatsu¹, ¹Toshiba Electronic Devices & Storage Corporation (Japan)</i>	9:00 H-3-02 CsI Seed Layer Controls Nucleation and Enhances Phase Purity in Vacuum Co-Evaporated Wide-Bandgap Perovskites for Silicon Tandem Solar Cells <i>◦Minseok Chin¹, Seok-Hyun Jeong¹, Hae-Seok Lee¹, ¹Korea Univ. (Korea)</i>	9:00 J-3-02 Observation of Dirac Source-Induced Subthreshold Swing Tuning in CVD Graphene/MoS₂ FETs <i>◦Anxhela Doko^{1,3}, Kaustuv Banerjee¹, Aryan Afzalian¹, Burkay Uzlur², Ozan Yakar², Cesar Javier Lockhart de la Rosa¹, Kristiaan De Greve^{1,3}, Dennis Lin¹, ¹Res. Inst. of IMEC (Belgium), ²Res. Inst. of AMO GmbH (Germany), ³Univ. of KU Leuven (Belgium)</i>	9:00 K-3-02 Key Process Challenge of the “Outer cut” scheme for 3D DRAM IGZO Transistors <i>◦Zhao Liu¹, Jiahao Ke¹, Ziheng Bai¹, Lu Tai¹, Fengbin Tian¹, Xiao Shang¹, Mingyi Yao¹, Libin Jia¹, Jiajia Wu¹, He Wang¹, Zhou He¹, Renrui Fang¹, Yazhou Liu¹, Gangping Yan¹, Jianqi Chen¹, Weihao Fan¹, Guilei Wang¹, Chao Zhao¹, ¹SAMT (China)</i>		9:00 N-3-02 2D and 3D Tumor Microenvironment Chip for the Study of H₂-Deuterium-Depleted Water <i>CHIA-WEI CHANG¹, ◦Bhoovitha Shanmugam², Chao-Ling Yao³, I-Hsin An¹, Chih-Kang Shih⁴, Tsai-Yu Shih⁵, Cheng-Hsien Liu^{1,2,5}, ¹Department of Power Mechanical Engineering, National Tsing Hua University, (Taiwan), ²College of Semiconductor Research, National Tsing Hua University, (Taiwan), ³Department of Chemical Engineering, National Cheng Kung University, (Taiwan), ⁴H Bank Technology Inc. (Taiwan), ⁵Institute of NanoEngineering and MicroSystems, National Tsing Hua University, (Taiwan)</i>
9:15 G-3-04 A Novel Dual-Channel LDMOS with an Embedded JFET Path for Enhanced On-State Performance and Hot-Carrier Reliability <i>◦Jingming Wan¹, Xun Zhao¹, Bole Xiang¹, Qianwen Guo¹, Dawei Gao^{1,2}, Xugang Ke¹, Junkang Li^{1,2}, Rui Zhang^{1,2}, ¹Zhejiang Univ. (China), ²Zhejiang ICsprout Semiconductor Company Ltd. (China)</i>	9:15 H-3-03 Mechanism of Fluorine-doped Tin Oxide Darkening Leading to Cell Degradation in Single-Junction Perovskite Solar Cell Modules <i>◦Jin Kim¹, Jongwon Ko¹, Junsu Son², MyeongSeob Sim¹, Tae Kyung Lee², Hae-Seok Lee¹, ¹Korea University (Korea), ²Hanyang University (Korea)</i>	9:15 J-3-03 Low Contact Resistance Amorphous MoS₂ Contact for 2D MoS₂ Channel <i>◦Toshiya Sasaki¹, Mihyeon Kim¹, Paul Fons², Wen-Hsin Chang³, Takahiko Endo⁴, Yasumitsu Miyata⁴, Yuta Saito^{1,3,5}, ¹The Univ. of Tohoku (Japan), ²The Univ. of Keio (Japan), ³Adv. Indus. Sci. Tech. (Japan), ⁴National Inst. Material Sci. (Japan), ⁵The GXT of Tohoku (Japan)</i>	9:15 K-3-03 Cryogenic Thermal-Path Packaging Using TSVs and a Cu-Post Substrate for Qubit-Chip Implementation <i>◦Misato Taguchi¹, Takuji Miki¹, Makoto Nagata¹, ¹Kobe Univ. (Japan)</i>		9:15 N-3-03 High-Voltage CMOS Switch Architecture for Current-Mode Neural Stimulators in a Low-Voltage CMOS Process <i>◦Wisaroot Sriitsaranusorn¹, Ryoma Okada¹, Kenzo Shodo², Yasuo Terasawa^{1,2}, Hironari Takehara¹, Makito Haruta^{1,3}, Hiroyuki Tashiro^{1,4}, Jun Ohta¹, Kiyotaka Sasagawa¹, ¹Nara Inst. of Sci. and Tech. (Japan), ²Nidek Co., Ltd. (Japan), ³Chitose Inst. of Sci. and Tech. (Japan), ⁴Kyushu Univ. (Japan)</i>

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Room A (Convention Hall 1, 2nd Floor)	Room B (Convention Hall 2, 2nd Floor)	Room C (101A, 1st Floor)	Room D (101B, 1st Floor)	Room E (101C, 1st Floor)	Room F (102, 1st Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-3:Gate Stack Engineering 2	02: Advanced and Emerging Memories / New Applications B-3:DRAM 1	09: Novel Functional / Quantum / Spintronic Devices and Materials C-3:Spintronics	05: Photonics: Devices / Integration / Related Technology D-3:Metaoptics and Nanophotonics	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-3:Group-IV 2D Materials	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process F-3:Oxide TFTs: Scaling & Nanoscale Devices
	9:30 B-3-05 (Late News) Optimizing Bits/Cell of Weight and Input for MAC Operation with 2T0C DRAM ^o Aman Chandrakar ¹ , Rohit Kumar Nirala ¹ , Manish Gupta ² , Abhinav Kranti ¹ , ¹ Indian Inst. of Tech. Indore (India), ² BITS Pilani K K Birla Goa Campus (India)	9:30 C-3-04 Robust Circularly Polarized Electroluminescence against High Bias Voltages in Spin-Polarized Light-Emitting Diode with Thin MgO Tunnel Barrier ^o Shinnosuke Wada ¹ , Itsu Tanaka ¹ , Daiki Mineyama ¹ , Ayano Morita ¹ , Hiroto Kise ¹ , Junichi Takayama ¹ , Akihiro Murayama ¹ , Satoshi Hiura ¹ , ¹ Hokkaido Univ. (Japan)	9:30 D-3-04 (Late News) Diameter-Dependent Ultraviolet Electroluminescence in Si-Based n-GaN MIS Microcavity LEDs ^o Qian Hu ¹ , Min Xie ¹ , Jiahao Cao ¹ , Jihai He ¹ , Yang Yang ² , Xiaohua Ma ¹ , ¹ Xidian Univ. (China), ² Nankai Univ. (China)	9:30 E-3-04 Direct formation of graphene on SiO₂/Si substrate by the hydrogen-assisted sputtering technique ^o Rion Kikuna ^{1,2} , Takeo Nakano ¹ , Katsuhisa Murakami ² , Masayoshi Nagao ² , Hiromasa Murata ² , ¹ Seikei Univ. (Japan), ² AIST (Japan)	9:30 F-3-05 Phase-Engineered Ferroelectric Gate Stacks for High-Performance BEOL Oxide Thin-Film Transistors ^o Ankita Vasnani ¹ , Sidhant V. Vazarkar ¹ , Abdullah M.H. Cachhi ¹ , Girish Pahwa ¹ , ¹ National Yang Ming Chiao Tung Univ. (Taiwan)
					9:45 F-3-06 (Late News) Theoretical Study on the Band Alignment of Charge Neutrality Level with Quantum Confinement in Ga-Doped In₂O₃ Nanosheets. ^o CHITRA PANDY ¹ , Masaharu Kobayashi ¹ , ¹ The University of Tokyo (Japan)

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Room G (103, 1st Floor)	Room H (105, 1st Floor)	Room J (107, 1st Floor)	Room K (108, 1st Floor)	Room M (109, 1st Floor)	Room N (110, 1st Floor)
04: Power / High-speed Devices and Materials G-3:Si Power Devices	06: Energy Harvesting and Converting Devices and Materials H-3:Photovoltaics	08: Low Dimensional Devices and Materials J-3:2D Devices	03: Heterogeneous and 3D Integration / Interconnect / MEMS K-3:Thermal Management and Multidimensional Device Technologies		07: Organic / Molecular / Bio-electronics N-3:Emerging Technologies in Organic and Biomedical
9:30 G-3-05 Quantitative Evaluation of the Impact of FZ-Si Wafer Deep-Level Defects on 3.3 kV Si-IGBT Characteristics °Bozhou Cai ¹ , Keiji Tagami ¹ , Wataru Saito ¹ , Shin-ichi Nishizawa ¹ , ¹ Kyushu University (Japan)	9:30 H-3-04 First demonstration of photoresponsivity in polycrystalline Ge-rich SiGe thin films for multijunction photovoltaic applications °Akira Ogawa ¹ , Shintaro Maeda ¹ , Takashi Suemasu ¹ , Kaoru Toko ¹ , ¹ The Univ. of Tsukuba (Japan)	9:30 J-3-04 Optimization of Scaled ALD Gate Dielectrics on Monolayer MoS₂/WSe₂ for Low-Power N/P FETs °Yu-wei Hsu ^{1,2} , Nien-En Chiang ¹ , Sheng-Xiang Su ³ , Yun-Cheng Liu ¹ , Ruei-Yu Chen ² , I-Chih Ni ¹ , Mei-Hsin Chen ³ , Tsung-En Lee ² , Chih-I Wu ¹ , ¹ National Taiwan Uni. (Taiwan), ² National Yang Ming Chiao Tung Uni. (Taiwan), ³ National Taipei Uni. of Technology (Taiwan)	9:30 K-3-04 Thermal Analysis and Experimental Validation of Heat Sinks for Acoustofluidic Devices °Wei Feng ¹ , Kanata Shirai ² , Akihiro Isozaki ² , Yusuke Takei ¹ , ¹ National Inst. of Advanced Indus. Sci. and Tech. (AIST) (Japan), ² Ritsumeikan Univ. (Japan)		9:30 N-3-04 Electrical Characterization of Thrombus Formation Under Oscillatory Shear Conditions °Dong-Hwi Ham ¹ , Chang-Hyun Lee ¹ , Hyun-Jo Yoon ¹ , Woo-Tae Park ¹ , ¹ Seoul National Univ. of Sci. and Tech. (Korea)

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-4:New Device Architecture (10:30-12:00) Session Chair: Anabela Veloso (imec), Pin Su (National Yang Ming Chiao Tung Univ.)	02: Advanced and Emerging Memories / New Applications B-4:Ferroelectric FET I (10:30-12:00) Session Chair: Yumeng Zheng (Tokyo Univ. of Science), Laurent Grenouillet (CEA-Leti)	09: Novel Functional / Quantum / Spintronic Devices and Materials C-4:Novel Devices for Unconventional Computing (10:30-12:00) Session Chair: Yoshifumi Nishi (Toshiba Corp.), Kenichi Aoshima (NHK STRL)	05: Photonics: Devices / Integration / Related Technology D-4:Photonic Integration (10:30-12:00) Session Chair: Kento Komatsu (Sumitomo Electric Industries, Ltd.), Xuejun Xu (Nippon Telegraph and Telephone Corporation)	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-4:Ultrathin Film Growth (10:30-12:00) Session Chair: Taizoh Sadoh (Kyushu Univ.), Makoto Koto (SanDisk G.K.)	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process F-4:Group-IV Thin-Film Materials & Devices (10:30-12:15) Session Chair: Kaoru Toko (Univ. of Tsukuba), Ryo Matsumura (NIMS)
10:30 A-4-01 (Invited) Value Proposition of Vertical Transistor for Future's Logic Applications: Symmetry, Drivability and Routability °Yanbang Chu ¹ , Yu Liu ¹ , Ziqiao Xu ¹ , Runsheng Wang ¹ , Ming Li ¹ , Heng Wu ¹ , ¹ <i>School of Integrated Circuits, Peking University (China)</i>	10:30 B-4-01 (Invited) Design Strategies for Radiation-Hard FeFET Memories through Interface, Channel, and HfZrO₂ Composition Engineering °Yung-Hsien Wu ¹ , Hao-Kai Peng ¹ , Sheng-Yen Zheng ¹ , Wei-Ning Kao ¹ , Jung-Ting Chang ¹ , ¹ <i>Department of Engineering and System Science, National Tsing Hua Univ., Hsinchu, Taiwan (Taiwan)</i>	10:30 C-4-01 (Invited) Ionics and Spintronic-based Reservoir Computing °Wataru Namiki ¹ , Daiki Nishioka ¹ , Kazuya Terabe ¹ , Takashi Tsuchiya ¹ , ¹ <i>NIMS (Japan)</i>	10:30 D-4-01 (Invited) Hybrid integrated nanophotonic devices assembled by transfer printing °Yasutomo Ota ¹ , Akinari Fujita ¹ , Hironobu Yoshimi ¹ , Natthajuks Pholsen ¹ , Satoshi Iwamoto ² , ¹ <i>Keio Univ. (Japan)</i> , ² <i>Univ. Tokyo (Japan)</i>	10:30 E-4-01 (Invited) Epitaxy growth of 2D p-type semiconductors with continuous crystallinity on amorphous dielectric °Vincent Tung ¹ , ¹ <i>The Univ. of Tokyo (Japan)</i>	10:30 F-4-01 (Invited) Recent progress in diamond MOSFET technology °Norio Tokuda ¹ , ¹ <i>Kanazawa Univ. (Japan)</i>
11:00 A-4-02 Critical PPA Examination of SRAMs with VFET Evolutions: From Frontside to Dual-sided and Stacking °Xinyue He ¹ , Siyuan Liu ¹ , Yuji Cheng ¹ , Yu Liu ¹ , Xiangyu Yan ¹ , Runsheng Wang ¹ , Ming Li ¹ , Xing Zhang ¹ , Heng Wu ¹ , ¹ <i>School of Integrated Circuits, Peking University (China)</i>	11:00 B-4-02 Dynamics of trapped electron migration in HfO₂/SiO₂ gate dielectrics clarified through displacement current measurement °Yuki Komatsubara ¹ , Reika Ichihara ¹ , ¹ <i>Kioxia Corp. (Japan)</i>	11:00 C-4-02 In-materio Spin-Wave Reservoir Computing for Speaker Classificationwithout Computationally Expensive Cochleagram Preprocessing °Sota Hikasa ^{1,2} , Wataru Namiki ¹ , Daiki Nishioka ¹ , Ryo Iguchi ¹ , Jiaxuan Chen ¹ , Kazuya Terabe ¹ , Takashi Tsuchiya ^{1,2} , ¹ <i>National Institute for Materials Science (NIMS) (Japan)</i> , ² <i>Tokyo University of Science (TUS) (Japan)</i>	11:00 D-4-02 Voltage-Induced Characteristics of Triple-Taper III–V/Si Hybrid Electro-Absorption Modulators °Junpei Koga ¹ , Kei Masuyama ¹ , Mizuki Shirao ¹ , Nobuhiko Nishiyama ² , Nobuo Ohata ¹ , ¹ <i>Mitsubishi Electric Corporation (Japan)</i> , ² <i>Institute of Science Tokyo (Japan)</i>	11:00 E-4-02 Boron Atomic-Layer Doping in Epitaxial SiGe °Yuji Yamamoto ^{1,2} , Kei Kiyose ¹ , Florian Bärwolf ¹ , Holger Rücker ¹ , Junichi Murota ³ , Bernd Tillack ⁴ , ¹ <i>IHP - Leibniz-Institut für innovative Mikroelektronik (Germany)</i> , ² <i>Nagoya Univ. (Japan)</i> , ³ <i>Micro System Integration Center, Tohoku Univ. (Japan)</i> , ⁴ <i>Tech. Univ. Berlin (Germany)</i>	11:00 F-4-02 (Invited) Potential of Si-Compatible Group-IV Thin Films for Low-Temperature Thermoelectric Applications °Masashi Kurosawa ¹ , Takayoshi Katase ² , Shigehisa Shibayama ¹ , Mitsuo Sakashita ¹ , Osamu Nakatsuka ¹ , ¹ <i>Nagoya Univ. (Japan)</i> , ² <i>Science Tokyo (Japan)</i>
11:15 A-4-03 PPA Examination of Flip Vertical FET (FVFET), a Novel Stacked VFET Architecture °Jiahao Zhang ¹ , Ziqiao Xu ¹ , Siyuan Liu ¹ , Yanbang Chu ¹ , Xinyue He ¹ , Yu Liu ¹ , Runsheng Wang ¹ , Ming Li ¹ , Heng Wu ¹ , ¹ <i>School of Integrated Circuits, Peking Univ. (China)</i>	11:15 B-4-03 FeMFET Endurance and Retention Reliability Overview for Low-Voltage Operation Prospects °Louise Dumas ¹ , Joel Minguet Lopez ¹ , Jean Coignus ¹ , Simon Martin ¹ , Fabien Grimaud ¹ , Laurent Grenouillet ¹ , ¹ <i>CEA-Leti (France)</i>	11:15 C-4-03 Experimental Engineering of Spin-Wave Interference for Tailorable Magnonic Reservoir Computing °Jiaxuan Chen ¹ , Ryo Iguchi ¹ , Sota Hikasa ^{1,2} , Takashi Tsuchiya ^{1,2} , ¹ <i>National Institute for Materials Science (Japan)</i> , ² <i>Tokyo University of Science (Japan)</i>	11:15 D-4-03 Experimental Observation of Pockels Effect in Ferroelectric Hf_{0.5}Zr_{0.5}O₂ Integrated with Silicon Nitride Waveguides °Wei Dai ¹ , Hiroya Sakumoto ¹ , Zhenhong Liu ¹ , Hiroyuki Matsukawa ¹ , Kasidit Toprasetpong ¹ , Mitsuru Takenaka ¹ , ¹ <i>The Univ. of Tokyo (Japan)</i>	11:15 E-4-03 Initial Ge Growth on Si Delta Layer on Ge Formed by Atomic-Layer Epitaxy °Kei Kiyose ¹ , Daniel Steckler ¹ , Florian Bärwolf ¹ , Junichi Murota ² , Bernd Tillack ^{1,3} , Yuji Yamamoto ^{1,4} , ¹ <i>IHP (Germany)</i> , ² <i>Tohoku Univ. (Japan)</i> , ³ <i>TUB (Germany)</i> , ⁴ <i>Nagoya Univ. (Japan)</i>	

