

Monday, September 2

Opening and Plenary Session (Arcrea HIMEJI, Grand Hall)

Opening Session

Session Chair: Meishoku Masahara, Chair, Program Committee  
Nobuhiko Nishiyama, Chair, Steering Committee

9:00 Welcome Address

Yasuyuki Miyamoto, Chair, Organizing Committee

9:05 Welcome Address

Tsunenobu Kimoto, President, The Japan Society of Applied Physics

9:10 SSDM Award/SSDM Paper Award Ceremony

Plenary Session

9:30 PL-01

Japan's Semiconductor Strategy

Hisashi Kanazashi, Ministry of Economy, Trade and Industry

10:15 PL-02

Creating the Future of Compute: The Next Chapter of Moore's Law

Sanjay Natarajan, Intel Corp.

11:00 Break

11:20 PL-03

Gallium Oxide Electronics - Power, Harsh Environment, and Something New -

Masataka Higashiwaki, Osaka Metropolitan Univ.

12:05 PL-04

Evolution of Chiplet packaging architectures advancing AI and HPC growth

Daniel ng, AMD

Lunch

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-1:Advanced CMOS: Process Technology</b> (14:30-16:00) Session Chair: Genji Nakamura (Tokyo Electron Ltd.), Takashi Matsukawa (AIST)	02: Advanced and Emerging Memories / New Applications <b>B-1:Ferroelectric Memory Materials</b> (14:30-15:45) Session Chair: Halid Mulaosmanovic (GlobalFoundries), Atsushi Himeno (Panasonic Holdings Corp.)	03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-1:Advanced Metallization I</b> (14:30-15:45) Session Chair: Wei Feng (AIST), Takashi Matsumoto (Tokyo Electron Technology Solutions Ltd.)	04: Power / High-speed Devices and Materials <b>D-1:Ga2O3 Power Devices</b> (14:30-16:00) Session Chair: Kohei Sasaki (Novel Crystal Technology, Inc.), Masashi Kato (Nagoya Inst. of Technology)		06: Energy Harvesting and Converting Devices and Materials <b>F-1:Thermoelectric materials and devices I</b> (14:30-15:45) Session Chair: Masahiro Nomura (The Univ. of Tokyo), Yoshitaro Nose (Kyoto Univ.)
<b>14:30 A-1-01 (Invited)</b> <b>3D stacked devices and MOL innovations for post-Nanosheet CMOS scaling</b> <sup>o</sup> Steven Demuyne <sup>1</sup> , <sup>v</sup> Victor Vega Gonzalez <sup>1</sup> , <sup>c</sup> Camila Toledo <sup>1</sup> , <sup>k</sup> Karen Stiers <sup>1</sup> , <sup>s</sup> Cassie Sheng <sup>1</sup> , <sup>a</sup> Andy Peng <sup>1</sup> , <sup>d</sup> Dmitry Batuk <sup>1</sup> , <sup>m</sup> Maryam Hosseini <sup>1</sup> , <sup>a</sup> Anne Vandooren <sup>1</sup> , <sup>l</sup> Lucas Lima <sup>1</sup> , <sup>n</sup> Naoto Horiguchi <sup>1</sup> , <sup>s</sup> Serge Biesemans <sup>1</sup> , <sup>i</sup> imec (Belgium)	<b>14:30 B-1-01 (Invited)</b> <b>Materials Development and Interfacial Engineering for Emerging Ferroelectric Memories</b> <sup>g</sup> Geun Hyeong Park <sup>1</sup> , <sup>s</sup> Se Hyun Kim <sup>1</sup> , <sup>m</sup> Min Hyuk Park <sup>1</sup> , <sup>1</sup> Seoul National Univ. (Korea)	<b>14:30 C-1-01 (Invited)</b> <b>Area Selective Deposition to Facilitate Integration</b> <sup>c</sup> Christophe Vallee <sup>1</sup> , <sup>a</sup> Anthony Valenti <sup>1</sup> , <sup>n</sup> Nicolas Paul Maldonado <sup>1</sup> , <sup>v</sup> Van Long Nguyen <sup>1</sup> , <sup>s</sup> shivan Antar <sup>1</sup> , <sup>g</sup> Gregory Denbeaux <sup>1</sup> , <sup>c</sup> Carl Jr Ventrice <sup>1</sup> , <sup>m</sup> Marceline Bonvalot <sup>2</sup> , <sup>1</sup> University at Albany (United States of America), <sup>2</sup> Universite Grenoble Alpes (France)	<b>14:30 D-1-01 (Invited)</b> <b>Pairing Ga<sub>2</sub>O<sub>3</sub> with p-NiO produces robust power diodes for harsh environments</b> <sup>h</sup> Hehe Gong <sup>1,2</sup> , <sup>f</sup> Feng Zhou <sup>1</sup> , <sup>m</sup> Ming Xiao <sup>2</sup> , <sup>y</sup> Yuhao Zhang <sup>2</sup> , <sup>j</sup> Jiandong Ye <sup>1</sup> , <sup>1</sup> Nanjing University (China), <sup>2</sup> Virginia Tech (United States of America)		<b>14:30 F-1-01 (Invited)</b> <b>Key issues for developing high performance thermoelectric materials and devices</b> <sup>o</sup> Takao Mori <sup>1,2</sup> , <sup>1</sup> National Institute for Materials Science (NIMS) (Japan), <sup>2</sup> University of Tsukuba (Japan)

Lunch

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	<p>08: Low Dimensional Devices and Materials <b>H-1:Device-I</b></p> <p>(14:30-15:30) Session Chair: Masafumi Jo (RIKEN), Mahito Yamamoto (Kansai Univ.)</p>	<p>09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-1:Qubit I</b></p> <p>(14:30-15:30) Session Chair: Jun Yoneda (Tokyo Tech), Tomohiro Otsuka (Tohoku University)</p>	<p>10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process <b>K-1:Oxide-TFTs I</b></p> <p>(14:15-16:00) Session Chair: Mamoru Furuta (Kochi Univ. of Technology), Juan Paolo Bermundo (NAIST)</p>	<p>11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-1:Oxide Materials</b></p> <p>(14:30-16:00) Session Chair: Takuya Hoshi (NTT Device Technology Lab.), Wen-Wei Wu (NYCU)</p>	<p>12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials <b>N-1:Sensor Circuits and Systems</b></p> <p>(14:30-15:45) Session Chair: Keita Yasutomi (Shizuoka Univ.), Wataru Saito (Renesas Electronics Corp.)</p>
	<p><b>14:30 H-1-01 (Invited)</b> <b>The Growth of N-polar AlN for Electronic Applications</b> <sup>o</sup>Markus Pristovsek<sup>1</sup>, Pietro Pampili<sup>2</sup>, Itsuki Furuhashi<sup>1</sup>, Xu Yang<sup>1</sup>, <sup>1</sup>Nagoya Univ. (Japan), <sup>2</sup>Tyndall National Institute (Ireland)</p>	<p><b>14:30 J-1-01</b> <b>A 300mm Silicon Spin Based Platform for Quantum Computing</b> <sup>o</sup>Stefan Kubicek<sup>1</sup>, Shana Massar<sup>1</sup>, Clement Godfrin<sup>1</sup>, Bart Raes<sup>1</sup>, Julien Jussot<sup>1</sup>, Yann Canvel<sup>1</sup>, Yannick Hermans<sup>1</sup>, George Simion<sup>1</sup>, Alexander Grill<sup>1</sup>, Danny Wan<sup>1</sup>, Kristiaan De Greve<sup>1</sup>, <sup>1</sup>IMEC (Belgium)</p>	<p><b>14:15 K-1-01 (Invited)</b> <b>Recent advances in oxide-TFT technology for next-generation sustainable electronics</b> <sup>o</sup>Kenji Nomura<sup>1</sup>, <sup>1</sup>UC San Diego (United States of America)</p>	<p><b>14:30 M-1-01 (Invited)</b> <b>Laser-Based Photoemission Electron Microscopy as a Nondestructive Imaging Tool for Ferroelectric Devices</b> <sup>o</sup>Hirokazu Fujiwara<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan)</p>	<p><b>14:30 N-1-01 (Invited)</b> <b>Digital and Analog Calibration Techniques for a Global Shutter CMOS Terahertz Image Sensor</b> <sup>o</sup>Masayuki Ikebe<sup>1</sup>, Yoshihiro Komatsu<sup>1</sup>, Takuto Togashi<sup>1</sup>, <sup>1</sup>Hokkaido Univ. (Japan)</p>
		<p><b>14:45 J-1-02</b> <b>Bringing Superconducting Al Overlap Josephson Junction Fabrication from Lab to Fab</b> <sup>o</sup>Shana Massar<sup>1</sup>, Tsvetan Ivanov<sup>1</sup>, Yann Canvel<sup>1</sup>, Daniel Perez Lozano<sup>1</sup>, Jacques Van Damme<sup>1,2</sup>, Stefan Kubicek<sup>1</sup>, Julien Jussot<sup>1</sup>, Diziana Vangoidsenhoven<sup>1</sup>, Yannick Hermans<sup>1</sup>, Antoine Pacco<sup>1</sup>, Ju-Geng Lai<sup>1</sup>, Rohith Acharya<sup>1</sup>, Vadiraj Rao<sup>1</sup>, Massimo Mongillo<sup>1</sup>, Anton Potočnik<sup>1</sup>, Danny Wan<sup>1</sup>, Kristiaan De Greve<sup>1,2</sup>, <sup>1</sup>IMEC (Belgium), <sup>2</sup>Katholieke Univ. Leuven (Belgium)</p>	<p><b>14:45 K-1-02</b> <b>Amorphous TeO<sub>2</sub> as P-type Wide-gap Oxide BEOL Semiconductor</b> <sup>o</sup>John Robertson<sup>1</sup>, Xuwei Zhang<sup>1</sup>, Qingzhong Gu<sup>2</sup>, Yuzheng Guo<sup>2</sup>, <sup>1</sup>Cambridge Univ. (UK), <sup>2</sup>Wuhan Univ. (China)</p>		