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04: Power / High-speed Devices and Materials G-4:SiC Devices and Materials (10:30-12:00) Session Chair: Mitsuo Okamoto (AIST), Kohei Adachi (Mitsubishi Electric)		08: Low Dimensional Devices and Materials J-4:Characterization of Devices and Materials II (10:30-12:00) Session Chair: Shengnan Wang (NTT Basic Research Lab.), Shinjiro Hara (NIMS)	03: Heterogeneous and 3D Integration / Interconnect / MEMS K-4:Emerging Materials and Device Technologies (10:30-11:45) Session Chair: Shigeo Yasuhara (Japan Advanced Chemicals Ltd.), Wei Feng (AIST)	12: Advanced and Innovative Circuits / Systems Interacting with Devices and Materials M-4:Advanced Analog Circuit Techniques (10:30-11:45) Session Chair: Nobuhiko Nakano (Kejo Univ.), Jerald Yoo (Seoul National Univ.)	07: Organic / Molecular / Bio-electronics N-4:Energy Related Organic and Biomedical (10:30-12:00) Session Chair: Toshinori Matsushima (Kyushu Univ.), Hiroaki Iino (Sicience Tokyo)
10:30 G-4-01 Non-destructive Individual Inspection of Dislocations in Processed 4H-SiC Wafers by Correlative Transmission Polarized Light Microscopy and X-ray Topography ^oShunta Harada¹, ^oKosei Takahashi¹, Kota Tsujimori¹, Keisuke Seo¹, Michio Kawase¹, Seiya Mizutani², Yuya Mizutani², Seiji Mizutani², Kenta Murayama², ¹Nagoya Univ. (Japan), ²Mipox Corp. (Japan) 10:45 G-4-02 Improved 4H-SiC (0001) MOS Interface Characteristics with Subsequent N₂ Annealing after Growth of Ultrathin (~2.5 nm) Direct NO Oxynitride Layers ^oYutaro Uchida¹, Atsushi Tamura¹, Koji Kita¹, ¹The University of Tokyo (Japan) 11:00 G-4-03 Study on Novel Nitrogen Passivation Method for SiC MOS Interfacethrough Solid Phase Reaction with Rf-sputtered SiO₂N₂ Thin Layers ^oHongbo Liu¹, Atsushi Tamura¹, Koji Kita¹, ¹The University of Tokyo (Japan) 11:15 G-4-04 Channel Mobility and Threshold Voltage in N₂-annealed SiC p-Channel MOSFETs ^oKyota Mikami¹, Mitsuaki Kaneko¹, Tsunenobu Kimoto¹, ¹Kyoto Univ. (Japan)		10:30 J-4-01 (Invited) Probing Sub-Picosecond Optical-to-Electrical Conversion in Two-Dimensional Materials Using On-Chip Terahertz Electronics ^oKatsumasa Yoshioka¹, Subhashri Chatterjee¹, Taro Wakamura¹, Norio Kumada¹, ¹NTT Basic Research Labs. (Japan) 11:00 J-4-02 Quantifying Sulfur Defects during the MOCVD Growth of MoS₂ by Atomic-Resolution Lateral Force Microscopy ^oKosei Matsumoto¹, Keisuke Atsumi¹, Tomonori Nishimura¹, Kaito Kanahashi¹, Yoshiki Sakuma², Kosuke Nagashio¹, ¹The Univ. of Tokyo (Japan), ²National Inst. of Materials Science (Japan) 11:15 J-4-03 Dependence of Spin-Polarization Amplification Dynamics on Nitrogen Content in Tunnel-Coupled InGaAs Quantum Dot/GaNAs Quantum Well Nanostructures ^oYuma Suzuki¹, Hiroto Kise¹, Ayano Morita¹, Junichi Takayama¹, Akihiro Murayama¹, Satoshi Hiura¹, ¹Hokkaido University (Japan)	10:30 K-4-01 (Invited) Gas-responsive Luminescent Metal–Organic Framework ^oHaruka Yoshino¹, Hitoshi Miyasaka¹, ¹Tohoku Univ. (Japan) 11:00 K-4-02 A Salable and Flexible 3D Spiking Neural Network (3D-SNN) Architecture for Hardware Reservoir Computing ^oRyotaro Kawashima¹, Aoi Kataura¹, Yuqi Duan², Akihiro Suzuki¹, Kotaro Torazawa², Thianmontri Pattaramon², Yukino Sakurai², Takafumi Fukushima¹, Koji Kiyoyama³, Tetsu Tanaka⁴, ¹Department of Biomedical Engineering, Graduate School of Biomedical Engineering, Tohoku Univ. (Japan), ²Department of Mechanical Systems Engineering, Graduate School of Engineering, Tohoku Univ. (Japan), ³Department of Electrical and Electronics Engineering, Nagasaki Inst.of Applied Science (Japan), ⁴Department of Biomedical Engineering, Graduate School of Biomedical Engineering, Tohoku Univ. and Department of Mechanical Systems Engineering, Graduate School of Engineering, Tohoku Univ. (Japan) 11:15 K-4-03 A Strain-Engineered Epitaxial Approach for Ultra-High-Periods Si/SiGe Superlattices Toward Vertically Stacked DRAM ^oYing Zhang¹, Xiangsheng Wang¹, Xiaomeng Liu¹, Hailing Wang¹, Guilei Wang¹, Chao Zhao¹, ¹Beijing Superstring Academy of Memory Technology (China)	10:30 M-4-01 The First CMOS-Integrated Stochastic Processing Unit for Scalable Thermodynamic Computing in 65nm with 1000× Power Efficiency Improvement ^oRyu Sugawara¹, Kentaro Yoshioka¹, ¹Keio Univ. (Japan) 10:45 M-4-02 A 0.132-mm², 104-nW CMOS Current-Mode Bandgap Reference Circuit Using Resistance-Reduced CTAT Current Generation ^oKazuhiko Miki¹, Yoshinori Irotagawa¹, Daisuke Kanemoto¹, Tetsuya Hirose¹, ¹The Univ. of Osaka (Japan) 11:00 M-4-03 A Low-Power BJT-Based Temperature-to-Digital Converter Using Switched-Capacitors Yao-Ting Chien, Chia-Tse Liu, ^oHongchin Lin¹, Kun-Yu Lai, ¹National Chung Hsing University (Taiwan) 11:15 M-4-04 A 96.4%-Efficiency 3A Dual-Mode DC-DC Converter for Full VCR Range Coverage with Input Reconfigurable Hybrid Topology ^oXinjian Wang¹, Jingyao Chi¹, Wenrui Chen², Yaolei Guo¹, Yue Cheng¹, Chenhao Tang¹, Wenjing Mu¹, Ping OuYang³, Guoping Shou², Yitao Ma^{1,2,3}, ¹Zhejiang University (China), ²ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), ³Zhejiang ICsprout Semiconductor Co., Ltd (China)	10:30 N-4-01 (Invited) Materials and Process Technologies for the Commercialization of Perovskite Solar Cells ^oTakuro Murakami¹, ¹National Institute of Advanced Industrial Science and Technology (Japan) 11:00 N-4-02 Extended π-Conjugation Molecules for Efficient and Durable Perovskite Solar Cells ^oToshinori Matsushima¹, ¹Kyushu Univ. (Japan) 11:15 N-4-03 Para Fluorophenyl Substituted Phenanthro[9,10-d]imidazole-based hole transport materials for efficient and stable perovskite solar cells ^oBhim Raju Telugu¹, Toshinori Matsushima¹, ¹Kyushu Univ. (Japan)

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-4:New Device Architecture	02: Advanced and Emerging Memories / New Applications B-4:Ferroelectric FET I	09: Novel Functional / Quantum / Spintronic Devices and Materials C-4:Novel Devices for Unconventional Computing	05: Photonics: Devices / Integration / Related Technology D-4:Photonic Integration	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-4:Ultrathin Film Growth	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process F-4:Group-IV Thin-Film Materials & Devices
11:30 A-4-04 Short-Term Synaptic Plasticity Emulation without Impact Ionization Using a Dual-Gate PN-Body Tied SOI-FET Yukihiko Yamazaki ¹ , Haruki Yonezaki ^{1,2} , Jiro Ida ¹ , Takayuki Mori ¹ , ¹ Kanazawa Inst. of Tech. (Japan), ² KIOXIA Corp. (Japan)	11:30 B-4-04 Observation of polarization switching-induced carrier mobility degradation in MOSFETs utilizing ferroelectric and antiferroelectric-like Hf _{1-x} Zr _x O ₂ /Si gate stacks Hiroyuki Matsukawa ¹ , Mitsuru Takenaka ¹ , Shinichi Takagi ^{1,2} , Kasidit Toprasertpong ¹ , ¹ The Univ. of Tokyo (Japan), ² Teikyo Univ. (Japan)	11:30 C-4-04 Spectral Dynamics Reservoir Computing with Forced Oscillations in an Ion-Gating Transistor Laszlo Posa ¹ , Jiaxuan Chen ¹ , Ryo Iguchi ¹ , Daiki Nishioka ¹ , Hina Kitano ^{1,2} , Takashi Tsuchiya ^{1,2} , ¹ National Institute for Materials Science (NIMS) (Japan), ² Tokyo University of Science (Japan)	11:30 D-4-04 Injection-angle Dependence of High-current Performance in Side-coupled Ge-on-Si Photodetectors Chao Zhang ¹ , Rui Tang ¹ , Makoto Okano ² , Kasidit Toprasertpong ¹ , Mitsuru Takenaka ¹ , ¹ The Univ. of Tokyo (Japan), ² National Inst. of Advanced Indus. Sci. and Tech. (Japan)	11:30 E-4-04 Quantitative Measurement of the Nanoscale Bandgap Distribution in Al ₂ O ₃ Ultrathin Film Using Angle-Selected STEM-EELS Takanori Asano ¹ , Manabu Tezura ¹ , Hiroki Tanaka ¹ , ¹ Kioxia Corp. (Japan)	11:30 F-4-03 Mechanism of enhanced Mg-induced lateral crystallization of amorphous Ge via two-step annealing Taiga Nagashima ¹ , Ayato Takazai ¹ , Kenichiro Takakura ¹ , Isao Tsunoda ¹ , ¹ National Inst. of Tech. Kumamoto College (Japan)
11:45 A-4-05 Monolithic 3D All-WSe ₂ CFET Inverter Enabled by Localized Electron-Beam Band Engineering and 2D-Compatible Process Engineering Chi-Chun Cheng ¹ , Chun-Yen Hsiao ¹ , Long-An Lee ¹ , Nguyen Huynh-Uyen-Phuong ¹ , Po-Wen Chiu ¹ , ¹ National Tsing Hua University (Taiwan)	11:45 B-4-05 BEOL-Compatible AlScN/IGZO FeFET with Robust Non-Volatile Behaviors and Multi-Level Cell Capability Ziqing Wang ¹ , Xi Zhou ¹ , Hongwei Hao ² , Shulin Zhu ¹ , Dongdong Li ² , Weipeng Xuan ³ , Liang Zhao ¹ , ¹ Zhejiang Univ. (China), ² Zhangjiang Lab. (China), ³ Hangzhou Dianzi Univ. (China)	11:45 C-4-05 CMOS Compatible, Compact SiO ₂ Oscillator-Based Probabilistic Bits for Applications Jihyun Kim ¹ , Yonghun Kim ² , Jiyong Woo ¹ , ¹ Kyungpook National Univ. (Korea), ² Korea Inst. of Materials Sci. (Korea)	11:45 D-4-05 Thick Ferroelectric Hf _{0.5} Zr _{0.5} O ₂ Films by Heat-free Digitally Processed DC Sputtering and Waveguide Formation using CHF ₃ RIE toward Nonvolatile Optical Phase Shifters Satoshi Fujiya ¹ , Yudai Katsura ¹ , Takahiro Tsukamoto ¹ , Hideo Isshiki ¹ , ¹ The University of Electro-Communications (Japan)	11:45 E-4-05 Observation and statistical analysis of leakage path formation in HfO ₂ -based ferroelectric capacitors using <i>in-situ</i> laser-based photoemission electron microscopy Yuki Itoya ¹ , Hirokazu Fujiwara ^{2,3} , Cédric Bareille ² , Toshiyuki Taniuchi ^{2,3} , Masaharu Kobayashi ¹ , ¹ IIS, Univ. of Tokyo (Japan), ² ISSP, Univ. of Tokyo (Japan), ³ MIRC, Univ. of Tokyo (Japan)	11:45 F-4-04 Removal of Impurities in Ultra-Thick SiO ₂ by Accelerated Oxidation through AlO _x Yuki Koga ¹ , Yuta Saito ¹ , Hiroyuki Yamashita ¹ , Tomonari Shioda ¹ , Shinji Mori ¹ , Tatsunori Isogai ¹ , ¹ Kioxia Corp. (Japan)
					12:00 F-4-05 Gate-All-Around Spacer Poly-Si Nanowire Channels Junctionless Transistors Fabricated Using a Solid Diffusion Doping Method Po-Yi Kuo ¹ , Yi-Cheng Tsai ¹ , ¹ National Chin Yi Univ. of Technology (Taiwan)

Short Oral Presentation					
(13:30-14:00) 01: Advanced CMOS: Material Science / Process Engineering / Device Technology Session Chair:Kuniyuki Kakushima (Institute of Science Tokyo), Genji Nakamura (Tokyo Electron Ltd.)	(13:30-14:42) 02: Advanced and Emerging Memories / New Applications Session Chair:Keiji Hosotani (KIOXIA Corporation), Kazuyuki Kouno (NuvoTon Technology Corporation Japan)	(13:30-13:56) 09: Novel Functional / Quantum / Spintronic Devices and Materials Session Chair:Shutaro KARUBE (Kyoto Univ.), Hidehiro Asai (AIST)	(13:30-13:52) 05: Photonics: Devices / Integration / Related Technology Session Chair:Kouichi Akahane (NICT)	(13:30-13:48) 11: Advanced Materials: Synthesis / Crystal Growth / Characterization Session Chair:Yoriko Tominaga (Hiroshima Univ.), Yuji Yamamoto (IHP)	(13:30-13:56) 10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process Session Chair:Ryo Matsumura (NIMS), Toshiya Murakami (KIOXIA)

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Room G (103, 1st Floor)	Room H (105, 1st Floor)	Room J (107, 1st Floor)	Room K (108, 1st Floor)	Room M (109, 1st Floor)	Room N (110, 1st Floor)
04: Power / High-speed Devices and Materials G-4:SiC Devices and Materials		08: Low Dimensional Devices and Materials J-4:Characterization of Devices and Materials II	03: Heterogeneous and 3D Integration / Interconnect / MEMS K-4:Emerging Materials and Device Technologies	12: Advanced and Innovative Circuits / Systems Interacting with Devices and Materials M-4:Advanced Analog Circuit Techniques	07: Organic / Molecular / Bio-electronics N-4:Energy Related Organic and Biomedical
		11:30 J-4-04 Gate-Modulated PL Spectroscopy for Nb Doping Effect in Monolayer WSe ₂ ^o Soma Toda ¹ , Kaito Kanahashi ¹ , Tomonori Nishimura ¹ , Keiji Ueno ² , Kosuke Nagashio ¹ , ¹ The Univ. of Tokyo (Japan), ² Saitama Univ. (Japan)	11:30 K-4-04 Enhancing Performance in High-Density F2F CFET 3D-ICs through Backside Clocking Framework ^o Liang-Chi Huang ¹ , Zong-Yan Yu ¹ , Pen-Yi Chu ¹ , Bo-Hsun Juan ¹ , Yuan-Ju Tien ¹ , Wei-Hsiang Huang ¹ , Jheng-Yen Li ¹ , Tzu-Hsuan Chang ¹ , ¹ National Taiwan Univ. (Taiwan)	11:30 M-4-05 A 0.67-dB/ F Low-EMI Wide-Input-Range Buck Converter with Adaptive Dual Random Spread Spectrum and Multi-Mode Control for automotive power supply ^o Canyu Yang ¹ , Yaolei Guo ¹ , Fei Wang, Yanrui Cao ¹ , Shuming Liu ¹ , Peijun Jiang ¹ , Qi Sun ¹ , Kai Xu ¹ , Ping Ouyang, Yitao Ma ¹ , ¹ Zhejiang University (China)	11:30 N-4-04 Single-Chip Integration of Optically poweredImplantable Continuous Glucose sensor ^o Daiki Kawase ¹ , Masato Saito ¹ , Yasufumi Yokoshiki ² , Takashi Tokuda ¹ , ¹ Science Tokyo (Japan), ² Aoyama Gakuin Univ. (Japan)
		11:45 J-4-05 Strain Relaxation and S-S Bond Elimination in PVD-WS ₂ Film using <i>In-situ</i> High Temperature Sintering ^o Koki Fukuda ¹ , Taiga Fuse ¹ , Shunsuke Nozawa ¹ , Soma Ito ¹ , Naoki Matsunaga ¹ , Minori Kaneko ² , Takuya Hoshii ¹ , Kuniyuki Kakushima ¹ , Atsushi Ogura ² , Hitoshi Wakabayashi ¹ , ¹ Inst. of Science Tokyo (Japan), ² Meiji Univ. (Japan)			11:45 N-4-05 Wrinkle-Structured Flexible Piezoelectric Energy Harvester with Enhanced Output under Low-Amplitude Vibrations ^o Phuc Khac Thien Le ¹ , Ji-Seob Choi ¹ , Tae-Uk Lee ¹ , Le-Giang Tran ² , Woo-Tae Park ¹ , ¹ Seoul National Univ. of Sci. and Tech. (Korea), ² International Univ., Vietnam National Univ. - HCM (Viet Nam)

Short Oral Presentation					
(13:30-14:02) 04: Power / High-speed Devices and Materials Session Chair:Katsuhiro Kutsuki (Toyota Central R&D Labs., Inc.), Tomoya Ono (Kobe Univ.)	(13:30-13:44) 06: Energy Harvesting and Converting Devices and Materials Session Chair:Hidetoshi Suzuki (Univ. of Miyazaki), Takuya Hoshii (Science Tokyo)	(13:30-14:00) 08: Low Dimensional Devices and Materials Session Chair:Takuo Sasaki (QST), Masafumi Jo (RIKEN)	(13:30-13:46) 03: Heterogeneous and 3D Integration / Interconnect / MEMS Session Chair:Mayumi B. Takeyama (Kitami Inst. of Technology), Yoshiyuki Oba (Sony Semiconductor Manufacturing Corp.)	(13:30-13:42) 12: Advanced and Innovative Circuits / Systems Interacting with Devices and Materials Session Chair:Jerald Yoo (Seoul National Univ.), Yasuhiro Ogasahara (AIST)	(13:30-13:56) 07: Organic / Molecular / Bio-electronics Session Chair:Hisashi Kino (Kyushu Univ.), Kazuhiro Takahashi (Toyohashi Univ. of Technology)

Wednesday, September 16

Poster Session (15:00-17:00) Poster Hall (303+304, 3rd Floor)

01: Advanced CMOS: Material Science / Process Engineering / Device Technology

PS-01-01

Drain-Polarity-Controlled RFET Using Drain-Offset Electrostatic Modulation

[◦]Seung-Hwa Choi¹, Seung-Hyun Lee¹, Won-Ju Cho¹, ¹Kwangwoon Univ. (Korea)

PS-01-02 (Late News)

Fabrication and evaluation of Metal/n⁺-Ge Contacts with Extremely Low Contact Resistivity

[◦]Yajun Feng¹, Chia-Yuan Kao¹, Chao-Ching Cheng¹, Iuliana Radu¹, Guang-Li Luo³, Keisuke Yamamoto^{4,5}, Dong Wang^{1,5}, ¹IGSES, Kyushu Univ. (Japan), ²Corp. Res., TSMC (Taiwan), ³TSRI, NIAR (Taiwan), ⁴REISI, Kumamoto Univ. (Japan), ⁵FES, Kyushu Univ. (Japan)

PS-01-03

Implementing Single Transistor Logic and Memory with Dual-Source/Drain RFET

[◦]Sandeep Semwal¹, Pin Su¹, Abhinav Kranti², ¹Institute of Electronics, National Yang Ming Chiao Tung University (NYCU) (Taiwan), ²Indian Institute of Technology Indore (India)

PS-01-04

High-Performance NC-RFGAAFETs Utilizing Hf_{0.3}Zr_{0.7}O₂ Superlattice Dielectric for Low Power Cryogenic Application

[◦]Chia-Yi Lin¹, Cheng-Yueh Cheng¹, Yueh-Chun Wu¹, Chao-Wei Wu¹, Hsin-Hui Hu², Yung-Chun Wu¹, ¹National Tsing Hua Univ. (Taiwan), ²National Taipei Univ. of Technology (Taiwan)

PS-01-05

Investigation into Asymmetric Signal Track Allocation of Dual-sided CFET

[◦]Xingjian Mao¹, Rui Guo¹, Haoran Lu¹, Runsheng Wang¹, Xia An¹, Heng Wu¹, ¹Peking University (China)

PS-01-06 (Late News)

Performance Evaluation of Unmerged Source/Drain Epitaxy in 7-angstrom node monolithic complementary field-effect transistors

[◦]SANGUK LEE¹, Sheng Yang², Halil Kükner², Lynn Verschueren², Jürgen Bömmels², Geert Eneman², Fabian M Buefler², Maarten Van de Put², Anita Farokhnejad², Geert Hellings², Rock-Hyun Baek¹, ¹POSTECH (Korea), ²IMEC (Belgium)

PS-01-07

Interconnect Routing Optimization for High-Performance CFET 6T-SRAM

[◦]Jimyoungh Lee^{1,2}, KwangYoung Lee¹, Minhyung Kang^{1,2}, Jongwook Jeon², ¹Samsung Electronics (Korea), ²Sungkyunkwan Univ. (Korea)

PS-01-08

Process Driven Optimization of Channel Strain Retention in Vertically Stacked CFETs

[◦]Sumant Sarkar¹, [◦]Timothy Yang², Tom Mountsier¹, Benjamin Vincent¹, ¹Lam Research, USA (USA), ²Lam Research, Japan (Japan), ³Lam Research, France (France)

PS-01-09

Thickness-Dependent Phonon-Limited Electron Mobility in Si (001) Films from First-Principles Calculations

[◦]Yi-Hsin Tu¹, Gengchiao Liang¹, ¹The Univ. of National Yang Ming Chiao Tung (Taiwan)

PS-01-10

Mechanical Stability and Adhesion of Nanosheets under Capillary Forces during the Wet Processes in Gate-all-around FETs Fabrication

[◦]Kenzo Manabe¹, Chia-Tsong Chen¹, Toshihiro Narushima¹, Ryutaro Nishino¹, Toshifumi Irisawa¹, Yoshihiro Hayashi¹, ¹National Inst. of Advanced Indus. Sci. and Tech. (Japan)

PS-01-11

Unraveling Intrinsic Multitrap Capture Kinetics from Stochastic Drain-Current Transients

[◦]Dokyoungh Lee¹, Sungho Kim¹, ¹Ewha Womans Univ. (Korea)

PS-01-12

Monolithic 3D Heterogeneous MoS₂-Si Integration for Memory-in-LogicApplications: Common-Gate CFEts and Multibit 2T eDRAM

[◦]Jin-Kai Lin¹, [◦]Li-Hsuan Li¹, Chao-Hui Yeh¹, Chih-Chao Yang², ¹National Tsing Hua University (Taiwan), ²Taiwan Semiconductor Research Institute (Taiwan)

PS-01-13

Performance Analysis of Dimple Structure in MINFIS FE-NAND Flash Memory

[◦]Jesun Park¹, Myounggon Kang¹, ¹University of seoul (Korea)

PS-01-14

Band-edge-controlled Schottky barriers at ICO:H/Ge interfaces revealed by temperature-dependent C–V analysis

[◦]Tatsuro Maeda¹, Hiroyuki Ishii¹, Rahmat Hadi Saputro¹, Chia-Tsong Chen¹, Takashi Koida¹, Wen Hsin Chang¹, ¹National Institute of Advanced Industrial Science and Technology (Japan)

PS-01-15

Significant performance improvement of GeSn-based RTD through interface planarization by Ge buffer introduction and H₂ pressure control in MBE

[◦]Shigehisa Shibayama¹, Shota Torimoto¹, Mitsuo Sakashita¹, Masashi Kurosawa¹, Osamu Nakatsuka^{1,2}, ¹Grad. Sch. of Eng., Nagoya Univ. (Japan), ²IMaSS, Nagoya Univ. (Japan)

02: Advanced and Emerging Memories / New Applications

PS-02-01

High Bandwidth Dynamic Flash Memory (HBD) with Planar Accessibility

[◦]Koji Sakui¹, Takayuki Ohba¹, ¹Institute of Science Tokyo (Japan)

PS-02-03

Nitrogen plasma engineering of TiN bottom electrodes for enhanced ferroelectric properties in TiN/Hf_{0.5}Zr_{0.5}O₂/TiN capacitors

[◦]Tung-Ming Pan^{1,2}, [◦]Yung-En Cheng¹, Shih-Ting Chuang¹, Wei-Che Weng¹, Jim-Long Her¹, ¹Chang Gung University (Taiwan), ²Chang Gung Memorial Hospital (Taiwan)

PS-02-04

Enhancing 3D Flash Memory Reliability by Stress Alleviating Techniques

[◦]Jayavel Pachamuthu¹, Yanfang Shi², Peng Zhang¹, Deepanshu Dutta¹, ¹SanDisk Corporation (USA), ²SanDisk Information Technology (China)

PS-02-06

Hot Carrier Injection Dependence on Select Gate Patterns during GIDL Erase Operation in 3D NAND Flash Memory

[◦]Jae Hyun Nam¹, Jin Ho Chang¹, Suk-Kang Sung², Jun Hyoung Kim², Woo Young Choi¹, ¹Seoul National Univ. (Korea), ²Samsung Electronics Co. (Korea)

PS-02-07

Improving Erase Speed and Retention Characteristics Using Bandgap Engineering and Odd/Even Erase Scheme in 3D NAND Flash Memory

[◦]Kyungmin Lee¹, Myounggon Kang¹, ¹Univ. of Seoul (Korea)

PS-02-08

Impact of MOSFET Sizing and Supply Voltage Scaling on Recall Window Characteristic of 6T2C Nonvolatile SRAM

[◦]Minseok Kim¹, Myounggon Kang¹, ¹Univ. of Seoul (Korea)

PS-02-09

Enhanced Retention Characteristics in 3D NAND Flash Memory by Suppressing Lateral Migration Using a Convex Structure

[◦]Beomgeun Lee¹, Myounggon Kang¹, ¹University of Seoul (Korea)

PS-02-10

Initial-State-Controlled Photonic Reservoir Computing in a Two-Terminal Memristive Device

[◦]Yumeng Zheng¹, Ryosuke Murai¹, Kentaro Kinoshita¹, ¹Tokyo Univ. of Science (Japan)

PS-02-11

Coupled Al₂O₃ Interlayer and HZO Ferroelectric Layer Thickness Engineering for Memory Window–Operation Voltage–Retention Optimization in MIFIS FeFETs

[◦]Jia Yang^{1,2}, Runhao Han¹, hu Tao², Kaiyi Li^{1,2}, Xianzhou Shao², Hao Xu², Xiaolei Wang², ¹The School of Advanced Interdisciplinary Sci., Univ. of Chinese Academy of Sci. (China), ²State Key Lab. of Fabrication Tech. for Integrated Circuits, Inst. of Microelectronics of the Chinese Academy of Sci. (China)

PS-02-12

Synaptic Plasticity with Varied Retention in Interface-Engineered Protonic Oxide Transistors

[◦]RUPAM MANDAL¹, Kazuya Terabe¹, Tohru Tsuruoka¹, ¹National Institute for Materials Science (Japan)

PS-02-13

Analysis of Nitride Thickness Effects on Programming Characteristics in Al₂O₃/Si₃N₄ Charge Trap Devices

[◦]Youngjin Jeon¹, Joon Hwang², Min-Kyu Park³, Jong-Ho Lee², Myounggon Kang¹, ¹Univ. of Seoul (Korea), ²Seoul National Univ. (Korea), ³Gachon Univ. (Korea)

PS-02-14

A Superlattice-like Memristive Device for Artificial Synapses and Hardware Security

[◦]Yong-Jyun Wang¹, Rupam Mandal¹, Tohru Tsuruoka¹, Kazuya Terabe¹, ¹Research Center for Materials Nanoarchitectonics, National Institute for Materials Science (Japan)

PS-02-15

Phase-Coexistence Engineering in FE-AFE HZO Bilayer MFM Capacitors for Improved Endurance, Imprint Stability, and Switching Nucleation

[◦]Tsz Ying Pun¹, Cheng-Hung Wu², Tsung-Ying Lin¹, William Cheng-Yu Ma³, Vita Pi-Ho Hu², Chun-Jung Su^{1,4}, ¹Dept. Electrophysics, National Yang Ming Chiao Tung Univ. (Taiwan), ²Graduate Inst. Electronics Engineering, National Taiwan Univ. (Taiwan), ³Dept. Electrical Engineering, National Sun Yat-sen Univ. (Taiwan), ⁴Taiwan Semiconductor Res. Inst., National Inst. of Applied Res. (Taiwan)

PS-02-16

Si/SiGe Quantum-Well FET Enabling Memory and Artificial Synapse Functions for Neuromorphic Computing

[◦]Anjana Rajan¹, Jiayuan Zhang¹, Yu-Tzu Liao¹, Jhonny Tiscareño Ramirez¹, Joachim Knoch², Detlev Grützmacher¹, Dan Buca¹, Andreas Mai^{3,4}, Yuji Yamamoto^{3,5}, Qing-Tai Zhao¹, ¹PGI-9 , Forschungszentrum Jülich (Germany), ²RWTH Aachen Univ. (Germany), ³IHP-Leibniz Inst. for High Performance Microelectronics (Germany), ⁴Technische Hochschule Wildau (Germany), ⁵Nagoya Univ. (Japan)

PS-02-17

Neuromorphic Vision Tasks on a Bi₂O₃Se Optoelectronic Synapse: From Conductance Plasticity to Hardware-Constrained Deep Learning

[◦]Huynh-Uyen-Phuong Nguyen¹, Chen-Yu Lin¹, Chun-Wei Li¹, Po-Wen Chiu¹, ¹National Tsing Hua University (Taiwan)

PS-02-18

Vacuum evaporation of ternary Ge-S-X (X=Te, Sn) thin films for the selector application

[◦]Daiki Inose¹, Mihyeon Kim¹, Shogo Hatayama², Yuta Saito^{1,2,3}, ¹Tohoku Univ. (Japan), ²SFRC, AIST (Japan), ³GXT, Tohoku Univ. (Japan)

PS-02-19

Polarity Dependent Rectification Mechanism in MoS₂ Interfacial Layer Self-Rectifying RRAM

[◦]Yoojin Shin¹, Minwoo Kwon¹, ¹Seoul National University of Science and Technology (Korea)

PS-02-20
Co-Optimization of Channel Interlayer Nitridation and Al₂O₃/HfO₂/Al₂O₃ Gate Interlayer for 3D NAND Compatible FeFETs
*Min Liao¹, Hao Xu¹, Runhao Han¹, Xianzhou Shao¹, Xinpei Jia¹, Yuanyuan Zhao¹, Xiaoyu Ke¹, Xiaqing Sun¹, Junshuai Chai¹, Jinjuan Xiang², Xiaolei Wang¹, Wenwu Wang¹, ¹Institute of Microelectronics, Chinese Academy of Sciences (China), ²Beijing Superstring Academy of Memory Technology (China)

PS-02-21
Polarity-Tunable WSe₂ Ferroelectric FETs for Multistate Searching Enabled by BEOL Sequential 3D Integration
*Pin-Yuan Wang¹, Yu-Wei Chen¹, Bing-Hong Chen¹, Li-Heng Han¹, Duen-Hong Jheng¹, Bo-Wei Yang¹, Yu-Lin Li¹, Pin-Yi Li¹, Chih-Chao Yang², Chao-Hui Yeh¹, ¹National Tsing Hua University, Hsinchu (Taiwan), ²Taiwan Semiconductor Research Institute, Hsinchu (Taiwan)

PS-02-22
Flexible Broadband Optoelectronic Memristor Based on IGZO Homojunction with Inherent Self-Rectifying Characteristics
*Haoze Yu^{1,2}, Zijian Wang^{1,2}, Xueming Fan^{1,2}, Baichen Zhu^{1,2}, Jie Wang^{1,2}, Yishu Zhang^{1,2}, ¹College of Integrated Circuits,Zhejiang Univ. (China), ²ZJU-Hangzhou Global Scientific and Technological Innovation Center (China)

PS-02-23
Double-Gate Mixed Phase Boundary FETs for Robust On-Chip Binary Neural Networks
*Yeonseop Shin¹, Eun Chan Park², Daewoong Kwon², Jangsaeng Kim^{1,3,4}, ¹Department of Semiconductor Eng., Sogang Univ. (Korea), ²Department of Electronic Eng., Hanyang Univ. (Korea), ³Department of Electronic Eng., Sogang Univ. (Korea), ⁴Department of System Semiconductor Eng., Sogang Univ. (Korea)

PS-02-24
Improvement of Cell Characteristics using Localized Doping for Convex and Concave Channel Structures in 3D NAND Flash
Daewoong Kang¹, *Siwon Park^{1,2}, Hojun Lee^{1,3}, Hoyeon Ko^{1,3}, Jeongnam Youn¹, Youngho Jung⁴, ¹Seoul National University (Korea), ²Soongsil University (Korea), ³Chung-Ang University (Korea), ⁴Daegu University (Korea)

PS-02-26
Effects of Oxygen Vacancy on the Variability of Hafnia Ferroelectrics
*Hosu Park¹, Sangwan Kim¹, Daewoong Kwon², Wonjun Shin¹, ¹Sungkyunkwan Univ. (Korea), ²Hanyang Univ. (Korea)

PS-02-27
Nb/TiN Gate-Stack Engineering for Enhanced Polarization Switching and Access- Rate Reliability in HZO Ferroelectric MFIS Capacitors
Yu-Ting Chen¹, *Cheng-Hung Wu¹, Hsuan-Yi Yang¹, Yi-Cheng Lin¹, Chun-Jung Su^{2,3}, Vita Pi-Ho Hu¹, ¹Graduate Inst. of Electronics Eng., National Taiwan Univ. (Taiwan), ²Dept. of Electrophysics, National Yang Ming Chiao Tung Univ. (Taiwan), ³Taiwan Semiconductor Res. Inst., National Inst. Applied Res. (Taiwan)

PS-02-28
Positive Bias Stress (PBS) Stability Improved by X-ray Irradiation for IGZO Ferroelectric Field-Effect Transistors
*Che-Chi Cheng¹, Zao-Feng Lou¹, I-Chun Cheng¹, Min-Hung Lee¹, ¹National Taiwan University (Taiwan)

PS-02-29
Novel Methods Enhancing GIDL current to Improve the Erase Performance in 3D NAND Flash Memory
Daewoong Kang¹, *Hoyeon Ko^{1,2}, Hojun Lee^{1,2}, Siwon Park^{1,3}, Jeongnam Youn¹, Youngho Jung⁴, ¹Seoul National University (Korea), ²Chung-Ang University (Korea), ³Soongsil Univ. (Korea), ⁴Daegu University (Korea)

PS-02-30
Ferroelectric Al₂O₃-Embedded Hf_{0.5}Zr_{0.5}O₂ Channel-last Transistors with a 950°C Thermal Budget for 3D NAND Application
*Wenbo Fan¹, Xiaoyu Ke², Xiaolei Wang², ¹Univ. of Chinese Academy of Sciences (China), ²Inst. of Microelectronics of the Chinese Academy of Sciences (China)

PS-02-31
TiO₂ Interlayer Engineering and Recovery Strategies for Enhancing Cycling-induced Reliability in HfO₂-Based Ferroelectric Capacitors
*Fei Yu^{1,2}, Yutai Man², Wanmei Zhang², Xingcheng Jin¹, Chongyong Guo³, Hongbo Li², Huan Liu^{1,2}, Bing Chen^{1,2}, Yan Liu^{1,2}, Xiao Yu^{1,2}, Genquan Han^{1,2}, ¹Faculty of Integrated Circuit, Xidian Univ. (China), ²Hangzhou Inst. of Tech., Xidian Univ. (China), ³China Resources Microelectronics Ltd. (China)

PS-02-32
Quantitative Bit-Precision Evaluation in Ferroelectric Synaptic Transistors Using Low-Frequency Noise Spectroscopy
*Jaehong Park¹, Daewoong Kwon², Wonjun Shin¹, ¹Sungkyunkwan Univ. (Korea), ²Hanyang Univ. (Korea)

PS-02-33
SOI FinFET-Integrated HfO₂/SrTiO₃ RRAM Cells for Energy-Efficient In-MemoryHyperdimensional Computing
*Chih-Chia Lin¹, Chao-Hui Yeh¹, Chih-Chao Yang², Bo-Cheng Chen¹, ¹National Tsing Hua University (Taiwan), ²Taiwan Semiconductor Research Institute (Taiwan)

PS-02-34 (Late News)
Giant Perpendicular Magnetic Anisotropy in Mo/CoFeB/MgAl₂O₄ Multilayers for 5 nm CMOS process compatibility
*Daiki Ito¹, Kosei Tsureo¹, Sho Kagami¹, Quang Le², Brian York², Cherngye Hwang², Xiaoyong Liu², Son Le², Maki Maeda³, Tuo Fan³, Yu Tao³, Hisashi Takano³, Hai Nam Pham¹, ¹Inst. of Sci. Tokyo (Japan), ²Western Digital Inc. Great Oaks site (USA), ³Western Digital Inc. Fujisawa site (Japan)

PS-02-35 (Late News)
High-Temperature Operating Margins of Sc-Doped Amorphous GaO_x Memristors for Memory and Neuromorphic Applications
*Yuto Shimizu¹, Yuki Komizo¹, Zhuo Diao¹, Tetsuya Tohei¹, Akira Sakai^{1,2}, ¹Graduate School of Engineering Sci., The Univ. of Osaka (Japan), ²Spintronics Res. Network Division, Inst. for Open and Transdisciplinary Res. Initiatives, The Univ. of Osaka (Japan)

PS-02-36 (Late News)
Ferroelectric Reservoir Computing Using Asymmetric Double-Layered HZO MFIMF Capacitor with Staggered Polarization Switching
*DongHee Lee¹, Ryosho Nakane¹, Shinichi Takagi^{1,2}, Mitsuru Takenaka¹, Kasidit Toprasertpong¹, ¹The Univ. of Tokyo (Japan), ²Teikyo Univ. (Japan)

03: Heterogeneous and 3D Integration / Interconnect / MEMS

PS-03-01
Innovative Fine-Pitch Bonding Process via DLP 3D-Printed Masks for High-Aspect-Ratio Cu-Pin Packaging
*Jihoon Kim¹, Jin-Heong Yim¹, Young Soo Ko¹, Hong Kyoong Choi¹, Sukeun Yoon¹, ¹Kongju National Univ. (Korea)

PS-03-02
Controlling Glass Microchannel Surface Morphology via Atmospheric Pressure Plasma Surface Modification and HCl Etching
*Nobuya Mineyuki¹, Yasuo Hayashi², Seiichiro Higashi¹, ¹Hiroshima Univ. (Japan), ²AGC Inc. (Japan)

PS-03-03
Low-Temperature Depth-Uniform SiC Coating of MWCNT Forests by Vinylsilane Thermal CVD for CNT-Sheet Electrode Applications
*Jiajin Wang¹, Naoto Oshima¹, Kenichi Uehara^{2,3}, Yasuo Nakai⁴, Shinya Fukuchi⁴, Shigeo Yasuhara², Wakana Takeuchi¹, ¹Aichi Inst. of Tech. (Japan), ²Japan Advanced Chemicals Ltd. (Japan), ³Tohoku Univ. (Japan), ⁴Koatsu Gas Kogyo Co., Ltd. (Japan)