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<b>15:00 A-1-02</b> <b>Source-Drain Damage of Monolithic Complementary Field Effect Transistors: A Comprehensive Study of Failure Modes and Mitigation Strategies</b> °Camila Toledo de Carvalho Cavalcante <sup>1</sup> , Steven Demuyneck <sup>1</sup> , Emmanuel Dupuy <sup>1</sup> , Thomas Chiarella <sup>1</sup> , BT Chan <sup>1</sup> , Pallavi Puttarame Gowda <sup>1</sup> , Il Gyo Koo <sup>1</sup> , Hans Mertens <sup>1</sup> , Anne Vandooren <sup>1</sup> , Farid Sebaai <sup>1</sup> , Jef Geypen <sup>1</sup> , Sujith Subramanian <sup>1</sup> , Lucas Petersen Barbosa Lima <sup>1</sup> , Serge Biesemans <sup>1</sup> , Naoto Horiguchi <sup>1</sup> , <sup>1</sup> imec, Leuven, Belgium (Belgium)	<b>15:00 B-1-02</b> <b>Understanding of Imprint Behavior of Ferroelectric Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> thin Film: Role of Charge Injection and Field Cycling</b> °Zhenhong Liu <sup>1</sup> , Zuochen Cai <sup>1</sup> , Mitsuru Takenaka <sup>1</sup> , Shinichi Takagi <sup>1</sup> , Kasidit Toprasertpong <sup>1</sup> , <sup>1</sup> The University of Tokyo (Japan)	<b>15:00 C-1-02</b> <b>Intercalated Multilayer Graphene / Nickel Hybrid Conductor for RF Device Scaling</b> °Kazuyoshi Ueno <sup>1</sup> , Kouta Masukawa <sup>1</sup> , Shinichi Tanaka <sup>1</sup> , <sup>1</sup> Shibaura Inst. of Tech. (Japan)	<b>15:00 D-1-02</b> <b>Demonstration of <math>\beta</math>-(Al<sub>0.17</sub>Ga<sub>0.83</sub>)<sub>2</sub>O<sub>3</sub> metal-semiconductor field-effect transistors with low contacts resistance and high drain current density</b> °Ryo Morita <sup>1</sup> , Aboulaye Traore <sup>1,2</sup> , Hironori Okumura <sup>1</sup> , Fenfen Fenda Florena <sup>1</sup> , Yun Jia <sup>1</sup> , Takeaki Sakurai <sup>1</sup> , <sup>1</sup> Univ. of Tsukuba (Japan), <sup>2</sup> J-FAST (Japan)		<b>15:00 F-1-02</b> <b>Record-High Power Factors in Polycrystalline Ge Thin Films for Flexible Thermoelectric Devices</b> °Koki Nozawa <sup>1</sup> , Masayuki Murata <sup>2</sup> , Takashi Suemasu <sup>1</sup> , Kaoru Toko <sup>1</sup> , <sup>1</sup> University of Tsukuba (Japan), <sup>2</sup> AIST (Japan)
<b>15:15 A-1-03</b> <b>Demonstration of Poly Gate Cut Process at Tight Gate Pitch of 50nm and High Gates Aspect Ratio for Advanced Device Architectures</b> °Xiuju Zhou <sup>1</sup> , Zheng Tao <sup>1</sup> , Hans Mertens <sup>1</sup> , Emmanuel Dupuy <sup>1</sup> , Anabela Veloso <sup>1</sup> , Boon Teik Chan <sup>1</sup> , Sujith Subramanian <sup>1</sup> , Naoto Horiguchi <sup>1</sup> , Serge Biesemans <sup>1</sup> , Elisabeth Camerotto <sup>2</sup> , Haseeb Kazi <sup>2</sup> , Ziad El Ouel <sup>2</sup> , <sup>1</sup> IMEC (Belgium), <sup>2</sup> Lam Res. Corp. (United States of America)	<b>15:15 B-1-03</b> <b>New insight of ferroelectric Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> properties under cryogenic temperatures in integrated ferroelectric capacitors</b> °Flavien Berthaud <sup>1</sup> , Liam Hosier <sup>1</sup> , Niccolo Castellani <sup>1</sup> , Jean Rotner <sup>1</sup> , Valentina Méli <sup>1</sup> , Laurent Grenouiller <sup>1</sup> , Julie Laguerre <sup>1</sup> , Catherine Carabasse <sup>1</sup> , Jean Coignus <sup>1</sup> , Mikael Cassé <sup>1</sup> , Simon Martin <sup>1</sup> , <sup>1</sup> Univ. Grenoble Alpes, CEA, Leti F-38000 Grenoble (France)	<b>15:15 C-1-03</b> <b>CFET-compatible Backside Connection using Dual-Damascene Integration Scheme comparing W versus Mo Metallization</b> °Anne Vandooren <sup>1</sup> , Stefaan Van Huylenbroeck <sup>1</sup> , Tanushree Sarkar <sup>1</sup> , Thomas Chiarella <sup>1</sup> , Anshul Gupta <sup>1</sup> , Michele Stucci <sup>1</sup> , Liesbeth Witters <sup>1</sup> , Jan Willem Maes <sup>1</sup> , Camila Toledo de Carvalho Cavalcante <sup>1</sup> , Harinarayanan Puliyalil <sup>1</sup> , Farid Sebaai <sup>1</sup> , Koen D'have <sup>1</sup> , Nancy Heylen <sup>1</sup> , Sujan Kumar Sarkar <sup>1</sup> , Andrea Mingardi <sup>1</sup> , Serena Iacovo <sup>1</sup> , Pallavi Puttarame Gowda <sup>1</sup> , Anabela Veloso <sup>1</sup> , Nicolas Jourdan <sup>1</sup> , Michael Givens <sup>2</sup> , Sujith Subramanian <sup>1</sup> , Steven Demuyneck <sup>1</sup> , Naoto Horiguchi <sup>1</sup> , Zsolt Tokei <sup>1</sup> , Serge Biesemans <sup>1</sup> , Chiyu Zhu <sup>3</sup> , Harsh Vardhan Bana <sup>2</sup> , Hameeda