PS-03-04
High-Performance Ferroelectric negative capacitance FinFET with solid-solution HZO Gate Stack for Low-Power RF Applications
*Cheng-Yueh Cheng¹, Chun-Wei Wu¹, Chia-Yi Lin¹, Chao-Wei Wu¹, Yueh-Chun Wu¹, Fu-Ju Hou², Hsin-Hui Hu², Yung-Chun Wu¹, ¹National Tsing Hua University (Taiwan), ²National Taipei University of Technology (Taiwan), ³Taiwan Semiconductor Research Institute (Taiwan)

PS-03-05
Atomic Layer Etching of Molybdenum Thin Films for Nanoscale Interconnect Patterning
*Hong Ju Yang¹, Hojin Chung¹, Daehan Won¹, In-Hwan Baek¹, Chee Won Chung¹, ¹INHA University (Korea)

PS-03-06 (Late News)
Temperature Distribution Measurement of an On-State GaN-HEMT Device in Lateral and Depth Directions using Raman Thermometry
*Kensuke Sagawa¹, Takuya Hoshii¹, Anton Myalitsin^{2,3}, Hiroyuki Ryoson², Hitoshi Wakabayashi⁴, Takashi Yoda², Takayuki Ohba², Kuniyuki Kakushima¹, ¹School of Eng., Science Tokyo (Japan), ²WOW Alliance, Science Tokyo (Japan), ³ANVOS Analytics Cor., Ltd. (Japan), ⁴Inst. of Integrated Res., ScienceTokyo (Japan)

PS-03-07 (Late News)
Control of Crystallinity and Preferred Orientation of TiN Films for Electrode Applications
*Masaru Sato¹, Mayumi B. Takeyama¹, ¹Kitami Inst. of Tech. (Japan)

PS-03-08 (Late News)
Signal and Power Integrity Co-Analysis of a High-Speed System-in-Package with Through-Silicon Interposer for Logic-Memory Integration
Yeong-Lin Lai¹, *Wen-Jung Chiang¹, ¹National Changhua University of Education (Taiwan)

04: Power / High-speed Devices and Materials

PS-04-01
Enhancement-Mode Recessed-Gate InAlGaN/GaN HEMTs with HfAlO Gate Dielectric and Gate Field Plate
*Chung-Che Shen¹, Yi-Hsuan Chang¹, Yan-Kuei Wu¹, Wei-Chou Hsu^{1,2}, ¹Inst. of Microelectronics, Dept. of Electrical Eng., National Cheng Kung Univ. (Taiwan), ²Academy of Innovative Semiconductor and Sustainable Manufac., National Cheng Kung Univ. (Taiwan)

PS-04-02
Enhanced Channel Conduction in Normally-Off AlGaIn/GaN HEMTs Using an MIS-Integrated Dual p-GaN Gate
Yue-ming Hsin¹, Yan-Ji Chen¹, *Kun Chun Wu¹, Krishna Sai Sriramadasu¹, Yi-Nan Wang¹, ¹National Central university (Taiwan)

PS-04-03
Fin Geometry Effects on Device Characteristics in Wide-Width 30V HV FinFETs for 3D NAND Periphery
*Sohyeon LEE^{1,2}, Jimyoung LEE^{1,2}, Jongwook Jeon¹, ¹Sungkyunkwan Univ. (Korea), ²Samsung Electronics (Korea)

PS-04-04
β-Ga₂O₃ Heterostructure Lateral Schottky Diode Fabricated via Mist-CVD
*Kai-Ting Chang¹, Hao-Chun Hung², Chia-Cheng Hsu², Rong-Ming Ko², Wei-Chou Hsu², ¹National Cheng Kung Univ. Inst. of Microelectronics Eng. (Taiwan), ²National Cheng Kung Univ. Academy of Innovative Semiconductor and Sustainable Manufac. (Taiwan)

PS-04-05
Enhancement-Mode InAlN/GaN MIS-HEMTs Enabled by a HfO₂-Based Plasma-Induced-Oxidation Charge-Trapping Layer
*Peiran Wang¹, Ziyang Wang¹, Shoucheng Xu¹, Wenchuan Tao¹, Nick Tao², Hongyu Yu², Qing Wang¹, ¹Southern University of Science and Technology (China), ²Maxscend Microelectronics Co., Ltd. (China), ³School of Integrated Circuit, Shenzhen Polytechnic University (China)

PS-04-06
Measurement and Simulation of Hot Carrier Effects Induced Degradations in 1200 V Silicon Carbide Power MOSFETS under Direct Current Stress
°Wen kai Li¹, Shilong Dai¹, Guowei Ma¹, Yidan Tang², Pengying Chang¹, ¹Beijing Univ. of Technology (China), ²Inst. of Microelectronics of the Chinese Academy of Sciences (China)

PS-04-07
Interface state densities near the conduction and valence band edges in SiC/SiO₂ structures formed with nitridation process
°Shuya Hiraiwa¹, Kyota Mikami¹, Mitsuaki Kaneko¹, Tsunenobu Kimoto¹, ¹Kyoto University (Japan)

PS-04-08
TCAD-Assisted Separation of Low-Dose Enhancement and High-Dose Degradation Mechanisms in Proton-Irradiated GaN HEMTs
°Yi-Lun Huang¹, Shao-Chun Huang¹, Chao-Hsin Wu¹, ¹National Taiwan University (Taiwan)

PS-04-09
Revealing RF Performance Trade-Offs via T-Gate Optimization in n⁺-GaN Regrown-Contact AlGaIn/GaN HEMTs
°Kun-Yang Jhang¹, Ren-Hong Zhang¹, Yi-Lun Huang¹, Po-Yu Tseng¹, Chao-Hsin Wu¹, ¹National Taiwan Univ. (Taiwan)

PS-04-10
Measurement and Physics-Based Analysis of the Forward Gate Current in Schottky-Gate AlGaIn/AlN/GaN HEMTs
°Ismaël Charlet¹, Fanny Morisot¹, Yveline Gobil¹, Arnaud Anotta¹, Erwan Morvan¹, ¹CEA-Leti (France)

PS-04-11
Vertical-Type Ohmic Contacts for Diamond Power Devices
°Shunsuke Shoji^{1,2}, Kosuke Ota¹, Nobutaka Oi¹, Ryo Yoshida^{1,2}, Akihiko Watanabe³, Ichiro Omura³, Kenji Ueda², Tatsuya Fujishima¹, ¹Power Diamond Systems (Japan), ²Waseda University (Japan), ³Kyushu Institute of Technology (Japan)

PS-04-12
Electrical Characteristics of Nitrogen-Doped Current Blocking Layer for Vertical Diamond MOSFETs
°Ryo Yoshida^{1,2}, Nobutaka Oi¹, Shunsuke Shoji^{1,2}, Akihiko Watanabe³, Ichiro Omura³, Kenji Ueda², Tatsuya Fujishima¹, ¹Power Diamond Systems Inc. (Japan), ²Waseda Univ. (Japan), ³Kyushu Inst. of Tech. (Japan)

PS-04-13
Contact Field Plate Length Engineering for Mitigating Hot-Carrier-Induced Drain Current Degradation in n-Type LDMOS Devices
°JIA - QIU¹, QIANWEN - GUO¹, RAN - TAO^{1,2}, DAWEI - GAO^{1,2}, KAI - XU^{1,2}, JUNKANG - LI^{1,2}, RUI - ZHANG^{1,2}, ¹Zhejiang Univ. (China), ²ZJU-Hangzhou Global Sci. and Tech. Innovation Center (China)

PS-04-14
Mobility Preservation and Degradation Governed by Recess Depth in Recessed Gate Al₂O₃/AlGaIn/GaN MIS-HEMTs
°Shundai Yamao¹, Kishi Sekiyama¹, Suguru Terai¹, Masaki Ishiguro¹, Ali Baratov¹, Naeemul Islam¹, Masaaki Kuzuhara², Susumu Yonezawa¹, Joel Tacla Asubar¹, ¹The Univ. of Fukui (Japan), ²The Osaka Gakuin Univ. (Japan)

PS-04-15
High-Performance Insulating Epitaxy on Secondary n-SiC Substrates for RF Applications
°Tsung Ming Chao¹, Hsia Yu Chen¹, Lung Hsing Hsu², Yu Yun Lin³, J Andrew Yeh¹, ¹National Tsing Hua University (Taiwan), ²Taiwan Semiconductor Research Institute (TSRI) (Taiwan), ³National Cheng Kung University (Taiwan)

PS-04-16
Comparative Analysis of Abnormal Degradation Mechanisms in 4H-SiC JMOS and VDMOS under Repetitive Avalanche Stress across Various Temperatures
°YI-PIN LEE¹, Kung-Yen Lee¹, Yan-Yu Wen¹, Jung-Chieh Chen¹, Chun-Wei Yeh¹, Tien-Chin Shih¹, Eugene Lin², Aaron Chung², ¹National Taiwan Univ. (Taiwan), ²Chroma ATE Inc. (Taiwan)

PS-04-17
Physical Origin and Suppression of Geometric Components in Charge Pumping of 4H-SiC nMOSFETs
°Shuto Oi¹, Mitsuru Sometani², Hirohisa Hira², Mitsuo Okamoto², Tetsuo Hatakeyama¹, ¹Toyama Prefectural Univ. (Japan), ²National Inst. of Advanced Industrial Science and Technology (AIST) (Japan)

05: Photonics: Devices / Integration / Related Technology

PS-05-01
Beyond 45-GHz-Bandwidth Si Mach-Zehnder Modulator with Interdigitated p-n Junction Structure for Future AI-Data Center Network
°Chih-Hsien Cheng¹, Atsushi Matsumoto¹, Naokatsu Yamamoto¹, Gong-Ru Lin², Kouichi Akahane¹, Satoshi Shinada¹, ¹NICT (Japan), ²National Taiwan Univ. (Taiwan)

PS-05-02
Vector Beam with Phase-Controlled Angular Momentum from InGaAsP Microdisk Laser
Cheng-Ju Li^{1,2}, °Zheng-Zhe Chen^{1,3}, Chi-Ti Hsieh¹, Yi-Shan Wu¹, Meng-Shu Rao^{1,2}, Chia-Hung Lin^{1,2}, Shu-Wei Chang^{1,2}, Min-Hsiung Shih^{1,2,4}, ¹Academia Sinica (Taiwan), ²National Yang Ming Chiao Tung Univ. (Taiwan), ³National Taiwan Univ. (Taiwan), ⁴National Sun Yat-sen Univ. (Taiwan)

PS-05-03
Humidity-Stable Zero-Bias 254-nm Perovskite Photodetector Using a Hydrophobic Li-Doped NiO Hole Transport Layer
°Hyung Wook Kim¹, Same Yoon¹, Uhyeong Noh¹, Joo Hyuk Park¹, Chung Wung BARK¹, ¹The Univ. of Gachon (Korea)

PS-05-04
Enhanced Performance of Quantum Dot Spin-Polarized Light-Emitting Diode via Post-Deposition Annealing of MgO/CoFeB/Mo Spin Injector
°Itsu Tanaka¹, Daiki Mineyama¹, Shinnosuke Wada¹, Ayano Morita¹, Hiroto Kise¹, Junichi Takayama¹, Akihiro Murayama¹, Satoshi Hiura¹, ¹IST, Hokkaido Univ. (Japan)

PS-05-05
Time-Resolved Quantum FDTD Simulation of Dynamic Quantum Interference in Photonic Circuits
°Masahiro Kato¹, Satofumi Souma¹, ¹Kobe Univ. (Japan)

PS-05-06
Au Nanoparticle-Decorated Mist-CVD Ga₂O₃ Deep-UV Photodetectors with Enhanced Photoresponse
°Chien-Sheng Cheng¹, Shiou-Ying Cheng², Wen-Chau Liu^{1,2}, Wei-Chou Hsu^{1,2}, ¹Academy of Innovative Semiconductor and Sustainable Manufacturing, National Cheng Kung University (Taiwan), ²Institute of Microelectronics, National Ilan University (Taiwan), ³Department of Electrical Engineering, National Ilan University (Taiwan)

PS-05-07
High temperature PVD AlN buffer growth on Si (111) for epitaxial Ga(Al)N
°Houssem BOUKHALFA¹, Mathieu Bernard², Fabrice Perrin², Helen Zhao³, Dan Deyo⁴, Shiva Rafi⁵, Guillaume Rodriguez², Lavinia E. Nistor¹, ¹Applied Materials (France), ²CEA LETI, Minattec, Univ. Grenoble Alpes (France), ³Applied Materials (China), ⁴Applied Materials (USA), ⁵Applied Materials, Inc. (USA)

PS-05-08
An Analytical Capacitance Model for Vertical Pinned Photodiodes
°Jiwon Bak¹, Jiwon Lee¹, ¹Pohang Univ. of Sci. and Tech. (POSTECH) (Korea)

PS-05-09
Passivation of the InP-Insulator Interface for Dark Current Reduction in InGaAs SWIR Detectors
°Maria Sanchez^{1,2}, Cyril Cervera², Jacques Baylet², Romain Paquet², Marc Veillerot², Olivier Saxod², Sophie Barber², Nathalie Sommaca¹, François Nardelli², Denis Mariolle², François Boulard², Frederic Boeuf¹, ¹STMicroelectronics (France), ²CEA-Leti (France)

PS-05-10
Near-Unity Internal Quantum Efficiency in Mg2Si SWIR Photodiodes Achieved by Reverse-Bias Suppression of P-Layer Recombination
°Ryosuke Furuta¹, Kosuke Shimano¹, Shunya Sakane¹, Haruhiko Udono¹, ¹The Univ. of Ibaraki (Japan)

PS-05-11
Substrate Orientation-Dependent Oxygen Incorporation and Superconductivity in thin NbN Films deposited by Reactive Sputtering
°WEI CHANG^{1,2}, Yu-Ting Lin², Ping-Feng Chi², Sheng-Tien Lin¹, Wen-Hao Chang², Ming-Jye Wang², Jing-Jie Wang¹, Jing-Wen Zhang¹, Yung-Lan Chuang¹, Tung-Sen Lin¹, Ming-Lun Lee³, Jinn-Kong Sheu¹, ¹National Cheng Kung Univ. (Taiwan), ²Academia Sinica (Taiwan), ³Southern Taiwan Univ. of Science and Technology (Taiwan)

06: Energy Harvesting and Converting Devices and Materials

PS-06-01
SGB Tilt Evolution and Crystallinity in Metamorphic InGaAs Solar Cells
°Haruto Furukawa¹, Naoki Hashimoto¹, Akio Ogura², Mitsuru Imaizumi², Hidetoshi Suzuki¹, ¹The Univ. of Miyazaki (Japan), ²The Univ. of Tsukuba (Japan), ³The Univ. of Sanjo City (Japan)

PS-06-02
Thermal Stability Challenges in Moisture-Resistant Ionic Liquid-Assisted Perovskite Films
°Yugo Nakahara¹, Ayhan Yurtsever¹, Takuya Kurihara¹, Ruka Yazawa¹, Masahiro Nakano¹, Makoto Karakawa¹, Motohiro Mizuno¹, Jean Michel Nunzi^{1,2}, Takeshi Fukuma¹, Tetsuya Taima¹, Md. Shahiduzzaman¹, ¹Kanazawa Univ. (Japan), ²Queens Univ. (Canada)

PS-06-03
Selective Adsorptive Recovery of Lead and Valuable Metals from Acidic Leachates of Flexible Perovskite Solar Cells
°Ruka Yazawa¹, Yugo Nakahara¹, Masahiro Nakano¹, Makoto Karakawa¹, Jean Michel Nunzi^{1,2}, Katsuhiko Maeda¹, Hiroshi Hasegawa¹, Tetsuya Taima¹, Md. Shahiduzzaman¹, ¹Kanazawa Univ. (Japan), ²Queens Univ. (Canada)

PS-06-04
Scalable Fabrication of Nanoimprint Master Molds via Dry Rubbing and Ice Transfer towards Light Trapping Structures in Silicon Tandem Solar Cells
°YUTONG WU¹, YASUYOSHI KUROKAWA^{1,2}, NORITAKA USAMI^{1,3,4}, ¹Graduate School of Engineering, Nagoya Univ. (Japan), ²Graduate School of Science and Engineering, Kansai Univ. (Japan), ³Institutes of Innovation for Future Society (InFuS), Nagoya Univ. (Japan), ⁴Institute of Materials and Systems for Sustainability (IMaSS), Nagoya Univ. (Japan)

PS-06-05
The Effects of Mg Doping and Irradiation Wavelength on the Photon-Enhanced Thermionic Emission Characteristics of Cs-Deposited InGaIn Emitters
°Kaisei Suzuki¹, Shion Araki¹, Shigeya Kimura², Hisao Miyazaki², Akihisa Ogino¹, ¹Shizuoka Univ. (Japan), ²Toshiba Corp. (Japan)

PS-06-06
Controlled Growth and Active Site Modulation in 2D Transition Metal Dichalcogenides for Artificial Photosynthesis: Edge, Vacancy, Dopant, and Janus Tailoring
°Mohammad Qorbani¹, Pin-Pin Huang², Yu-Chun Yeh², Raha Shafieepour², Kuei-Hsien Chen³, Li-Chyong Chen², ¹National Taiwan Normal Univ. (Taiwan), ²National Taiwan Univ. (Taiwan), ³Academia Sinica (Taiwan)

PS-06-07
Long-Alkyl-Chain Surfactant Molecular Wrapping for Air-Stable n-Type Carbon Nanotube Thermoelectrics
°Shinichi Hata¹, ¹Sanyo-Onoda City University (Japan)

07: Organic / Molecular / Bio-electronics

PS-07-01
Clinical Validation of a Robust and Cost-Effective EG-FET Platform Fabricated in a Standard Commercial CMOS Process for Multiplexed IL-6 Detection in Human Synovial Fluid
°Huang-Ming Philip Chen¹, Fang-Yu Teng¹, Suh Kuan Yong¹, Chien Chih Wang², Yuh-Shyong Yang¹,
¹National Yang Ming Chiao Tung Univ. (Taiwan), ²Taichung Veterans General Hospital (Taiwan)

PS-07-02
Localized Receptor Immobilization on Optical Interferometric MEMS Surface Stress Biosensors Using Functionalized Electropolymerized Films
°Junki Hirano¹, Masaki Oshino¹, Ik Hyun Kwon¹, Yong-Joon Choi¹, Toshihiko Noda¹, Kazuaki Sawada¹, Kazuhiro Takahashi¹, ¹Toyohashi Univ. of Tech. (Japan)

PS-07-03
Crystal Structure and Charge Transport Properties of a Novel π -Conjugated Molecule, DIC
°Yuma Osari¹, Seiya Yokokura^{1,2}, Hiroki Waizumi^{1,2}, Toshihiro Shimada^{1,2}, ¹Grad. Sch. of Chem. Sci. and Eng. Hokkaido Univ. (Japan), ²Div. of App. Chem. Fac. of Eng. Hokkaido Univ. (Japan)

PS-07-04
Fabrication of Au-CYTOP-Teflon Devices for Horizontal-Voltage Application to Artificial Lipid Bilayer Membranes
°Tatsuya Nomoto^{1,2}, Maki Komiya¹, Haruka Okumura³, Daisuke Tadaki¹, Yuzuru Tozawa³, Ayumi Hirano-Iwata^{1,2,4}, ¹Research Institute of Electrical Communication, Tohoku Univ (Japan), ²Graduate School of Biomedical Engineering, Tohoku Univ (Japan), ³Graduate School of Science and Engineering, Saitama Univ. (Japan), ⁴Advanced Institute for Materials Research (WPI-AIMR), Tohoku Univ (Japan)