Jagalur Basheer <sup>2</sup> , <sup>1</sup> imec (Belgium), <sup>2</sup> ASM Leuven (Belgium), <sup>3</sup> ASM Helsinki (Finland)	<b>15:15 D-1-03</b> <b>Optimization of Characteristics in NiO/<math>\beta</math>-Ga<sub>2</sub>O<sub>3</sub> Heterojunction Diodes with Surface Treatment</b> °Dinghe Liu <sup>1</sup> , Zeyulin Zhang <sup>1</sup> , Hao Chen <sup>1</sup> , Dazheng Chen <sup>1</sup> , Chunfu Zhang <sup>1</sup> , Yue Hao <sup>1</sup> , <sup>1</sup> Xidian Univ. (China)		<b>15:15 F-1-03</b> <b>Fabrication of Planar Thermoelectric Generators using Phosphorus-doped Silicon Nanocrystals/ Amorphous Silicon Composite Films</b> °Yasuyoshi Kurokawa <sup>1</sup> , Keisuke Shibata <sup>1</sup> , Shinya Kato <sup>2</sup> , Masashi Kurosawa <sup>1</sup> , Satoru Miyamoto <sup>1</sup> , Takashi Itoh <sup>1</sup> , Noritaka Usami <sup>1</sup> , <sup>1</sup> Nagoya Univ. (Japan), <sup>2</sup> Nagoya Inst. Tech. (Japan)
<b>15:30 A-1-04</b> <b>Low-Thermal Budget Activation for 3D Integration by Green Nanosecond Laser</b> °Hongxu Liao <sup>1</sup> , Yandong Ge <sup>1</sup> , Haixia Li <sup>1</sup> , Lanyi Xie <sup>2</sup> , Qing Wang <sup>1</sup> , Ming Li <sup>1,3</sup> , Ru Huang <sup>1,3</sup> , <sup>1</sup> School of Integrated Circuits, Peking University (China), <sup>2</sup> Department of Energy and Resources Engineering, Peking University (China), <sup>3</sup> Beijing Advanced Innovation Center for Integrated Circuits (China)	<b>15:30 B-1-04</b> <b>Universal Temperature-Strain Phase Diagram of Hf,Zr<sub>1-x</sub>O<sub>2</sub> Films</b> <b>Towards to Ferroelectric Phase Engineering</b> °Tianming Cui <sup>1</sup> , Zhipeng Xue <sup>1</sup> , Danyang Chen <sup>1</sup> , Yuyan Chen <sup>1</sup> , Jingquan Liu <sup>1</sup> , Mengwei Si <sup>1</sup> , °Xiuyan Li <sup>1</sup> , <sup>1</sup> Shanghai Jiao Tong University (China)	<b>15:30 C-1-04</b> <b>Tungsten Carbide Hard Mask Performance in Supervia and High Aspect Ratio Patterning for BEOL Advanced Interconnects</b> °Daniel Montero <sup>1</sup> , Philippe Marien <sup>1</sup> , Yannick Hermans <sup>1</sup> , Fulya Ulu Okudur <sup>1</sup> , Mattia Pasquali <sup>1</sup> , Syamashree Roy <sup>1</sup> , Chen Wu <sup>1</sup> , Nunzio Buccheri <sup>1</sup> , Victor Vega-Gonzalez <sup>1</sup> , Harinarayanan Puliyalil <sup>1</sup> , Quyang Lin <sup>1</sup> , Gilberto Casillas <sup>1</sup> , Jef Geypen <sup>1</sup> , Alfonso Sepulveda <sup>1</sup> , Frederic Lazzarino <sup>1</sup> , Seongho Park <sup>1</sup> , Zsolt Tokei <sup>1</sup> , <sup>1</sup> imec (Belgium)	<b>15:30 D-1-04</b> <b>Characterization of trap states in <math>\beta</math>-(Al,Ga<sub>1-x</sub>)<sub>2</sub>O<sub>3</sub>/Ga<sub>2</sub>O<sub>3</sub> modulation-doped field effect transistors by deep level transient spectroscopy</b> °Yun Jia <sup>1</sup> , Fenfen Fenda Florena <sup>1</sup> , Ryo Morita <sup>1</sup> , Aboulaye Traore <sup>1,2</sup> , Hironori Okumura <sup>1</sup> , Takeaki Sakurai <sup>1</sup> , <sup>1</sup> Univ. of Tsukuba (Japan), <sup>2</sup> Japanese-French Lab. for Semiconductor Physics and Technology (Japan)		<b>15:30 F-1-04</b> <b>Controlling the conduction type of thermoelectric (Zn<sub>1-x</sub>Cd<sub>x</sub>) SnAs<sub>2</sub> material</b> °KOKI NAKASHIMA <sup>1</sup> , Shoma Miura <sup>1</sup> , Yuichi Hirai <sup>1</sup> , Kensuke Nishioaka <sup>1</sup> , Akira Nagaoka <sup>1</sup> , <sup>1</sup> University of Miyazaki (Japan)
<b>15:45 A-1-05</b> <b>Transferring Compressive or Tensile Stress from Stressors to Si Layers: A Novel Approach</b> °Pablo Acosta Alba <sup>1</sup> , Mayara Auricchio <sup>1</sup> , Patrice Gergaud <sup>1</sup> , Jean-Michel Hartmann <sup>1</sup> , Shay Reboh <sup>1</sup> , <sup>1</sup> Univ. Grenoble ALPES, CEA-LETI (France)			<b>15:45 D-1-05</b> <b><math>\beta</math>-Ga<sub>2</sub>O<sub>3</sub> Schottky Barrier Diodes with Surface Etching and Piranha Solution Pre-treatment: Achieving Near-ideal Forward and Reverse Characteristics</b> Haodong Hu <sup>1,2</sup> , Yibo Wang <sup>1,2</sup> , Xiaole Jia <sup>1</sup> , °Chenyu Liu <sup>1</sup> , Cizhe Fang <sup>1,2</sup> , Xiaoxi Li <sup>1,2</sup> , Bochang Li <sup>1,2</sup> , Zhongdong Luo <sup>1,2</sup> , Yan Liu <sup>1,2</sup> , Yue Hao <sup>1,2</sup> , Genquan Han <sup>1,2</sup> , <sup>1</sup> School of Microelectronics, Xidian Univ. (China), <sup>2</sup> Hangzhou Inst. of Tech., Xidian Univ. (China)		