PS-07-05
Analysis of Stagnation Zone Formation under Reduced-Flow Conditions in a Microfluidic Venous Valve Model
°Woo-Young Son¹, Woo-Tae Park¹, ¹Seoul National Univ. of Sci. and Tech. (Korea)

PS-07-06
3D Flexible Electronics for the Development of Artificial Tactile Sense, Takeru Tsuchihashi, Shintaro Fujii, and Masatoshi Sakai / Department of Electrical and Electronic Engineering, Chiba University
°Takeru Tsuchihashi¹, Masatoshi Sakai¹, ¹The Univ. of Chiba (Japan)

PS-07-07
Stable and Reproducible Organic Electrochemical Transistors Fabricated by Lithography-Free Method
°Miguel Henrique Boratto¹, Wongap Shin¹, Suhyeon Jang¹, Cheolwon Lee¹, Sanggil Han^{1,2}, ¹Dept. of Nano-Bio Eng., Incheon National University (Korea), ²Center for Brain-Machine Interface, Incheon National University (Korea)

PS-07-08
Non-invasive Eyelid Pressure Sensing for Real-Time Intraoperative Ocular Nerve Monitoring
°Yunhyeong Cho¹, Dongwook Baek¹, Dong-Hyun Joo¹, Jae-Sung Park², Woo-Tae Park^{1,1}, ¹Seoul National Univ. of Sci. and Tech. (Korea), ²The Catholic Univ. (Korea)

PS-07-09
Development of Short-Wavelength Infrared Responsive Charge-Transfer Complexes for Phototransistor application
°Yui Sueishi¹, Kei Nikaido², Satoru Inoue², Tatsuo Hasegawa², Reiji Kumai¹, Satoshi Matsuoka¹, ¹The Univ.of Nagasaki (Japan), ²The Univ.of Tokyo (Japan), ³INOEL,The Univ of Yamagata (Japan), ⁴KEK (Japan)

PS-07-10
Surface-Chemically Activated PZTO Nanofiber Membranes for High-Sensitivity EG-ISFET pH Sensors
°Yoon-Sub Shin¹, Seung-Jin Lee¹, Seung-Hwa Choi¹, Won-Ju Cho¹, ¹Kwangwoon Univ. (Korea)

PS-07-11
Dynamically Reconfigurable Multibit Modulator Enabled by Programmable Anti-Ambipolar Memory Transistors
°YEBIN BAK¹, Jeong-ik Park¹, Changhyeon Lee¹, Junhwan Chor², Sung Gap Im¹, ¹KAIST (Korea), ²Dankook Univ. (Korea)

PS-07-12 (Late News)
Spontaneous Transition to Bilayer Crystal Structure in Ph-BTBT-10 Thin Films and their organic transistor performances
°Haruka Yamada¹, Issei Suzuki¹, Yves Geerts², Michele Sferrazza², Hiroaki Iino¹, ¹Inst. of Science Tokyo (Japan), ²Univ. Libre de Bruxelles (Belgium)

PS-07-13 (Late News)
Non-destructive electrical detection of platelet-derived microparticles using an extended-gate field-effect transistor biosensor
°Sungmuk Park¹, Dae-Geon Lee¹, Cheonjung Kim¹, Yong Kyoung Yoo Yoo¹, ¹Kangwon National Univ. (Korea)

08: Low Dimensional Devices and Materials

PS-08-01
Effects of Surface MoS₂ Layer Number on Photon-Enhanced Thermionic Emission from Si-Based Emitters
°Rikiya Matsushima¹, Akihisa Ogino¹, ¹Shizuoka Univ. (Japan)

PS-08-02
Monolayer MoS₂ Lateral p–n Homo Junctions Synthesized by Two-Step Processes
°Mitsuhiro Okada¹, Yuki Okigawa¹, Takatoshi Okigawa Yamada¹, ¹Natl. Inst. Adv. Indus. Sci. Tech. (Japan)

PS-08-03
Impact of Gate Metal Adhesion Layers on Gate Dielectric Properties in Wet-Transferred MoS₂/Al₂O₃ Bottom-Gated MOSFETs
°Shiho Nakamura¹, Yuanyuan Shi², Xiao Yu³, Nobuyuki Aoki¹, Mengnan Ke⁴, ¹Chiba Univ. (Japan), ²Univ. of Sci. and Tech. of China (China), ³Xidian Univ. (China), ⁴Yokohama National Univ. (Japan)

PS-08-04
Crossover from Coulomb-Dominated to Phonon-Mediated Drag in SOI Electron–Hole Bilayers
°Filchita Renee G. Bagsican¹, Nabil Ahmed¹, Masahiro Hori^{1,2}, Yukinori Ono^{1,2}, ¹Research Inst. of Electronics, Shizuoka Univ. (Japan), ²Graduate School of Sci. and Tech., Shizuoka Univ. (Japan)

PS-08-05
LED-Integrated MXene Memristive Gas Sensor for Visual NO₂ Detection
°Sanggyu Bang¹, Hee-Dong Kim¹, ¹Sejong Univ. (Korea)

PS-08-06
Effective Remote Modulation p-Type Doping in Few-Layer WSe₂ Field-Effect-Transistors using V₂O₅/h-BN Heterostructures
°Jungon Yu¹, Younghoon Cho¹, Kyunghoon Kim¹, ¹Sungkyunkwan Univ. (Korea)

PS-08-07
Characterization of Modulation-Doped InGaAs Core-Multishell Nanowires on SOI (111) and Vertical Tunnel Transistor Applications
°Kai Fujimoto^{1,2}, Keita Taniyama^{1,2}, Yuki Azuma^{1,2}, Katsuhiko Tomioka^{1,2}, ¹Hokkaido Univ. (Japan), ²Research Center for Integrated Quantum Electronics (RCIQE) (Japan)

PS-08-08
First-Principles Investigation of a Novel a-CoSi₂/1T-MoS₂/Doped Silicon (100) Contact Architecture for Reduced Contact Resistivity
°KUNAL -¹, Amit Kumar Singh Chauhan¹, Harsh Raju¹, Vishvendra Singh Poonia¹, Sanjeev Kumar Manhas¹, ¹Indian Inst. of Tech. Roorkee (India)

PS-08-09
Bottom-Up Direct Epitaxial Growth of Tunable TMD Layers by Oxide-Assisted Engineering: From Single-Crystal Synthesis to Memristors
°Shih Jie Chiu¹, En Yu Lin¹, Yen Lin Huang¹, Yu Chuan Lin¹, ¹National Yang Ming Chiao Tung Univ. (Taiwan)

PS-08-10
Formation of stable HfO₂/MoS₂ interfaces by off-axis e-beam evaporation under controlled O₂ partial pressure
°Hiroyasu Maekawa¹, Jui-Teng Chang¹, Tomonori Nishimura¹, Kaito Kanahashi¹, Yoshiki Sakuma², Kosuke Nagashio¹, ¹The University of Tokyo (Japan), ²NIMS (Japan)

PS-08-11
Characterization Strategy for Interfacial Traps and Potential Distribution of Ultrathin 2D-MISFET Channel
°RYU HASUNUMA¹, Masaru Sato¹, Yuto Terasaka¹, Takeo Matsuki¹, Toshifumi Irisawa², Tomonori Nishimura³, Naoya Okada², Wen Hsin. Chang², Akiko Ueda², Hirokazu Fukidome⁴, Takahiro Iizuka⁵, Kosuke Nagashio³, ¹Univ. of Tsukuba (Japan), ²AIST (Japan), ³The Univ. of Tokyo (Japan), ⁴Tohoku Univ. (Japan), ⁵Hiroshima Univ. (Japan)

PS-08-12
Bridging the Absorption-Responsivity Gap in Si/Ge Core-Shell Nanoresonators via Cross-Sectional Geometric Evolution
Guanghui Wang^{1,2}, ¹Wipakorn Jevasiwan¹, Naoki Fukata^{1,2}, ¹NIMS (Japan), ²Univ. of Tsukuba (Japan)

PS-08-13
Tailored Seeding Technology for Threshold Voltage (V_{th}) Control in Monolayer WSe₂ p-FET
°Tsung-Che Hsieh¹, Li-Heng Han¹, Hung-Hui Yang¹, Li-Hsuan Li¹, Yu-Lin Li¹, Pin-Yi Li¹, Ching-Wen Tsai¹, Chih-Chao Yang², Chao-Hui Yeh¹, ¹National Tsing Hua Univ. (Taiwan), ²Taiwan Semiconductor Research Inst. (Taiwan)

PS-08-14
UV-Ozone Assisted Defect Passivation in ZrO₂ Top-Gated Bi₂O₃Se Field-Effect Transistors
°Yi-Chuan Hou¹, Chi-Chun Cheng¹, Po-Wen Chiu¹, ¹The Univ. of Tsing Hua (Taiwan)

PS-08-15
Atomic Resolution Analysis of Highly Oriented MoS₂/sapphire Interface
°Emi Kano¹, Jun Nara², Keisuke Atsumi³, Shuhong Li², Tomonori Nishimura³, Kaito Kanahashi², Jun Uzuhashi², Kosuke Nagashio³, Yoshiki Sakuma², Nobuyuki Ikarashi¹, ¹Nagoya Univ. (Japan), ²NIMS (Japan), ³The Univ. of Tokyo (Japan)

09: Novel Functional / Quantum / Spintronic Devices and Materials

PS-09-01
Impact of Mo Cap Thickness on Circular Polarization Detection Properties in MgO/CoFeB-Based Spin Photodiodes
°Takeru Omi¹, Daiki Mineyama¹, Itsu Tanaka¹, Kaito Nakama², Hidetoshi Hashimoto², Keisuke Minehisa², Junichi Takayama¹, Fumitaro Ishikawa², Akihiro Murayama¹, Satoshi Hiura¹, ¹IST, Hokkaido Univ. (Japan), ²RCIQE, Hokkaido Univ. (Japan)

PS-09-02
Tunable-Dynamics Reservoir Computing System Enabled by a Single Flexible Electrolyte-Gated Transistor with Tailored Synaptic Dynamics
°Kang Hyun Lee¹, Inseong Lee¹, Min Kyu Lee¹, Seohak Park¹, Mingu Kang¹, Wonbae Ahn¹, Seungsun Yoo¹, Min Seok Choi¹, Sung-Yool Choi¹, ¹KAIST (Korea)

PS-09-03
Ultrawideband Ion-Gating Reservoir Computing for Computationally Efficient Edge AI
°Daiki Nishioka¹, Hina Kitano^{2,3}, Kazuya Terabe², Takashi Tsuchiya^{2,3}, ¹International Center for Young Scientists, NIMS (Japan), ²Research Center for Materials Nanoarchitectonics, NIMS (Japan), ³Department of applied physics, Tokyo Univ. Sci. (Japan)

PS-09-04
Self-Adaptive Reservoir Computing with Proton Memristors for Wide-Range Temperature Compensation
◦Yoshihiro Furue¹, Satoshi Hamasuna¹, Yohito Tateishi¹, Takeaki Yajima¹, ¹Kyushu University (Japan)

PS-09-05
Raman-ion-gating reservoir realized with MoS₂ electric double-layer transistor.
◦Yoshitaka Shingaya¹, Daiki Nishioka¹, Kazuya Terabe¹, Takashi Tsuchiya¹, ¹NIMS (Japan)

PS-09-06
Highly Broadband-Transparent Metal Mesh/Ultra-Thin ITO Flexible Electrodes for Multi-spectral Camouflage Electrochromic Device
◦Ju Hyun Park^{1,2}, Yongjun Lee², Jiyoung Oh², Jaewoo Seo^{3,2}, Chil Seong Ah², Juhee Song², Byeong-Kwon Ju¹, Tae-Youb Kim², ¹Korea Univ. (Korea), ²Electronics and Telecommunications Research Inst. (Korea), ³Hanyang Univ. (Korea)

PS-09-07
Evidence of Spin-Orbit Torque in Rh-Spacer Synthetic Antiferromagnetic Structures toward Field-Free Switching
◦YANGMING CHEN¹, Lin Zhang¹, Yuichiro Kurokawa¹, Hiromi Yuasa¹, ¹Kyushu University (Japan)

PS-09-08
Direct observation of skyrmions in the PtCoNi with ultrathin insertion Ti layer
◦Zheyang Zheng¹, Tsz Chung Cheng¹, Yuichiro Kurokawa¹, Hiromi Yuasa¹, ¹Kyushu University (Japan)

PS-09-09
Superconducting properties in altermagnet/superconductor heterostructures
◦Akihiro Yamada¹, Shutaro Karube^{1,2}, Yuma Inaoka¹, Tetsuma Mandokoro¹, Fugo Tokoro¹, Susumu Hirata¹, Hisakazu Matsuki^{1,2}, Ryusuke Hisatomi^{1,2}, Yoichi Shiota^{1,2}, Teruo Ono^{1,2,3}, ¹Inst. for Chemical Research, Kyoto Univ. (Japan), ²CSRN, Kyoto Univ. (Japan), ³SRIS, Tohoku Univ. (Japan)

PS-09-10
Ferroelectric-controlled Nonvolatile Magnetic Anisotropy of 2-nm-thick CoFeB Layer
◦Yan WU^{1,2}, Kazushi Onimura¹, Hiroyuki Kobayashi², Kuniyuki Kakushima^{1,2}, ¹Institute of Science Tokyo (Japan), ²Sumitomo Chemical Next-Generation Eco-Friendly Devices Collaborative Research Cluster of Sci-ence Tokyo (Japan)

PS-09-11
High-intensity and uniform microwave-driven quantum sensing using a coupled microstrip line–dielectric resonator system
◦Mohamadoshara Sato¹, Kazuma Hanawa¹, Yusuke Azuma¹, Hideyuki Watanabe², Satoshi Kashiwaya³, Shintaro Nomura¹, ¹University of Tsukuba (Japan), ²AIST (Japan), ³Nagoya University (Japan)

PS-09-12
Bohmian Trajectory Analysis of Path Variability in Flying Qubit Devices Using Antisymmetric Two-Electron Wavepackets
◦Yuma Yamaguchi¹, Satofumi Souma¹, ¹Kobe Univ. (Japan)

PS-09-13 (Late News)
Demonstration of Charge Sensing in Vertically Stacked Silicon Quantum Dots
◦Daiki Futagi¹, Tomoko Mizutani¹, Hiroshi Oka², Takahiro Mori², Masaharu Kobayashi¹, ¹IIS, The Univ. of Tokyo (Japan), ²AIST (Japan)

10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process

PS-10-01
Fabrication and Evaluation of a Proton-Gated Field-Effect Transistor Using a Nafion Electrolyte / β-MoO₃ Single-Crystal Thin Film
◦Yuto Kanbayashi¹, Sena Yamamoto¹, Shoki Mizukami¹, Yuichi Hirofujii¹, Nobuya Hiroshiba¹, Kazuto Koike¹, ¹Osaka Inst. of Tech. (Japan)

PS-10-02
Carrier Transport Properties in Strongly Correlated Electron System/Semiconductor Heterojunctions Using LaVO₃/n-Si Junctions
◦Kaito Fujitani¹, Koji Iwasaki¹, Ryosuke Takagi¹, Yasushi Hotta¹, ¹Univ. of Hyogo (Japan)

PS-10-03
Heterointerface Engineered Tri-Layer Versatile Memristor for Integrated Neuromorphic Functions
◦Chanmin Hwang¹, Hee-Dong Kim¹, ¹Sejong Univ. (Korea)

PS-10-04
First-Principles Study on Hydrogen Gas Sensing Mechanism of Single-Atom Pt-Decorated Oxygen-Deficient ZnO Surfaces
◦Cheng-Chuan Chou¹, Chia-Hsu Hsieh¹, ¹Natl. Sun Yat-sen Univ. (Taiwan)

PS-10-05
Fabrication of α-quartz-type GeO₂ thin filmsby water-vapor oxidation
◦Busaya Sonjaiyoul¹, Mikio William Yoshioka-Hunter¹, Masaru Susa¹, Masao Kamiko², Kentaro Kyuno¹, ¹Shibaura Inst. of Technology (Japan), ²The Univ. of Tokyo (Japan)

PS-10-06
Crystal Indium Oxide FET with High Mobility and Excellent Reliability Characteristics
◦Nozomi Kamata¹, Chihiro Inagaki¹, Ryosuke Motoyoshi¹, Taichi Ebihara¹, Kazuma Furutani¹, Takanori Matsuzaki¹, Sachiaki Tezuka¹, Tsutomu Murakawa¹, Kazuya Sugimoto¹, Kota Shinnoki¹, Hiromichi Godo¹, Kenichi Okazaki¹, Shunpei Yamazaki¹, ¹Semiconductor Energy Laboratory CO., LTD. (Japan)

PS-10-07
Fast Microwave Activation of Solution-Processed a-IGZO TFTs with Improved Electrical Stability through Oxygen-Bonding Control
◦Tae-Hoon Kim¹, Ki-Ju Park¹, Won-Ju Cho¹, ¹Kwangwoon Univ. (Korea)

PS-10-08
Highly Stable Al-IZTO Thin-Film Transistors Enabled by Microwave Annealing for OLED-on-Glass Backplanes
◦Seung-Hwa Choi¹, Ki-Ju Park¹, Jin-Wook Shin², Jong-Heon Yang², Won-Ju Cho¹, ¹Kwangwoon Univ. (Korea), ²Electronics and Telecommunications Res. Inst. (Korea)

PS-10-09
Thermally Stable IGO Thin Films Grown by Supercycle ALD Using Novel In and Ga Precursors with Identical Amidinate Ligand Structures
◦Jun Yong Lee^{1,2}, Dahui Jeon^{1,2}, Minsuk Sung^{2,3}, Changbong Yeon⁴, Jaesun Jung⁴, In-Hwan Baek^{1,2}, ¹The Univ. of Inha (Korea), ²The Univ. of Inha IPCC (Korea), ³Tanhay Inc. (Korea), ⁴Soulbrain Co., Ltd. (Korea)

PS-10-10
Mitigating the Mobility–Stability Trade-Off in Microwave-Annealed AlZTO/ZTO Heterojunction TFTs for High-Resolution OLED-on-Glass Microdisplays
◦Seung-Jin Lee¹, Yoon-Sub Shin¹, Jin-Wook Shir², Jong-Heon Yang², Won-Ju Cho¹, ¹Kwangwoon Univ. (Korea), ²Electronics and Telecommunications Res. Inst. (Korea)

PS-10-11
Thermionic Emission-Diffusion and Series-Shunt Path Limited Electron Transport in Total Ionizing Dose Exposed IGZO/Pt Schottky Barrier Diode
◦Jay Singh¹, Suman Gora¹, Prince Mishra¹, Arnab Datta¹, ¹Indian Institute of Technology Roorkee (India)

PS-10-12
Selective Etch-Back Process for Raised Source/Drain SnO₂ Thin-Film Transistors with ITO Source/Drain Electrodes
◦- SangBeom Seo^{1,2}, Dahui - Jeon^{1,2}, In-Hwan - Baek^{1,2}, ¹The Univ. of INHA (Korea), ²The Univ. of INHA IPCC (Korea)

PS-10-13
Cu Resistivity Reduction by Ta Surface Oxidation Control Based on In-situ XPS Analysis
◦Yukiaki Oono¹, Yousuke Machida¹, Kazuhiko Tonari¹, Kyouji Notaki², Mauro Sogou², Daisuke Sakai², Shuzo Fujimura^{2,3}, ¹ULVAC Inc. (Japan), ²ULVAC-PHI Inc. (Japan), ³Institute of Science Tokyo Univ. (Japan)

11: Advanced Materials: Synthesis / Crystal Growth / Characterization

PS-11-01
Crystallinity-Dependent Selective Etching of SiGe for Next-Generation Transistors
◦Tomoki Tokunaga^{1,2}, Shuma Akiyoshi^{1,2}, Takashi Kajiwara^{1,2}, Koji Usuda⁴, Toshifumi Irisawa^{2,4}, Atsushi Ogura³, Taizoh Sadoh^{1,2}, ¹Kyushu Univ. (Japan), ²LSTC (Japan), ³Meiji Univ. (Japan), ⁴AIST (Japan)

PS-11-02
Effects of Post-Annealing on Sn-Doped Poly-Ge on Insulator
◦Reo Imada¹, Takuto Watanabe¹, Ryu Hashimoto¹, Takashi Kajiwara¹, Taizoh Sadoh¹, ¹Kyushu Univ. (Japan)

PS-11-03
Improved Carrier Mobility of Ultra-Thin Sn-Doped Poly-Ge Films by Thinning with Dry Etching and Post-Annealing
◦Hongbo Shan¹, Takuto Watanabe¹, Takashi Kajiwara¹, Taizoh Sadoh¹, ¹Kyushu Univ. (Japan)

PS-11-04
Chemical Vapor Deposition of *h*-BN on epitaxial Ge film / Si substrate
◦Kai Tsukada¹, Kentaro Watanabe^{1,2}, ¹Shinshu Univ. (Japan), ²IFES, Shinshu Univ. (Japan)

PS-11-05
Robust Spectroscopic Ellipsometry for Nanoscale Oxide Multilayer Characterization
◦Rogie Maghinay Madula¹, Kazunori Iwamitsu², Takanori Takahashi², Zentaro Akase¹, Yukiharu Uraoka³, Shigetaka Tomiya², ¹PhD Student (Japan), ²Assistant Professor (Japan), ³Professor (Japan), ⁴Associate Professor (Japan)

PS-11-06
GaN-Drain Si nMOSFETs with Enhanced Breakdown Voltage via Selective Area Integration
◦Cheng-Jun Huang¹, Shuo Hwai², Tsai-Fu Chung¹, Chien-Nan Hsiao³, Edward. Yi Chang¹, Mau-Chung Frank Chang², ¹National Yang Ming Chiao Tung University (Taiwan), ²University of California, Los Angeles (USA), ³National Applied Research Laboratories, Taiwan Instrument Research Institute (Taiwan)

PS-11-07
CMOS-Compatible Low-Temperature (400°C) Synthesis of Large-Area 2D Bi₂O₃S via Two-Step CVD for Field-Effect Transistors
◦Tung-Sen Lin¹, Ding-Chieh Wang¹, Jing-Wen Zhang¹, Jing-Jie Wang¹, Wei Chang¹, Yung-Lan Chuang¹, Chin-Chuan Liu¹, Jia-Jyun Wu¹, Ming-Lun Lee², Jinn-Kong Sheu¹, ¹National Cheng Kung Univ. (Taiwan), ²Southern Taiwan Univ. of Sci. and Tech. (Taiwan)

PS-11-08
In-Situ Stabilization of Ultra-High-κ Oriented c/t-ZrO₂ via Atomic Layer Annealing for BEOL-Compatible Applications
◦Yu-Che Huang¹, Chih-Sheng Hsu¹, Yen-Fa Liao², Shu-Chih Haw², Shu-Jui Chang¹, Edward Yi Chang¹, ¹National Yang Ming Chiao Tung University, Hsinchu (Taiwan), ²National Synchrotron Radiation Research Center, Hsinchu (Taiwan)

PS-11-09 (Late News)
Electrical Spin Injection into a Ge/SiGe Multiple Heterostructure Grown on a SiGe Buffer Layer
◦Shunsuke Tanaka¹, Sora Obinata^{1,2,4}, Kenji Oki¹, Shuya Kikuoka², Michihiro Yamada³, Kentarou Sawano³, Kohei Hamaya^{1,2,4}, ¹Department of Systems Innovation, Graduate School of Eng. Sci., The Univ. of Osaka (Japan), ²Center for Spintronics Res. Network, Graduate School of Eng. Sci., The Univ. of Osaka (Japan), ³Advanced Res. Labs., Tokyo City Univ. (Japan), ⁴Spintronics Res. Network Division, Inst. for Open and Transdisciplinary Res. Initiatives, The Univ. of Osaka (Japan)

PS-12-01
0.42pW/bit Low-Power-Density High-Accuracy Ternary-Gated Spiking MGU Accelerator for Low-Time-Step Spiking Automatic Speech Recognition

[◦]Jiapeng Shi¹, Shuming Liu², Zhongyong Ye³, Yitao Ma^{2,3,4}, ¹University of Science and Technology of China (China), ²Zhejiang University (China), ³Zhejiang ICsprout Semiconductor Co. Ltd (China), ⁴ZJU-Hangzhou Global Scientific and Technological Innovation Center (China)

PS-12-02
A 1.2-mV Low-Ripple Seamless-Transition Single-Mode Hybrid Buck-BoostConverter for Lithium-Ion Battery-Powered Sensor Interfaces

[◦]JingYao Chi¹, Xinjian Wang¹, Wenrui Chen³, Yaolei Guo¹, Chenhao Tang¹, Yue Cheng¹, Wenjing Mu³, Ping Ouyang³, Yitao Ma^{1,2,3}, ¹Zhejiang Univ. (China), ²ZJU-Hangzhou Global Sci. and Tech. Innovation Center (China), ³Zhejiang ICsprout Semiconductor Corp. (China)

PS-12-03
Programmable Temperature Switch with Wide-Range Threshold Control

[◦]Yugo Matsumoto¹, Tetsuya Hirose¹, ¹The University of Osaka (Japan)

PS-12-04
An Ultra-Low-Power ELM-RLS Chip for On-Chip Online Learning in Extreme-Edge AI Systems

[◦]Yinfei Ma¹, Keisuke Takano², Shiyuan Sun¹, Satoshi Kawakami¹, Takeaki Yajima¹, ¹Kyushu University (Japan), ²Japan Advanced Institute of Science and Technology (Japan)

PS-12-05
A Fast-Locking, Low-Power, and Low-Jitter Sub-Sampling PLL with a Dead Zone Automatic Controller in 16nm FinFET

[◦]Jyun-Si Lin¹, Yu-Lung Lo¹, Wei-Bin Yang², ¹The Univ. of National Kaohsiung Normal (Taiwan), ²The Univ. of Tamkang (Taiwan)

PS-12-06
Transimpedance Amplifier for Low IRN and Flat Group Delay Using Bessel Filter-Based Pole Placement and Negative Capacitance

[◦]Yuki Kubo¹, Masahiro Fujii¹, Ippei Akita¹, ¹AIST (Japan)

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-5:GAA FET (8:30-9:45) Session Chair: Francois Andrieu (CEA-Leti), Heng Wu (Peking Univ.)	02: Advanced and Emerging Memories / New Applications B-5:Ferroelectric FET 2 (8:30-9:45) Session Chair: Kouichi Nagai (RAMXEED), E Ray Hsieh (National Yang Ming Chiao Tung Univ.)		05: Photonics: Devices / Integration / Related Technology D-5:Light Emitting Devices (8:30-9:45) Session Chair: Kouichi Akahane (NICT), Kento Komatsu (Sumitomo Electric Industries, Ltd.)	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-5:III-V Materials (8:30-9:30) Session Chair: Akihiko Kikuchi (Sophia Univ.), Yoriko Tominaga (Hiroshima Univ.)	
8:30 A-5-01 Standard Cell Performance Improvement with Ultra Low Temperature (<350°C) SiGe:B GAA Si Nanosheet P-FET °Arka Dutta ¹ , Ritam Sarkar ¹ , Pierre Eyben ¹ , Daniel Casey ² , Hiroaki Arimura ¹ , Thomas Chiarella ¹ , Anabela Veloso ¹ , Andrea Pondini ^{1,3} , Alexander Makarov ¹ , Lynn Verschueren ¹ , Hans Mertens ¹ , Clement Porret ¹ , Thomas Dursap ¹ , Jishnu Ganguly ¹ , Conor Cullen ² , Rami Khazaka ² , Min Soo Kim ¹ , Lucas Petersen Barbosa Lima ¹ , Jerome Mitard ¹ , Serge Biesemans ¹ , Naoto Horiguchi ¹ , ⁴ imec (Belgium), ² ASM (Belgium), ³ KU Leuven (Belgium)	8:30 B-5-01 (Invited) Device-to-Package Co-Design of Vertically Integrated FeRAM for Efficient AI Memory °Vijaykrishnan Narayanan Narayanan ¹ , Kai Ni ² , ¹ The Pennsylvania State Univ., USA (USA), ² Notre Dame Univ., USA (USA)		8:30 D-5-01 First Demonstration of High-responsivity 255 nm Deep Ultraviolet Photodetection based on Ga2O3/GaN/2DEG Heterostructures °Xiaoling Ye ^{1,2} , Chunxiang Zhu ¹ , Yung C. Liang ^{1,2} , ¹ National University of Singapore (Singapore), ² National University of Singapore (Suzhou) Research Institute (China)	8:30 E-5-01 (Invited) Study on Intrinsic Point Defects in n-type GaN Formed by Ion Implantation and Electron-Beam Irradiation °Masahiro Horita ¹ , Jun Suda ¹ , ¹ Nagoya Univ. (Japan)	
8:45 A-5-02 Process Optimization of GAAFET CMOS for Leakage Current Reduction °Kazuya Uejima ¹ , Atsushi Yagishita ¹ , Naoto Kumagai ¹ , Chia-Tsong Chen ¹ , Masanaga Fukasawa ¹ , Shutaro Asanuma ¹ , Toshihiro Kamei ¹ , Yuuki Ishida ¹ , Naoya Okada ¹ , Kenzo Manabe ¹ , Yuji Kasashima ¹ , Hiroki Tonegawa ¹ , Shin Kono ¹ , Tetsuya Ueda ¹ , Motoharu Shichiri ¹ , Ryutaro Nishino ¹ , Yoko Tanaka ¹ , Takahiro Goya ¹ , Jun'ichi Hattori ¹ , Yukinori Morita ¹ , Toshifumi Irisawa ¹ , Wataru Mizubayashi ¹ , Hiroyuki Ota ¹ , Fuminori Ito ¹ , Takashi Matsukawa ¹ , Yoshihiro Hayashi ¹ , ¹ National Inst. of AIST (Japan)			8:45 D-5-02 ITO Low-Resistivity p-GaN Contacts for µLED Obtained Through Interface and Material Engineering by Co-Sputtering Using Clover® PVD °Lavinia Elena Nistor ¹ , Nicolas Coudurier ² , Aurelien Lardeau-Falcy ² , Julia Simon ² , Stéphane Altazin ² , Séverine Poncet ² , Valentin Chambinaud ² , Benjamin Dey ² , Jerome Machillot ² , Houssem Boukhalfa ¹ , Louwenn Cherruault ² , Manon Arch ² , Shiva Rai ¹ , Guillaume Rodriguez ² , ¹ Applied Materials France (France), ² CEA LETI, Minattec, Univ. Grenoble Alpes (France), ³ Applied Materials Belgium (Belgium), ⁴ Applied Materials, Inc (USA)		
9:00 A-5-03 Insights into Ultra-Scaled Nanosheet FETs for the Angstrom Era °Anabela Veloso ¹ , Ruben Asanovski ¹ , Jeroen E. Scheerder ¹ , Daniel Casey ² , Conor Cullen ² , Clement Porret ¹ , Thomas Dursap ¹ , Geert Eneman ¹ , Felix Seidel ¹ , Claudia Fleischmann ¹ , Paola Favia ¹ , Ritam Sarkar ¹ , Arka Dutta ¹ , Xiuju Zhou ¹ , Anne Vandooren ¹ , Roger Loo ¹ , Rami Khazaka ² , Naoto Horiguchi ¹ , ¹ imec (Belgium), ² ASM (Belgium)	9:00 B-5-02 Investigation of N₂O Gas-Treated Interfacial Layer and ZrO₂ Seed Layer on Ferroelectricity and Memory Window of UTB HZO FeFETs Dong-Ru Hsieh ¹ , Hsin-Yu Chen ¹ , Li-Quan Yang ¹ , Nai-Fang Hsu ¹ , Yu Fu ¹ , °Tien-Sheng Chao ¹ , ¹ National Yang Ming Chiao Tung University (NYCU) (Taiwan)		9:00 D-5-03 Active-Region Engineered GaN Micro-LEDs for GHz-Class Optical Interconnects °Chien-Chi Huang ¹ , Tzu-Yi Lee ¹ , Tzer-Perng Chen ² , Solomon Chi ² , I-Jou Lin Lin ² , Li-Yin Chen ¹ , Hao-Chung Kuo ^{1,3,4} , ¹ National Yang Ming Chiao Tung Univ. (Taiwan), ² Tera Electronics Corp. (Taiwan), ³ Hon Hai Res. Inst. (Taiwan), ⁴ Chung Yuan Christian Univ. (Taiwan)	9:00 E-5-02 Optically Pumped Low-Threshold InGaN/GaN Thin-Film Core Lasers with GaN/Air DBRs and an AlInN Low-Refractive-Index Layer °Sotaro IJIMA ¹ , Ryuma Yamaguchi ¹ , Akihiko Kikuchi ^{1,2} , ¹ Sophia University (Japan), ² Sophia Semiconductor Research Institute (Japan)	

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-5:GAA FET	02: Advanced and Emerging Memories / New Applications B-5:Ferroelectric FET 2		05: Photonics: Devices / Integration / Related Technology D-5:Light Emitting Devices	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-5:III-V Materials	
9:15 A-5-05 Sub-Nanometer Tomographic Imaging of Resistance, Carrier Distribution and Effective Gate Length in 45 nm Gate Pitch Nanosheet-FETs °Andrea Pondini ^{1,2} , Pierre Eyben ² , Lennaert Wouters ² , Hiroaki Arimura ² , Thomas Chiarella ² , Hans Mertens ² , Arka Dutta ² , Albert Minj ² , Clement Porret ² , Erik Rossee ² , Philippe Matagne ² , Thomas Hantschel ² , Naoto Horiguchi ² , Jérôme Mitard ² , Anne Verhulst ^{1,2} , ¹ KU Leuven (Belgium), ² imec (Belgium)	9:15 B-5-03 Tunneling Dielectric Layer Position Optimization and Performance Trade-offs in FeFETs for Fe-NAND Application °Zegü Chen ^{1,2,3} , Xianzhou Shao ^{1,2} , Ruoyao Ji ^{1,2} , Mingkai Bai ^{1,2,3} , Xinpei Jia ^{1,2} , Tao Hu ^{1,2,3} , Junshuai Chai ^{1,2} , Hao Xu ^{1,2} , Xiaolei Wang ^{1,2} , Wenwu Wang ^{1,2} , Tianchun Ye ^{1,2} , ¹ State Key Lab. of Fabrication Technologies for Integrated Circuits, Chinese Academy of Sciences (CAS), Beijing, China (China), ² Inst. of Microelectronics of Chinese Academy of Sci. (IMECAS), Beijing, China (China), ³ School of Integrated Circuits, Univ. of Chinese Academy of Sci., Beijing, China (China)		9:15 D-5-04 Demonstration of Room-Temperature Circular Polarization Reversal via Strain-Induced Valence Band Splitting in Voltage-Controlled Opto-Spintronic Device °Hiroto Kise ¹ , Keisuke Minehisa ² , Junichi Takayama ¹ , Akihiro Murayama ¹ , Fumitaro Ishikawa ² , Satoshi Hiura ¹ , ¹ IST, Hokkaido Univ. (Japan), ² RCIQE, Hokkaido Univ. (Japan)	9:15 E-5-03 A Nitrogen-Leakage Growth Method for Dilute Nitride InGaAsN Quantum Dots and Their Spin-Polarized Luminescence Properties °Ayano Morita ¹ , Hiroto Kise ¹ , Junichi Takayama ¹ , Akihiro Murayama ¹ , Satoshi Hiura ¹ , ¹ Hokkaido Univ. (Japan)	
	9:30 B-5-04 Achieving Low-Voltage Operation and Superior Endurance via Hybrid HAO/HZO Ferroelectric Layers and Microwave Annealing °Ming-Chen Chou ¹ , Yu-Cheng Lin ¹ , Yung-Hsien Wu ¹ , ¹ National Tsing Hua Univ. (Taiwan)		9:30 D-5-05 Low Turn-on Voltage Electroluminescence from Atomic-Layer-Deposited Au/Al ₂ O ₃ /Ge MIS Structures °Jiahao Cao ¹ , Min Xie ¹ , Jihai He ¹ , Yang Yang ² , Xiaohua Ma ¹ , ¹ Xidian Univ. (China), ² Nankai Univ. (China)		

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04: Power / High-speed Devices and Materials G-5:Vertical GaN Devices and Related Technologies		08: Low Dimensional Devices and Materials J-5:FET Applications	02: Advanced and Emerging Memories / New Applications K-5:MRAM -Joint Session-		
9:15 G-5-03 Enhanced Tunneling at Metal/Heavily Doped GaN Interfaces with Ultrathin GaO_x Interlayers <i>^oMasahiro Hara¹, Ryo Sakai¹, Mikito Nozaki¹, Takuma Kobayashi¹, Heiji Watanabe¹, ¹UOsaka (Japan)</i>		9:15 J-5-03 Steep Subthreshold Swing in In-Plane Tunnel FETs Based on Heterodimensional Nb-Doped WSe₂ Structures <i>^oKaito Kanahashi¹, Tomonori Nishimura¹, Keiji Ueno², Kosuke Nagashio¹, ¹The University of Tokyo (Japan), ²Saitama University (Japan)</i>	9:15 K-5-03 Ion Beam Etch Based Enablement of Current Confinement in Spin Current Generating z-Spin SOT-MRAM Technology <i>^oNikita Paul¹, Vaishnavi Kateel¹, Van Dai Nguyen¹, Siddharth Rao¹, Joseba Urrestarazu Larranaga¹¹, Alvaro Palomino Lopez¹, Giacomo Talmelli¹¹, Birte Coester¹, Robert Carpenter¹, Katia Devriendt¹, Gouri Sankar Kar¹, Shreya Kundu¹, ¹imec (Belgium)</i>		
9:30 G-5-04 First-Principles Study of the Electronic and Electrostatic Role of GaO_x at Al₂O₃/GaN Interfaces <i>^oMarouane Ammar^{1,3}, Pawel Kempisty², Cédric Masante^{1,3}, François Triozon^{1,3}, Lukasz Borowik^{1,3}, ¹The Univ. of Grenoble Alpes (France), ²Inst. of High Pressure Physics (Poland), ³CEA-Leti (France)</i>		9:30 J-5-04 Impact of Array CNT Diameter Distribution on FET I_{min} and Device Variability <i>^oErika Giorgione^{1,2}, Fabian Ducry¹, Lijun Liu¹, Luca Mana^{1,2}, Marina Y Timmermans¹, Aryan Afzalian¹, Pavlos Tyllianakis Rompotis^{1,2}, Dmitry Levshov³, Sofie Cambré³, Kaustuv Banerjee¹, Cesar Javier Lockhart de la Rosa¹, Valeri Afanasiev², Dennis Lin¹, ¹Res. Inst. IMEC (Belgium), ²Univ. of KU LEUVEN (Belgium), ³Univ. of Antwerp (Belgium)</i>	9:30 K-5-04 Intermediate-State Characteristics in MTJs with Different Free-Layer Thicknesses <i>^oHaruki Hatanaka¹, Chihiro Watanabe¹, Yusuke Ishiyama¹, Junichi Tsuchimoto^o, Hiroyuki Hosoya³, Kazuto Yamanaka³, Yuki Nishimori³, Yoshiteru Amemiya^{1,2}, Ryo Yokogawa^{1,2}, Akinobu Teramoto^{1,2,4}, ¹Grad. Sch. of Adv. Sci. and Eng., Hiroshima Univ. (Japan), ²RISE, Hiroshima Univ. (Japan), ³CANON ANELVA Corp. (Japan), ⁴Res. Inst. for Synchrotron Radiation Sci., Hiroshima Univ. (Japan)</i>		