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	08: Low Dimensional Devices and Materials <b>H-1:Device-I</b>	09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-1:Qubit I</b>	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process <b>K-1:Oxide-TFTs I</b>	11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-1:Oxide Materials</b>	12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials <b>N-1:Sensor Circuits and Systems</b>
	<b>15:00 H-1-02</b> <b>In-Depth Understanding of Back-switching Dynamics in Anti-ferroelectric HZO for Reservoir Computing</b> °Yufei Shi <sup>1</sup> , Ngoc Thanh Duong <sup>1</sup> , Yu-Chieh Chien <sup>1</sup> , Kah-Wee Ang <sup>1</sup> , <sup>1</sup> National Univ. of Singapore (Singapore)	<b>15:00 J-1-03</b> <b>Large-Scale Characterization Classifying Double Quantum Dots in Isoelectronic-Trap-Assisted Tunnel Field-Effect Transistors</b> °Yusuke Chiashi <sup>1</sup> , Takumi Inaba <sup>1</sup> , Atsushi Yagishita <sup>1</sup> , Makoto Kato <sup>1</sup> , Tomohiro Ishikawa <sup>1</sup> , Oka Hiroshi <sup>1</sup> , Kimihiko Kato <sup>1</sup> , Hidehiro Asai <sup>1</sup> , Minoru Ogura <sup>1</sup> , Shota Iizuka <sup>1</sup> , Takahiro Mori <sup>1</sup> , <sup>1</sup> Advanced Industrial Science and Technology (AIST) (Japan)	<b>15:00 K-1-03</b> <b>In/Ga Ratio and Annealing Temperature Influence on IGO Crystallization</b> °Kuo Zhang <sup>1,2,3</sup> , Jiayi Wang <sup>1,3</sup> , Ziheng Bai <sup>3</sup> , Yang Xu <sup>1,3</sup> , Nannan You <sup>1,3</sup> , Yuxuan Li <sup>1,2,3</sup> , Ling Li <sup>2,3</sup> , Di Geng <sup>2,3</sup> , Shengkai Wang <sup>2,3</sup> , <sup>1</sup> High-Frequency High-Voltage Device and Integrated Circuits Research and Development Center, Instit. of Microelectronics, Chinese Academy of Sci. (China), <sup>2</sup> Univ. of Chinese Academy of Sci. (China), <sup>3</sup> Key Lab. of Fabrication Technologies for Integrated Circuits, Chinese Academy of Sci. (China)	<b>15:00 M-1-02</b> <b>Effects of Millisecond Flash Lamp Annealing on the Polarization and Crystallization in Thin Al:HfO<sub>2</sub> Films</b> °Hideaki Tanimura <sup>1,2</sup> , Tomoya Mifune <sup>1</sup> , Yuma Ueno <sup>2</sup> , Shinichi Kato <sup>2</sup> , Takumi Mikawa <sup>2</sup> , Hironori Fujisawa <sup>1</sup> , Seiji Nakashima <sup>1</sup> , <sup>1</sup> Univ. of Hyogo (Japan), <sup>2</sup> SCREEN Semiconductor Solutions (Japan)	<b>15:00 N-1-02</b> <b>Performance improvement by multi-layer on-pixel polarizer structure using 0.35-<math>\mu</math>m CMOS process for high-sensitivity electro-optic imaging system</b> °Ryoma Okada <sup>1</sup> , Maya Mizuno <sup>2</sup> , Hironari Takehara <sup>1</sup> , Makito Haruta <sup>1</sup> , Hiroyuki Tashiro <sup>1</sup> , Jun Ohta <sup>1</sup> , Kiyotaka Sasagawa <sup>1</sup> , <sup>1</sup> Nara Institute of Science Technology (Japan), <sup>2</sup> National Institute of Information and Communications Technology (Japan)
	<b>15:15 H-1-03</b> <b>All-2D-Materials Floating Gate Structure For Synaptic Device</b> °Hailiang Wang <sup>1</sup> , Qian He <sup>1</sup> , Yishu Zhang <sup>1</sup> , Yang Xu <sup>1</sup> , Bin Yu <sup>1</sup> , <sup>1</sup> Zhejiang University (China)	<b>15:15 J-1-04</b> <b>Time-Efficient Tuning of a Quadruple Quantum Dot into single dot regime by using a Long Short-Term Memory Neural Network</b> °Ehsan Alizadeh Kashtiban <sup>1</sup> , Takafumi Fujita <sup>1</sup> , Akira Oiwa <sup>1</sup> , <sup>1</sup> Osaka Univ. (Japan)	<b>15:15 K-1-04</b> <b>"Enhancing Stability and Mobility in TFTs through Indium-Tungsten-Oxide and Indium-Gallium-Zinc-Oxide Heterojunction Engineering: Exploring ISFET Applicability"</b> °Seong-Hwan Lim <sup>1</sup> , Dong-Gyun Mah <sup>1</sup> , Jin-Wook Shin <sup>2</sup> , Jong-Heon Yang <sup>2</sup> , Won-Ju Cho <sup>1</sup> , <sup>1</sup> The Univ. of Kwangwoon (Korea), <sup>2</sup> The Lab. of ETRI (Korea)	<b>15:15 M-1-03</b> <b>Low-temperature Selective Growth of Dense and Oriented Heteroepitaxial ZnO Nanowires on Au / Si Substrate with Wafer-Scale Periodic Growth Window Arrays</b> °Takumi Noro <sup>1</sup> , Kentaro Watanabe <sup>1,2</sup> , <sup>1</sup> Shinshu Univ. (Japan), <sup>2</sup> IFES, Shinshu Univ. (Japan)	<b>15:15 N-1-03</b> <b>Self-Resetting CMOS Image Sensor with Signal-to-Noise Ratio of over 70 dB throughout the Entire Imaging Area</b> °Subaru Iwaki <sup>1</sup> , Kiyotaka Sasagawa <sup>1</sup> , Yoshinori Sunaga <sup>1</sup> , Hironari Takehara <sup>1,2</sup> , Makito Haruta <sup>1,3</sup> , Hiroyuki Tashiro <sup>1,4</sup> , Jun Ohta <sup>1</sup> , <sup>1</sup> Nara Inst. of Sci. and Tech. (Japan), <sup>2</sup> Nara Advanced Imaging Tech., Co., Ltd. (Japan), <sup>3</sup> Chitose Inst. of Sci. and Tech. (Japan), <sup>4</sup> Kyushu Univ. (Japan)
			<b>15:30 K-1-05</b> <b>Enhancement in Mobility and Stability in Thin Film Transistor Based on InPrO/InPrO Homo Junction Structure</b> Min Guo <sup>1</sup> , °Xiaoci Liang <sup>1</sup> , Chuan Liu <sup>1</sup> , <sup>1</sup> Sun Yat-sen Univ. (China)	<b>15:30 M-1-04</b> <b>Layer-by-layer Synthesis of Functional Oxides by Digitally Processed DC Sputtering with Alternating Surface Oxidation</b> °Hideo Isshiki <sup>1</sup> , Daiki Yamashita <sup>1</sup> , Mehdi Ali <sup>1</sup> , Masaya Takeuchi <sup>1</sup> , Taiga Hokkezu <sup>1</sup> , Yuki Takamatsu <sup>1</sup> , Shoji Kiyota <sup>1</sup> , Satoshi Fujijya <sup>1</sup> , Yasuhiro Tanaka <sup>1,2</sup> , Shinichiro saisho <sup>1,2</sup> , <sup>1</sup> The University of Electro-Communications (Japan), <sup>2</sup> Shincron Co.Ltd. (Japan)	<b>15:30 N-1-04</b> <b>An Area-Efficient Sub-nJ/ Conversion Temperature-to-Digital Converter</b> Po-Wei Lai <sup>1</sup> , Chung-Tai Wei <sup>1</sup> , °Hongchin Lin <sup>1</sup> , <sup>1</sup> National Chung Hsing University (Taiwan)
			<b>15:45 K-1-06 (Late News)</b> <b>Theoretical Study on Structural and Electronic Properties of Interstitial Oxygen Defects in Amorphous Indium Gallium Oxide for Transistor Reliability</b> °Chitra Pandey <sup>1</sup> , Masaharu Kobayashi <sup>2</sup> , <sup>1</sup> The University of Tokyo (Japan), <sup>2</sup> The University of Tokyo (Japan)	<b>15:45 M-1-05 (Late News)</b> <b>Study of the Dependence of Effective Barrier Height on Thickness of HfO<sub>2</sub>, SiO<sub>2</sub>, Y<sub>2</sub>O<sub>3</sub>, and Al<sub>2</sub>O<sub>3</sub> Films in Metal-Ultra-Thin-Insulator-Germanium Structures</b> °Yajun FENG <sup>1</sup> , Noboru Shimizu <sup>1</sup> , Keisuke Yamamoto <sup>1</sup> , Dong Wang <sup>1</sup> , <sup>1</sup> IGSE,Kyushu University (Japan)	

# Monday, September 2

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
<p>01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-2: Innovative devices and Sensing technology</b></p> <p>(16:15-17:30) Session Chair: Hidetoshi Oishi (Sony Semiconductor Solutions Corp.), Shoichi Kabuyanagi (KIOXIA Corp.)</p>	<p>02: Advanced and Emerging Memories / New Applications <b>B-2: In-Memory and Unconventional Computing I</b></p> <p>(16:15-17:30) Session Chair: Ming-Hsiu Lee (Macronix International Co., Ltd.), Xu Bai (NanoBridge Semiconductor, Inc.)</p>	<p>03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-2: MEMS and Advanced Metallization I</b></p> <p>(16:15-16:45) Session Chair: Takeyasu Saito (Osaka Metropolitan Univ.), Christian Dussarrat (Air Liquide)</p>	<p>04: Power / High-speed Devices and Materials <b>D-2: Diamond Devices</b></p> <p>(16:30-17:30) Session Chair: Norio Tokuda (Kanazawa Univ.), Masashi Kato (Nagoya Inst. of Technology)</p>	<p>05: Photonics: Devices / Integration / Related Technology <b>E-2: Integrated Light Source and Related Technology</b></p> <p>(16:15-17:30) Session Chair: Mizuki Shirao (Mitsubishi Electric), Karim Hassan (CEA-LETI)</p>	<p>06: Energy Harvesting and Converting Devices and Materials <b>F-2: Thermoelectric materials and devices II</b></p> <p>(16:15-17:30) Session Chair: Shinnya Kato (Nagoya Inst. of Technology), Takuya Hoshii (Tokyo Tech)</p>
<p><b>16:15 A-2-01</b> <b>On-Wafer Polarity-Specific Response Plasma Charging Recorder with Fin-Coupling Structure by FinFET Technology</b> Han-Lin Huang<sup>1</sup>, <sup>2</sup>Wei Chang<sup>1</sup>, Yu-Der Chih<sup>2</sup>, Jonathan Chang<sup>2</sup>, Chrong-Jung Lin<sup>1</sup>, Ya-Chin King<sup>1</sup>, <sup>1</sup>National Tsing Hua Univ. (Taiwan), <sup>2</sup>Taiwan Semiconductor Manufac. Company (Taiwan)</p>	<p><b>16:15 B-2-01 (Invited)</b> <b>Ferroelectric Neuromorphic Devices and System Implementations</b> <sup>2</sup>Thomas Kämpfle<sup>1</sup>, <sup>1</sup>Fraunhofer Institute for Photonic Microsystems (Germany)</p>	<p><b>16:15 C-2-01 (Invited)</b> <b>Evaluation Platforms for Next-Generation Semiconductor Packaging Technologies</b> <sup>2</sup>Hirokazu Noma<sup>1</sup>, <sup>1</sup>Resonac Corp. (Japan)</p>	<p><b>16:30 D-2-01 (Invited)</b> <b>High Power and High Frequency Diamond Field Effect Transistors</b> <sup>2</sup>Hiroshi Kawarada<sup>1,2</sup>, Ken Kudara<sup>1</sup>, Masakazu Arai<sup>1</sup>, Akira Takahashi<sup>1</sup>, Kousuke Ota<sup>1,2</sup>, Tatsuya Fujishima<sup>2</sup>, <sup>1</sup>Waseda Univ. (Japan), <sup>2</sup>Power Diamond Systems (Japan)</p>	<p><b>16:15 E-2-01 (Invited)</b> <b>Heterogeneously Integrated Membrane Lasers on Si and Thin-film Lithium Niobate Platforms</b> <sup>2</sup>Yoshiho Maeda<sup>1</sup>, Hidetaka Nishi<sup>1</sup>, Takuma Aihara<sup>1</sup>, Takuro Fujii<sup>1</sup>, Tatsuro Hiraki<sup>1</sup>, Nikolaos-Panteleimon Diamantopoulos<sup>1</sup>, Koji Takeda<sup>1</sup>, Hiroki Sugiyama<sup>1</sup>, Tomonari Sato<sup>1</sup>, Yasutomo Ota<sup>2,3</sup>, Satoshi Iwamoto<sup>1</sup>, Yasuhiko Arakawa<sup>2</sup>, Shinji Matsuo<sup>1</sup>, <sup>1</sup>NTT Corp. (Japan), <sup>2</sup>Nano Quine, The Univ. of Tokyo (Japan), <sup>3</sup>Keio Univ. (Japan), <sup>4</sup>The Univ. of Tokyo (Japan)</p>	<p><b>16:15 F-2-01</b> <b>Reduction of Thermal Conductivity in Silicon Thin Film by Super-lattice Interface and Phononic Crystal Nanostructures</b> Sota Koike<sup>1</sup>, Ryoto Yanagisawa<sup>1</sup>, Takahiro Inoue<sup>2</sup>, Kentarou Sawano<sup>2</sup>, <sup>2</sup>Masahiro Nomura<sup>1</sup>, <sup>1</sup>Inst. of Indus. Sci., the Univ. of Tokyo (Japan), <sup>2</sup>Tokyo City Univ. (Japan)</p>