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-6:Advanced CMOS Process (10:15-12:00) Session Chair: Takashi Matsukawa (AIST), Keisuke Yamamoto (Kumamoto Univ.)	02: Advanced and Emerging Memories / New Applications B-6:DRAM 2 (10:15-11:45) Session Chair: Siva Ramesh (Micon Technology), Hyung-Suk Jung (Samsung Electronics)		05: Photonics: Devices / Integration / Related Technology D-6:Photodetectors (10:15-11:45) Session Chair: Kouichi Akahane (NICT), Mizuki Shirao (Mitsubishi Electric)	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-6:Nanodots and Nanowires (10:15-11:00) Session Chair: Makoto Koto (SanDisk G.K.), Kentaro Watanabe (Shinshu Univ.)	
10:15 A-6-01 (Invited) Material-Driven Device-Level Thermal Management Strategies °Chang-Seok Lee ¹ , Taehoon Kim ¹ , Jaewon Kim Kim ¹ , Jae Hong Lee ¹ , Yoonhoo Ha ¹ , Wooschang Lee ¹ , ¹ Samsung Advanced Institute of Tech. (Korea)	10:15 B-6-01 (Invited) High-density and Low-power 3D DRAM technology by Oxide-semiconductor Channel Transistor DRAM (OCTRAM) °Fumiya Kimura ¹ , Takamitsu Ochi ¹ , Tsuyoshi Sugisaki ¹ , Takanori Akita ¹ , Isamu Ujite ¹ , Sota Mochizuki ¹ , Masayoshi Iwayama ¹ , Atsuko Sakata ¹ , Shinji Miyano ¹ , Takafumi Masuda ¹ , Kazuki Eshiro ¹ , Tomomasa Ueda ¹ , Nobuyoshi Saito ¹ , Keiji Ikeda ¹ , Mutsumi Okajima ¹ , ¹ KIOXIA Corp. (Japan)		10:15 D-6-01 High-Efficiency Near-Infrared Spin Photodiodes Based on Dilute Nitride GaNAs Operating at Room Temperature under Zero Magnetic Field °Daiki Mineyama ¹ , Itsu Tanaka ¹ , Takeru Omi ¹ , Shonnosuke Wada ¹ , Ayano Morita ¹ , Eita Tagawa ¹ , Junichi Takayama ¹ , Akihiro Murayama ¹ , Satoshi Hiura ¹ , ¹ IST., Hokkaido Univ. (Japan)	10:15 E-6-01 Influence of Strain Distribution in a Local SiGe Virtual Substrate on the Formation and Alignment of Self-Ordered SiGe Nanodots °Jongeun Baek ^{1,2} , Wei-Chen Wen ² , Jon Schlipf ² , Andreas Mai ^{2,3} , Yuki Imai ¹ , Katsunori Makihara ^{1,2} , Yuji Yamamoto ^{2,1} , ¹ Nagoya Univ. (Japan), ² IHP (Germany), ³ UAS Wildau (Germany)	
			10:30 D-6-02 Full-Stack Pixelated PbS CQDs Infrared Photodetector on Silicon °Yu Yang ^{1,2} , Weinan Yin ^{1,2} , Chenfeng Zheng ^{1,2} , Hongrui Liu ^{1,2} , Anqi Hu ^{1,2} , Yunlong Li ^{1,2,3} , ¹ College of Integrated Circuits, Zhejiang University (China), ² Zhejiang ICsprout Semiconductor Co., Ltd (China), ³ State Key Laboratory of Silicon and Advanced Semiconductor Materials, Zhejiang University (China)	10:30 E-6-02 Luminescence Properties of β-FeSi₂/Si Core-Shell Quantum Dots Formed through a Cyclic Process Sequence °Eita Yano ¹ , Yuki Imai ¹ , Yuji Yamamoto ^{1,2} , Markus Andreas Schubert ¹ , Katsunori Makihara ^{1,2} , ¹ Nagoya Univ. (Japan), ² IHP - Leibniz-Institut für innovative Mikroelektronik (Germany)	
10:45 A-6-02 Overlay and Grid Distortion Control in the Fabrication of Bonded CFET devices °Rajendra Kumar Saroj ¹ , Andrea Mingardi ¹ , Teresa Rodrigues ¹ , Koen D'have ¹ , Sandip Halder ¹ , Hans Mertens ¹ , Camila Cavalcante ¹ , Hung-Chieh Tsai ¹ , Serena Iacovo ¹ , Steven Brems ¹ , Min-Soo Kim ¹ , Steven Demuyne ¹ , Lucas Petersen Barbosa Lima ¹ , Naoto Horiguchi ¹ , Serge Biesemans ¹ , ¹ IMEC (Belgium)	10:45 B-6-02 A Novel Pull-Up/Pull-Down Mechanism-Enabled High-Speed, Low-Voltage DRAM with Single CFET °Sandeep Semwal ¹ , Pin Su ¹ , ¹ National Yang Ming Chiao Tung University (NYCU) (Taiwan)		10:45 D-6-03 Broadband Infrared-Transparent and Highly Conductive Ce-Doped Hydrogenated In₂O₃ Front Electrodes for Infrared Photodetection °Rahmat Hadi Saputro ¹ , Tomo Tanaka ² , Yasutomo Omori ² , Hiroyuki Ishii ¹ , Tatsuro Maeda ¹ , ¹ AIST (Japan), ² NEC Corp. (Japan)	10:45 E-6-03 Homoepitaxial Selective Growths of Dense and Oriented ZnO Nanowire Arrays on ZnO Films / Sapphire Substrates for High-temperature Piezoelectric Applications °Takumi Arai ¹ , Kentaro Watanabe ^{2,2} , ¹ Shinshu Univ. (Japan), ² IFES, Shinshu Univ. (Japan)	
11:00 A-6-03 Optimization of vertically stacked n-NSFET combining experimental access re-sistance extraction and TCAD analysis. °Pierre Eyben EYBEN ¹ , An De Keersgieter ¹ , Maryam Hosseini ¹ , Andrea Pondini ^{1,2} , Arka Dutta ¹ , Hiroaki Arimura ¹ , Thomas Chiarella ¹ , Elena Capogreco ¹ , Philippe Matagne ¹ , Jérôme Mitard ¹ , Naoto Horiguchi ¹ , ¹ IMEC (Belgium), ² KU Leuven (Belgium)	11:00 B-6-03 Investigation of Row Hammer Effect Induced by Word Line Capacitive Crosstalk in 3D CT-DRAM Array °Jihoon Kim ¹ , Dabok Lee ¹ , Jonghyeon Ha ¹ , Kanghyeon Im ¹ , Yeonsu Jeong ¹ , Jungsik Kim ¹ , Hyeongyu Kim ² , Yoojin Seof ¹ , Jeongmin Son ² , Hyokyung Kim ² , Kihyun Kim ² , Zvi Or-Bach ¹ , Sung-II Chang ² , Su-in Yi ¹ , ¹ Department of Electrical Engineering, Gyeongsang National Univ. (Korea), ² Division of Electronic Engineering, Jeonbuk National Univ. (Korea), ³ MonolithIC3D (USA), ⁴ Department of Electrical and Computer Engineering, Texas A&M Univ., College Station (USA)		11:00 D-6-04 CMOS-Compatible PtSe₂/Si Heterojunction Self-Powered Near-Infrared Photodetector °Jinfu Zhang ^{1,2,3} , Xinfeng Wang ¹ , Zongwen Li ^{1,2,3} , Wenzhang Fang ^{1,2,3} , Dawei Gao ^{1,2,3} , Yang Xu ^{1,2} , Di Wu ² , Dianyu Qi ^{1,2,3} , ¹ Zhejiang Univ. (China), ² ZJU-Hangzhou Global Scientific and Technological Innovation Center (China), ³ Zhejiang Technology Innovation Center of CMOS IC Manufacturing Process and Design (China), ⁴ Shenzhen Univ. (China), ⁵ Huainan Normal Univ. (China)		

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04: Power / High-speed Devices and Materials G-6:GaN HEMT Related Technologies (10:15-11:30) Session Chair: Akio Wakejima (Kumamoto Univ.), Junya Yaita (Sumitomo Electric)		08: Low Dimensional Devices and Materials J-6:Process Technologies (10:15-11:30) Session Chair: Takayuki Arie (Osaka Metropolitan Univ.), Yusuke Hoshi (Tokyo City Univ.)	02: Advanced and Emerging Memories / New Applications K-6:In-Memory and Unconventional Computing 1 (10:15-11:45) Session Chair: Ming-Hsiu Lee (Macronix International Co., Ltd.), Yumeng Zheng (Tokyo Univ. of Science)		
10:15 G-6-01 (Invited) Recent Status in GaN/ SiC-based Hybrid HEMT Technologies <i>°Akira Nakajima¹, Hirohisa Hirai¹, Yoshinao Miura¹, Kazutoshi Kojima¹, Tomohisa Kato¹, Shinsuke Harada¹, ¹ AIST (Japan)</i>		10:15 J-6-01 High-Performance Monolayer WSe₂ pFETs Enabled by Precise O-Doping Control <i>°Yi-Cheng Lo¹, Ting-Hua Wei¹, Yu-Wei Hsu¹, Tsung-En Lee¹, ¹National Yang Ming Chiao Tung Univ. (Taiwan)</i>	10:15 K-6-01 (Invited) Towards Bio-Inspired Edge Intelligence: Precise Analog-Flash Programming for Reconfigurable Event-Driven Circuits and Analog Gated Recurrent Units <i>°Sheng-Yu Peng¹, Kofi M. Odame², Hsuan-Wei Pu³, Wei-Zhi Lai³, ¹National Yang Ming Chiao Tung University (Taiwan), ²Dartmouth College (USA), ³National Taiwan University of Science and Technology (Taiwan)</i>		
		10:30 J-6-02 Solid-Stacked MoO₃/TiN Hybrid Contact Doping for p-Type WSe₂ Transistors <i>°Jia-Hao Chih¹, Kuan-Bo Lin Lin², Hui-Hsuan Li Li³, Bo-Yuan Chen³, Chien-Ying Su⁴, Yu-Che Huang², Po-Heng Pao², Horng-Chih Lin¹, Chenming Hu^{2,3}, Chao-Hsin Chien¹, ¹Inst. of Electronics, National Yang Ming Chiao Tung Univ. (Taiwan), ²International College of Semiconductor Technology, National Yang Ming Chiao Tung Univ. (Taiwan), ³Taiwan Semiconductor Research Institute, National Institutes of Applied Research (Taiwan), ⁴National Center for Instrumentation Research, National Institutes of Applied Research (Taiwan), ⁵Department of Electrical Engineering and Computer Sciences, Univ. of California (USA)</i>			
10:45 G-6-02 Analysis of Ferroelectric Switching and Trap-Assisted Modulation in GaN HEMTs with an AlScN/HfO₂ Gate Stack <i>°Yoojin Lim¹, Hyeongjun Joo¹, Jongmin Park¹, Juno Bae¹, Geonwook Yoo¹, ¹Soongsil Univ. (Korea)</i>		10:45 J-6-03 The Intrinsic Top-Gate FETs Performance of transfer-free MOCVD-Grown MoS₂ Wafer on Sapphire Substrate <i>°Jui-Teng Chang¹, Shu-Hong Li¹, Kosei Matsumoto¹, Hiroyasu Maekawa¹, Tomonori Nishimura¹, Kaito Kanahashi¹, Takahiro Nagata², Yoshiki Sakuma², Emi Kano³, Nobuyuki Ikarashi³, Kosuke Nagashio¹, ¹The Univ. of Tokyo (Japan), ²National Inst. for Materials Science (Japan), ³Nagoya Univ. (Japan)</i>	10:45 K-6-02 Scaling Analysis of Nanoelectromechanical Memory Switches for Binary Neural Networks <i>°Geuntae Park¹, Jinwook Lee¹, Jaeseung Woo¹, Wooyoung Choi¹, ¹Seoul National Univ. (Korea)</i>		
11:00 G-6-03 High-Performance InAlGaN/ GaN HEMTs on Si with 2130 V Breakdown Voltage and 3.78 GW/cm² BFOM Utilizing Drain Field Plate <i>°Li-Ying Chiu¹, Yen-Ying Chu², Jian-Hong Ke³, Yan-Kuei Wu¹, Lung-Hsing Hsu⁴, Wei-Chou Hsu^{1,3}, ¹Inst. of Microelectronics, Department of Electrical Eng., National Cheng Kung Univ. (Taiwan), ²Master Degree Program on Nano-Integrated-Circuit Eng., National Cheng Kung Univ. (Taiwan), ³Academy of Innovative Semiconductor and Sustainable Manufac., National Cheng Kung Univ. (Taiwan), ⁴Taiwan Semiconductor Res. Inst. (Taiwan)</i>		11:00 J-6-04 A 60.7dB 1041fps 60.5pJ/pixel/frame High-Efficient Time-Domain Pro-cessing-in-Sensor Pixel Unit Based on Graphene/ Silicon Heterogeneous Integration <i>°Ruotong Jia¹, Zhaolong He², Chuan Qin¹, Haonan Mu⁴, Yang Xu¹, Yitao Ma^{1,3,5}, ¹Zhejiang University (China), ²Peking University (China), ³ZJU- Hangzhou Global Scientific and Technological Innovation Center (China), ⁴Xi'an Jiaotong University (China), ⁵Zhejiang ICsprout Semiconductor Co., Ltd (China)</i>	11:00 K-6-03 Split Word-Line 3D NAND Flash Array with Positive Feedback Mechanism for Reconfigurable In-Memory Logic Operation <i>°Jaewon Lee¹, Damin Kim¹, MinWoo Kwon¹, ¹Seoul National Univ. of Sci. and Tech. (Korea)</i>		

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-6:Advanced CMOS Process	02: Advanced and Emerging Memories / New Applications B-6:DRAM 2		05: Photonics: Devices / Integration / Related Technology D-6:Photodetectors	11: Advanced Materials: Synthesis / Crystal Growth / Characterization E-6:Nanodots and Nanowires	
11:15 A-6-04 Ultra-Doped In-Situ Si:P Raised S/D for performance improvement in view of 10 nm FD-SOI nMOSFETs °Krunoslav Romanjek ¹ , Blend Mohamad ¹ , Joël Kanyandekwe ¹ , Zdenek Chalupa ¹ , Micaël Charbonneau ¹ , Valérie Lapras ¹ , Théo Cabaret ¹ , Tadeu Mota-Frutoso ¹ , Wissem Baik ¹ , Fabien Bringuier ¹ , Laurent Brévard ¹ , Alexandre Magalhaes-Lucas ¹ , Marie-Claire Cyrille ¹ , Claire Fenouillet-Beranger ¹ , ¹ Univ. Grenoble Alpes, CEA, Leti (France)	11:15 B-6-04 Investigation of Self-Heating Effects in 4F ² Vertical DRAM °Jiwoong Choi ¹ , Jinhong Lee ¹ , Hojun Kim ¹ , Yeongmyeong Cho ¹ , Dong keun Lee ¹ , Jangsaeng Kim ^{1,2} , Sihyun Kim ^{1,2} , Sangwan Kim ^{1,2} , ¹ Department of Electronic Engineering, Sogang Univ. (Korea), ² Inst. of Semiconductor Technologies, Sogang Univ. (Korea)		11:15 D-6-05 Vertical Structure InGaAs Photodiodes integrated onto SOI Substrates with van der Waals Metal Contact °Gwonman Noh ¹ , Juno Bae ¹ , Taekyun Kim ² , Junseok Heo ² , Geonwook Yoo ^{1,3} , ¹ Department of Intelligent Semiconductor, Soongsil Univ. (Korea), ² Department of Intelligence Semiconductor Engineering, Ajou Univ. (Korea), ³ Department of Electronic Engineering, Soongsil Univ. (Korea)		
11:30 A-6-05 Innovative Contact Etch Stop Layer Allowing Performance and Robustness Improvement for Advanced FD-SOI Devices Emmanuel PETITPREZ ¹ , Pierre BRIANCEAU ¹ , Blend MOHAMAD ¹ , Zdenek CHALUPA ¹ , °Alexis KRAKOVINSKY ¹ , Krunoslav ROMANJEK ¹ , Jorge-Pablo NACENTA MENDIVIL ¹ , ¹ Univ. Grenoble Alpes, CEA-Leti (France)	11:30 B-6-05 High-Density Three-Dimensional DRAM Using Vertical Storage Capacitor Harsh Raju ¹ , Bushra Fatima ¹ , Pankaj Kumar ¹ , °Kunal ⁻¹ , Mugdha Sharma ¹ , Sanjeev Kumar Manhas ¹ , ¹ Indian Inst. of Tech. Roorkee (India)		11:30 D-6-06 Self-Powered Deep-UV Photodiodes for Intelligent Invisible Flame Detection °Thi Muoi Vo ¹ , Hyung-Wook Kim ¹ , Same Yoon ¹ , Uhyeong Noh ¹ , Joohyuk Park ¹ , Chung Wung Bark ¹ , ¹ Gachon University (Korea)		
11:45 A-6-06 High Performance GeOI (111) nMOSFETs with Ge-Bi-Te S/D Contact using High-temperature Sputtering Deposition °Wen Hsin Chang ¹ , Shogo Hatayama ¹ , Fang-Jui Chu ² , Naoya Okada ¹ , Toshifumi Irisawa ¹ , Yao-Jen Lee ³ , Yeong-Her Wang ² , Tatsuro Maeda ¹ , Yuta Saito ¹ , ¹ Natl. Inst. Adv. Indus. Sci. Tech. (Japan), ² Natl. Cheng Kung Univ. (Taiwan), ³ Natl. Yang Ming Chiao Tung Univ. (Taiwan), ⁴ Tohoku Univ. (Japan)					