<p><b>16:30 A-2-02</b> <b>IT EUV/DUV Detector in Fully Compatible 16nm FinFET Logic Process</b> <sup>2</sup>Wei-Hwa Lin<sup>1</sup>, Ting-Kai Huang<sup>2</sup>, Yue-Der Chih<sup>2</sup>, Yih Wang<sup>2</sup>, Jonathan Chang<sup>2</sup>, Ya-Chin King<sup>1</sup>, Chrong Jung Lin<sup>1,2</sup>, <sup>1</sup>Institute of Electronics Engineering, National Tsing Hua Univ. (Taiwan), <sup>2</sup>College of Semiconductor Research, National Tsing Hua Univ. (Taiwan), <sup>3</sup>Design Technology Platform, Taiwan Semiconductor Manufac. Company (Taiwan)</p>	<p><b>16:45 B-2-02</b> <b>ISIR Multi-Level-Cell for Dense Quantized Recurrent Spiking Neural Network Inference Computing</b> <sup>2</sup>Joel Minguet Lopez<sup>1</sup>, Manon Dampffoffer<sup>2</sup>, Gabriele Navarro<sup>1</sup>, Mathieu Bernard<sup>1</sup>, Catherine Carabasse<sup>1</sup>, Niccolo Castellani<sup>1</sup>, Thomas Magis<sup>1</sup>, Chiara Sabbione<sup>1</sup>, Gabriel Molas<sup>1</sup>, François Andrieu<sup>1</sup>, <sup>1</sup>Univ. Grenoble Alpes, CEA, Leti (France), <sup>2</sup>Univ. Grenoble Alpes, CEA, List (France)</p>	<p><b>16:45 A-2-03 (Late News)</b> <b>Efficient Reverse Current Reduction of GeSn-Based pn Diodes by Surface Passivation of ALD-GeO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> Stacked Structure</b> <sup>2</sup>Yoshiki Kato<sup>1</sup>, Mitsuo Sakashita<sup>1</sup>, Masashi Kurosawa<sup>1</sup>, Osamu Nakatsuka<sup>1,2</sup>, Shigehisa Shibayama<sup>1</sup>, <sup>1</sup>Grad. Sch. Eng., Nagoya Univ. (Japan), <sup>2</sup>IMaSS, Nagoya Univ. (Japan)</p>	<p><b>16:45 E-2-02</b> <b>Enhanced Light Emission and Linewidth Narrowing in Er-doped Gd<sub>2</sub>O<sub>3</sub> Microring Resonators</b> <sup>2</sup>Xuejun Xu<sup>1</sup>, Tomohiro Inaba<sup>1</sup>, Takuma Aihara<sup>2</sup>, Atsushi Ishizawa<sup>2</sup>, Takehiko Tawara<sup>2</sup>, Haruki Sanada<sup>1</sup>, <sup>1</sup>NTT Basic Res. Labs. (Japan), <sup>2</sup>NTT Device Tech. Labs. (Japan), <sup>3</sup>Nihon Univ. (Japan)</p>	<p><b>16:30 F-2-02</b> <b>Optimizing the Wiring Layout of Silicon Integrated Thermoelectric Devices for Enhancing Maximum Performance</b> <sup>2</sup>Md Mehdee Hasan Mahfuz<sup>1</sup>, Suhei Arai<sup>1</sup>, Takeo Matsuki<sup>1</sup>, Watanabe Takano<sup>1</sup>, <sup>1</sup>Waseda University (Japan)</p>	
<p><b>17:00 A-2-04</b> <b>High-speed, Low-power, Ultra-scaled IT-pTRNG Array with 10-ns of p-bits Generation, 0.3V of the Reading-voltage, and 400-Mbits of the Throughput</b> <sup>2</sup>P.H. Huang<sup>1</sup>, S.Y. Huang<sup>1</sup>, Y.-H. Lin<sup>1</sup>, K.H. Chang<sup>1</sup>, T.H. Shen<sup>1</sup>, R.Y. Lyu<sup>1</sup>, K.Y. Lee<sup>1</sup>, E Ray Hsieh Hsieh<sup>1</sup>, <sup>1</sup>National Central University (Taiwan)</p>	<p><b>17:00 B-2-03</b> <b>Analog In-Memory Search Technology Based on Automotive Grade NOR Flash Memory</b> <sup>2</sup>Po Hao Tseng<sup>1</sup>, Feng-Ming Lee Lee<sup>1</sup>, Tian-Cig Bo<sup>1</sup>, Yu-Hsuan Lin<sup>1</sup>, Chen-Chi Liu<sup>1</sup>, Ming-Hsiu Lee<sup>1</sup>, Kuang-Yeu Hsieh<sup>1</sup>, Keh-Chung Wang<sup>1</sup>, Chih-Yuan Lu<sup>1</sup>, <sup>1</sup>Macronix International Co., Ltd. (Taiwan)</p>	<p><b>17:00 D-2-02</b> <b>Improvement of the Contact Resistance and Subthreshold Swing of the (001) C-H Diamond MOSFETs with Heavily Boron Doped Layer</b> <sup>2</sup>Ryosuke Yamamoto<sup>1</sup>, Kento Narita<sup>1</sup>, Kosuke Ota<sup>1,2</sup>, Nobutaka Ota<sup>1,2</sup>, Atsushi Hiraiwa<sup>1</sup>, Tatsuya Fujishima<sup>2</sup>, Hiroshi Kawarada<sup>1,2,3</sup>, <sup>1</sup>Waseda Univ. (Japan), <sup>2</sup>Power Diamond Systems, Inc. (Japan), <sup>3</sup>Kagami Memorial Research Institute for Materials Science and Technology (Japan)</p>	<p><b>17:00 E-2-03</b> <b>InP Membranes Laterally Grown on Si-Photonics 220 nm SOI Platform</b> <sup>2</sup>Yao Chen<sup>1</sup>, Yu Han<sup>1</sup>, Hui Dong Fu<sup>1</sup>, Zhi Ying Zhao<sup>1</sup>, Jiang Yun Jin<sup>1</sup>, Yuan Si Yu<sup>1</sup>, <sup>1</sup>The Univ. of Sun Yat-sen (China)</p>	<p><b>16:45 F-2-03</b> <b>Scaling Effect of Silicon-based Micro Thermoelectric Device with Cavity</b> <sup>2</sup>Takuya Miura<sup>1</sup>, Md Mehdee Hasan Mahfuz<sup>1</sup>, Takeo Matsuki<sup>1</sup>, Takano Watanabe<sup>1</sup>, <sup>1</sup>Waseda Univ. (Japan)</p>	