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04: Power / High-speed Devices and Materials G-6:GaN HEMT Related Technologies		08: Low Dimensional Devices and Materials J-6:Process Technologies	02: Advanced and Emerging Memories / New Applications K-6:In-Memory and Unconventional Computing 1		
11:15 G-6-04 (Late News) 320 nm Sub-Bandgap Excitation of High-Performance Vertical Fe-Doped β -Ga ₂ O ₃ Photoconductive Switch <i>[◦]Xixin Deng¹, Min Xie¹, Zhi Huang¹, Ning Zhou², Qingsong Tao², Shuangyue Li², Xiaohua Ma¹, ¹Xidian Univ. (China), ²Hangzhou Inst. for Advanced Study, Univ. of Chinese Academy of Sci. (China)</i>		11:15 J-6-05 (Late News) Access-Region Engineering in Graphene-Edge-Defined Subnanometer-Gate-Length MoS ₂ Transistors via Angled Source/Drain Deposition <i>[◦]QIYUE HE¹, Hirai Tanaka¹, Fuminori Sasaki¹, Hideaki Sugino¹, Kazuki Yonekubo¹, Toshifumi Irisawa², Naoya Okada², Akiko Ueda², Takahiro Iizuka³, Takeo Matsuki⁴, Daisuke Ohori³, Kazuhiko Endo⁶, Keisuke Atsumi⁷, Kousuke Nagashio⁷, Issei Watanabe⁸, Hirokazu Fukidome¹, ¹RIEC, Tohoku Univ. (Japan), ²AIST (Japan), ³Hiroshima Univ. (Japan), ⁴Univ. of Tsukuba (Japan), ⁵Kansai Univ. (Japan), ⁶Inst. of Fluid Sci., Tohoku Univ. (Japan), ⁷The Univ. of Tokyo (Japan), ⁸NICT (Japan)</i>	11:15 K-6-04 Demonstration of Ferroelectric FET-based 2-input Reservoir Computing <i>[◦]Seung-Min Jeong¹, Ryosho Nakane¹, Shinichi Takagi¹, Mitsuru Takenaka¹, Kasidit Toprasertpong¹, ¹The Univ. of Tokyo (Japan)</i> 11:30 K-6-05 Program-State-Remapped Noise-Spectroscopy PUF in Floating-Body Charge-Trap Transistors <i>Jaehong Min¹, [◦]Jueun Lee¹, Hyun-Jun Kang², Youngchan Cho¹, Jaehong Park¹, Sangwan Kim¹, Joon-Kyu Han², Wonjun Shin¹, ¹Sungkyunkwan Univ. (Korea), ²Seoul National Univ. (Korea)</i>		

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-7:Process for Memory (12:45-14:00) Session Chair: Kasidit Toprasertpong (the Univ. of Tokyo), Shoichi Kabuyanagi (Kioxia Corporation)	02: Advanced and Emerging Memories / New Applications B-7:Flash Memory and Emerging Memory Devices (12:45-14:00) Session Chair: Xu Bai (NanoBridge Semiconductor, Inc.), Siva Ramesh (Micron Technology)				
12:45 A-7-01 Relationship between Electrical Characteristics and Crystal Phases in High-k HfO2–ZrO2 Systems [©] Takamasa Kawanago ^{1,2} , Takefumi Kamioka ^{1,2} , Yukinori Morita ^{1,2} , Naoya Okada ^{1,2} , Kenzo Manabe ^{1,2} , Wataru Mizubayashi ^{1,2} , Hiroyuki Ota ^{1,2} , Takashi Matsukawa ^{1,2} , Shinji Migita ^{1,2} , ¹ National Institute of Advanced Industrial Science and Technology (AIST) (Japan), ² LSTC (Japan)	12:45 B-7-01 Asymmetric Dual-Gate Biasing for Optimal Balancing of Read Speed and Program Efficiency in NAND Flash Memory [©] Kwanyong Kim ^{1,2,3} , Devin Verreck ^{1,2} , Kruti Trivedi ¹ , Laurent Breuil ¹ , Tathagata Paul ¹ , Christophe Lorant ¹ , Geert Van den bosch ¹ , Jo De Boeck ^{1,2} , Maarten Rosmeulen ^{1,2} , ¹ IMEC (Belgium), ² KU (Katholieke Univ.) Leuven (Belgium), ³ Samsung Electronics (Korea)				
13:00 A-7-02 Improvement of Endurance Properties in Ferroelectric Hf,Zr_{1-x}O₂ Thin Films by Designing Interfaces Using Oxygen Blocking Layers [©] Takashi Onaya ¹ , Toshihide Nabatame ¹ , Takahiro Nagata ¹ , Kazuhito Tsukagoshi ¹ , ¹ NIMS (Japan)	13:00 B-7-02 New insights into enhanced retention characteristics in cryogenic operation combined with defect annihilation annealing in MONOS cells [©] Viktoria Schlykov ¹ , Yuta Aiba ¹ , Hitomi Tanaka ¹ , Hajime Sano ¹ , Takanori Yamanaka ¹ , Keiichi Sawa ¹ , Masumi Saitoh ¹ , Tomoya Sanuki ¹ , Reika Ichihara ¹ , ¹ Kioxia Corp. (Japan)				
13:15 A-7-03 Hydrogen-Induced Boron Deactivation and Reactivation via Interstitial-Complex Dissociation in CMOS [©] Pooi Lee Tung ^{1,2} , Sanchali Mitra ¹ , Yee Sin Ang ³ , Yan Song ² , Kah Wee Ang ¹ , ¹ National University of Singapore (NUS) (Singapore), ² Micron Semiconductor Asia Pte. Ltd (Singapore), ³ Singapore University of Technology and Design (SUTD) (Singapore)	13:15 B-7-03 Monolithic Vertically Stacking 3D 16-nm FinFET 1-Transistor-and-4-Metal-Fuses (1T4F) One-time-programmable Memory (OTP) MACRO [©] Kai Wen Cheng ¹ , Wei-Da Lin ³ , Bin-Chi Wang ³ , Chen-Yan Lin ² , Hao-wei Chuang ² , E Ray Hsieh Hsieh ¹ , ¹ National Yang-ming Chiao Tung University (Taiwan), ² National Central University (Taiwan), ³ National Tsing Hua University (Taiwan)				
13:30 A-7-04 A New Approach to Reducing Interface Traps for Improved Refresh Retention in Modern DRAMs [©] Yongmin Jung ¹ , Sungyeob Ha ¹ , Taehoon Park ¹ , Dongkyu Jang ¹ , ¹ Samsung Electronics (Korea)	13:30 B-7-04 Read-Asymmetry Engineering of 7 nm FinFET-Based OTP Memory for Scalable Compute-in-Memory Arrays [©] BING RONG TANG ¹ , Cheng Ying Chuang ¹ , Jiaw Ren Shih ¹ , Yue Der Chih ¹ , Yih Wang ² , Jonathan Chang ² , Chrong Jung Lin ¹ , Ya-Chin King ¹ , ¹ National Tsing Hua University (Taiwan), ² Taiwan Semiconductor Manufacturing Company (Taiwan)				
13:45 A-7-05 Efficient thermal treatment for robust refresh retention for 14nm DRAM [©] Kyoungrock Nho ¹ , Dongkyu Jang ¹ , Inkyum Lee ¹ , Shindeuk Kim ¹ , Taehoon Park ¹ , ¹ Samsung Electronics (Korea)	13:45 B-7-05 Hot Hole Injection assessment of a 40nm embedded Flash Memory for Neural-Network Application [©] Celine Belabbas ¹ , Sebastien Perrin ¹ , Thibault Bergamaschi ¹ , Vincenzo Della Marca ¹ , Thibault Kempf ² , Franck Melul ¹ , Nicolas Zammit ² , Jean-Pierre Walder ¹ , Jean-Michel Portal ¹ , Jorge Daniel Aguirre-Morales ¹ , Marc Bocquet ¹ , Arnaud Regnier ² , Stephan Niel ³ , Francesco La Rosa ² , Pierre Canet ¹ , ¹ Aix-Marseille Univ, Université de Toulon, CNRS, IM2NP, Marseille (France), ² STMicroelectronics, Rousset (France), ³ STMicroelectronics, Crolles (France)				

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04: Power / High-speed Devices and Materials G-7:High Speed Compound Semiconductor Devices (12:45-13:45) Session Chair: Junya Yaita (Sumitomo Electric), Yue-ming Hsin (National Central Univ.)			02: Advanced and Emerging Memories / New Applications K-7:RRAM and CBRAM (12:45-14:00) Session Chair: Yoshihiro Sato (Tohoku Univ.), Wein-Town Sun (eMemory Technology Inc.)		
12:45 G-7-01 (Invited) Extrinsic regrown base for fine emitter InP HBTs with low base-collector capacitance <i>^oYasuyuki Miyamoto¹, Yuta Shiratori², Shota Watanabe¹, ¹Science Tokyo (Japan), ²NTT, Inc. (Japan)</i>			12:45 K-7-01 (Invited) Analysis of OTS Switching Mechanisms and Memory Characteristics via DFT-informed Stochastically Induced Defect Percolation Model <i>^oHyunsang Hwang¹, Dongmin Kim¹, Yoori Seo¹, Ohhyuk Kwon¹, Yubin Park², Taehoon Lee², ¹Pohang Univ. of Science and Technology (POSTECH) (Korea), ²Kyungpook National Univ. (Korea)</i>		
13:15 G-7-02 Back-End-of-Line-Process-Tolerant InP-HEMTs for Terahertz MMICs <i>^oTaro Sasaki¹, Hiroki Sugiyama¹, Takuya Hoshi¹, Yuki Yoshiya¹, Shiro Ozaki¹, Fumito Nakajima¹, ¹NTT, Inc. (Japan)</i>			13:15 K-7-02 High Density Embedded Contact RRAM in Pure 7nm FinFET CMOS Logic Process <i>^oYen Yu Liu¹, Wei Hua Lin¹, Ming Wei He¹, Jia Ren Chen¹, Yi Jen Tseng², Meng Ju She², Yen Han Chen³, Ya Chin King^{1,2}, Chrong Jung Lin^{1,2}, ¹Inst. of Electronics Engineering, National Tsing Hua Univ. (Taiwan), ²College of Semiconductor Res., National Tsing Hua Univ. (Taiwan), ³Fab18A Process Integration Development (PID), Taiwan Semiconductor Manufac. Company (Taiwan)</i>		
13:30 G-7-03 Mitigating the trade-off between breakdown voltage and microwave performance in GaN HEMTs by using a partial high-k film between the gate and the drain <i>Itsuki Yoshida¹, Daisuke Iida¹, Yota Takamura¹, Shigeki Nakagawa¹, ^oYasuyuki Miyamoto¹, ¹Science Tokyo (Japan)</i>			13:30 K-7-03 Uniform Ultralow-Voltage (<1 V), Ultrafast (<50 ns) Self-Limited Non-Volatile TLC (3-Bit) Operation of the Forming-Free Ag/Ti/GeS/Pt CBRAM Device <i>Asif Ali¹, ^oDiing Shenp Ang¹, ¹Nanyang Technological University (Singapore)</i>		

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-8:CryoFET and Mobility (14:30-16:15) Session Chair: Satofumi Souma (Kobe Univ.), Anabela Veloso (imec)	02: Advanced and Emerging Memories / New Applications B-8:Ferroelectric Materials (14:30-16:00) Session Chair: Toshinori Numata (Toyota Technological Institute), Sanghun Jeon (KAIST)				
14:30 A-8-01 (Invited) Carrier Dynamics and Transport in Cryo-CMOS Devices *Ken Uchida ¹ , ¹ The Univ. of Tokyo (Japan)	14:30 B-8-01 (Invited) Property design of HfO₂- and AlN-based ferroelectric films for memory applications *Hiroshi Funakubo ¹ , Kazuki Okamoto ¹ , ¹ Institute of Science Tokyo (Japan)				
15:00 A-8-02 Temperature Detection utilizing Superconducting Transition Temperature for Characterizing the Self-heating of Cryo-CMOS *Takumi Inaba ¹ , Hidehiro Asai ¹ , Tomoki Kashiwagi ^{1,2} , Takumi Katorhi ^{1,3} , Hiroshi Oka ¹ , Kimihiko Kato ¹ , Shota Iizuka ¹ , Takashi Nakayama ¹ , Satoshi Moriyama ³ , Takahiro Mori ¹ , ¹ National Institute of Advanced Industrial Science and Technology (Japan), ² Chuo University (Japan), ³ Tokyo Denki University (Japan)	15:00 B-8-02 Lanthanum Interlayer and Fluorine-Passivated HZO Co-Engineering for High-Memory-Window FeFETs with Suppressed Interface Traps from Room Temperature to 73K *Sangmyun Lim ¹ , kyungsoo Park ² , Sangkuk Han ² , Jihoon Choi ¹ , Taesuk Kim ² , Hyunsoo Jung ² , Changhwan Choi ^{1,2} , ¹ Department of Semiconductor Engineering, Hanyang University (Korea), ² Division of Materials Science & Engineering, Hanyang University (Korea)				
15:15 A-8-03 Quantitative Representation of High-N, Mobility in (100) Si n-MOSFETs at 4 K: Combined Effects of Multi-Subband Occupation, Surface Roughness, and Coulomb Scattering *Shinichi Takagi ¹ , Kei Sumita ² , Zhao Jin ² , Yutong Chen ² , Hiroshi Oka ³ , Takahiro Mori ³ , Mitsuru Takenaka ² , Kasidit Toprasertpong ² , ¹ Teikyo Univ. (Japan), ² The Univ. of Tokyo (Japan), ³ Nat. Inst. Adv. Indus. Sci. and Tech. (AIST) (Japan)	15:15 B-8-03 Microstructure-Performance Evolution in Lanthanum-Doped Ferroelectric HZO MIM Capacitors by Precession Electron Diffraction *Sarah Lynch ¹ , Hannah Margavio ¹ , Sara Aoki ¹ , Dina Triyoso ¹ , Steve Consiglio ¹ , Dave Hetzer ¹ , Cory Wajda ¹ , Gert Leusink ¹ , Rimus Lee ¹ , ¹ Tokyo Electron America, Inc. (USA)				
15:30 A-8-04 Impact of substrate off-angles on electrical characteristics of vicinal Si(110) n-MOSFETs *Ryotaro Shimura ¹ , Yutong Chen ¹ , Koji Matsumoto ² , Akihiro Suzuki ² , Hiroaki Yamamoto ² , Kazuhito Matsukawa ² , Mitsuru Takenaka ¹ , Shinichi Takagi ^{1,3} , Kasidit Toprasertpong ¹ , ¹ The Univ. of Tokyo (Japan), ² SUMCO Corp. (Japan), ³ Teikyo Univ. (Japan)	15:30 B-8-04 Nucleation Limited Switching Kinetics of Ferroelectric and Antiferroelectric Hafnium Zirconium Oxides for Elevated Temperature *Cheng-Hong Liu ¹ , Kuo-Yu Hsiang ^{1,2} , Chia-Chun Hung ¹ , Min-Hung Lee ^{1,3,4} , ¹ Graduate School of Advanced Technology, National Taiwan Univ. (Taiwan), ² Institute of Electronics, National Yang Ming Chiao Tung Univ. (Taiwan), ³ Graduate Institute of Electronics Engineering, National Taiwan Univ. (Taiwan), ⁴ Institute of Applied Mechanics, National Taiwan Univ. (Taiwan)				

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			02: Advanced and Emerging Memories / New Applications K-8:In-Memory and Unconventional Computing 2 (14:30-16:15) Session Chair: E Ray Hsieh\ (National Yang Ming Chiao Tung Univ.), Xu Bai (NanoBridge Semiconductor, Inc.)		
			14:30 K-8-01 (Invited) Energy-Efficient MTJ-based Probabilistic Ising Processors: Device, Architecture, and Scaling <i>Vivek Bettadapura Adishesha¹, Shuhan Yang¹, Youwei Bao¹, [◦]Hyunsoo Yang¹, ¹National Univ. of Singapore (Singapore)</i> 15:00 K-8-02 High Resolution Retrieval-Augmented Generation Accelerator Using 192-layer In-3D-NAND Searching Cube with Multi-level Range Thermometer Code <i>[◦]Po-Hao Tseng¹, Chen-Chi Lee Liu¹, Chi-Tse Lee Huang², Feng-Ming Lee¹, Yu-Hsuan Lin Lin Lin¹, Yu-Yu Lin Lin¹, An-Yeu Wu Wu², Hsiang-Yun Cheng Cheng², Ming-Hsiu Lee Lee¹, Kuang-Yeu Hsieh Hsieh¹, Keh-Chung Wang Wang¹, Chih-Yuan Lu Lu¹, ⁴Macronix international co. ltd (Taiwan), ²National Taiwan University (Taiwan), ³Academia Sinica (Taiwan)</i> 15:15 K-8-03 4nm FinFET CMOS Logic Embedded Vertically Multiple-Time Programmable Memory with Self-Boosting Operation Scheme <i>[◦]Yu-Chien Kuo¹, Wei-Hwa Lin², Jia-Ren Chen³, Yi-Jen Tseng³, Meng-Ju She³, Yen-Han Chen³, Ya-Chin King^{1,2}, Chrong Jung Lin^{1,2}, ¹College of Semiconductor Res., National Tsing Hua Univ. (NTHU) (Taiwan), ²Inst. of Electronics Engineering, National Tsing Hua Univ. (NTHU) (Taiwan), ³Fab 18A Process Integration Development (PID), Taiwan Semiconductor Manufac. Company (TSMC) (Taiwan)</i> 15:30 K-8-04 A Cryogenic Artificial Synapse Using a Si/SiGe Heterostructure Field-Effect Transistor <i>Abhinav Kumar Gupta¹, [◦]Hsiang Shu Kao², Yu-Jui Wu², Yi-Pei Lin¹, Jiun-Yun Li^{1,2,3,4}, ¹Graduate School of Advanced Technology, National Taiwan University (Taiwan), ²Graduate Institute of Electronics Engineering, National Taiwan University (Taiwan), ³Department of Electrical Engineering, National Taiwan University (Taiwan), ⁴Taiwan Semiconductor Research Institute, National Institutes of Applied Research (Taiwan)</i>		

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01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-8:CryoFET and Mobility	02: Advanced and Emerging Memories / New Applications B-8:Ferroelectric Materials				
15:45 A-8-05 Monte Carlo Simulation of Electron Transport in MOSFETs Incorporating Impurity-Induced Random Potentials at Cryogenic Temperatures <i>°Kaoru Kato¹, Hajime Tanaka^{1,2}, Nobuya Mori¹, ¹The Univ. of Osaka (Japan), ²Kwansei Gakuin Univ. (Japan)</i>	15:45 B-8-05 Fatigue-Free Highly Polarized HZO-based Ferroelectric Synapses Demonstrating Long Endurance and Stable LTP/LTD for Neuromorphic Computing <i>°Long Nguyen Minh Le¹, Abhijit Aich¹, Yit-Tay Chang², Fasaï Visuddhidham¹, Wachiraporn Poomeesap¹, Yi-Rou Hsiao¹, Asim Senapati¹, Yi-Pin Chen^{3,4}, Shih-Yin Huang¹, Min-Hung Lee², Siddheswar Maikap^{1,3}, ¹Thin Film Nano Tech. Lab., Department of Electronic Engineering, Chang Gung Univ. (Taiwan), ²Graduate School of Advanced Technology, National Taiwan Univ. (Taiwan), ³Department of Obstetrics and Gynecology, Keelung Chang Gung Memorial Hospital (Taiwan), ⁴School of Traditional Chinese Medicine, College of Medicine, Chang Gung Univ. (Taiwan)</i>				

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			02: Advanced and Emerging Memories / New Applications K-8:In-Memory and Unconventional Computing 2		
			15:45 K-8-05 Locality-Sensitive Hashing Engine Based on Ambipolar Ferroelectric Tunnel FETs for Efficient Processor-Associative Memory Interfaces in Edge MANNs <i>°Minjeong Ryu^{1,2}, Jae Seung Woo^{1,2}, Woo Young Choi^{1,2}, ¹Department of Electrical and Computer Engineering, Seoul National University (Korea), ²Inter-university Semiconductor Research Center (ISRC), Seoul National University (Korea)</i>		
			16:00 K-8-06 Demonstration of WL-Wise Programming Scheme for AND-Type Synaptic Flash Array <i>°Hyang Kim¹, Donghyun Ryu², Hyoseob Kim¹, Woo Young Choi³, Min-Hwi Kim¹, ¹Chung-Ang Univ. (Korea), ²Univ. of California, Berkeley (USA), ³Seoul National Univ. (Korea)</i>		