<p><b>17:15 A-2-05</b> <b>Development of Curved CMOS Image Sensors by Using SOI Layer Transfer</b> <sup>2</sup>Masahide Goto<sup>1</sup>, Shigeyuki Imura<sup>1</sup>, Hiroto Sato<sup>1</sup>, <sup>1</sup>NHK Sci. &amp; Tech. Res. Labs. (Japan)</p>	<p><b>17:15 B-2-04</b> <b>A Novel Decrement Program-Verify Scheme of a 2T NOR Flash eNVM-Based In-Memory Computing Technology</b> <sup>2</sup>Yu-Hsuan Lin<sup>1</sup>, Yu-Yu Lin<sup>1</sup>, Feng-Min Lee<sup>1</sup>, Po-Hao Tseng<sup>1</sup>, Pei-Ying Du<sup>1</sup>, Chih-Chieh Lin<sup>1</sup>, Dai-Ying Lee<sup>1</sup>, Ming-Hsiu Lee<sup>1</sup>, Kuang-Yeu Hsieh<sup>1</sup>, Keh-Chung Wang<sup>1</sup>, Chih-Yuan Lu<sup>1</sup>, <sup>1</sup>Macronix International Co., Ltd. (Taiwan)</p>	<p><b>17:15 D-2-03</b> <b>Diamond Photoconductive Switch with Nitrogen Doping to Regulate Transient Response and its Microwave Applications</b> <sup>2</sup>Hanpeng Zhang<sup>1</sup>, Min Xie<sup>1</sup>, Jingliang Liu<sup>2</sup>, Xiangjin Chen<sup>2</sup>, Xiaoli Lu<sup>1</sup>, Xiaohua Ma<sup>1</sup>, Yue Hao<sup>1</sup>, <sup>1</sup>Xidian Univ. (China), <sup>2</sup>The 13th Inst. of China Electronics Tech. Group Corp. (China)</p>	<p><b>17:15 E-2-04</b> <b>Design of Broadband Dispersion Compensation Characteristics of Photonic Crystal Slow-light Waveguide by Lightweight Machine Learning</b> <sup>2</sup>Yuchen Zhao<sup>1,2</sup>, Nao Harada<sup>1</sup>, Satoshi Iwamoto<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan), <sup>2</sup>Xi'an Univ. of Tech. (China)</p>	<p><b>17:00 F-2-04</b> <b>Identification of Temperature Difference Across the Thermoelements of an Integrated Micro Thermoelectric Device</b> <sup>2</sup>Ryuichiro Arayama<sup>1</sup>, Takuya Miura<sup>1</sup>, Md Mehdee Hasan Mahfuz<sup>1</sup>, Takeo Matsuki<sup>1</sup>, Takano Watanabe<sup>1</sup>, <sup>1</sup>Waseda Univ. (Japan)</p>	
<p><b>17:15 A-2-05</b> <b>Development of Curved CMOS Image Sensors by Using SOI Layer Transfer</b> <sup>2</sup>Masahide Goto<sup>1</sup>, Shigeyuki Imura<sup>1</sup>, Hiroto Sato<sup>1</sup>, <sup>1</sup>NHK Sci. &amp; Tech. Res. Labs. (Japan)</p>	<p><b>17:15 B-2-04</b> <b>A Novel Decrement Program-Verify Scheme of a 2T NOR Flash eNVM-Based In-Memory Computing Technology</b> <sup>2</sup>Yu-Hsuan Lin<sup>1</sup>, Yu-Yu Lin<sup>1</sup>, Feng-Min Lee<sup>1</sup>, Po-Hao Tseng<sup>1</sup>, Pei-Ying Du<sup>1</sup>, Chih-Chieh Lin<sup>1</sup>, Dai-Ying Lee<sup>1</sup>, Ming-Hsiu Lee<sup>1</sup>, Kuang-Yeu Hsieh<sup>1</sup>, Keh-Chung Wang<sup>1</sup>, Chih-Yuan Lu<sup>1</sup>, <sup>1</sup>Macronix International Co., Ltd. (Taiwan)</p>	<p><b>17:15 D-2-03</b> <b>Diamond Photoconductive Switch with Nitrogen Doping to Regulate Transient Response and its Microwave Applications</b> <sup>2</sup>Hanpeng Zhang<sup>1</sup>, Min Xie<sup>1</sup>, Jingliang Liu<sup>2</sup>, Xiangjin Chen<sup>2</sup>, Xiaoli Lu<sup>1</sup>, Xiaohua Ma<sup>1</sup>, Yue Hao<sup>1</sup>, <sup>1</sup>Xidian Univ. (China), <sup>2</sup>The 13th Inst. of China Electronics Tech. Group Corp. (China)</p>	<p><b>17:15 E-2-04</b> <b>Design of Broadband Dispersion Compensation Characteristics of Photonic Crystal Slow-light Waveguide by Lightweight Machine Learning</b> <sup>2</sup>Yuchen Zhao<sup>1,2</sup>, Nao Harada<sup>1</sup>, Satoshi Iwamoto<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan), <sup>2</sup>Xi'an Univ. of Tech. (China)</p>	<p><b>17:15 F-2-05</b> <b>Thermoelectric properties of CMOS-compatible GeSn binary alloys at room temperature</b> <sup>2</sup>Jhonny Tiscareno Ramirez<sup>1</sup>, Omar Concepción<sup>1</sup>, Thomas Classen<sup>1</sup>, Zoran Konic<sup>2</sup>, Francisco Rivadulla<sup>2</sup>, Detlev Grützmacher<sup>1</sup>, Dan Buca<sup>1</sup>, <sup>1</sup>PGI-9 Forschungszentrum Jülich (Germany), <sup>2</sup>Univ. of Leeds (UK), <sup>3</sup>Univ. de Santiago de Compostela (Spain)</p>	

**18:30-20:30 Banquet (at World Heritage “Himeji Castle”)**

## Monday, September 2

Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
	<p>08: Low Dimensional Devices and Materials <b>H-2:Characterization-I</b></p> <p>(16:15-17:30) Session Chair: Takuo Sasaki (QST), Yusuke Hoshi (Tokyo City Univ.)</p>	<p>09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-2:Qubit II</b></p> <p>(16:15-17:15) Session Chair: Takafumi Fujita (Osaka Univ.), Tokuro Hata (Tokyo Tech)</p>	<p>10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process <b>K-2:Oxide-TFTs II</b></p> <p>(16:15-17:30) Session Chair: Jun Koyama (Semiconductor Energy Lab.), Wenchang Yeh (Shimane Univ.)</p>	<p>11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-2:Characterization and Device Applications</b></p> <p>(16:15-17:30) Session Chair: Yoriko Tominaga (Hiroshima Univ.), Shingo Ogawa (Toray Research Center, Inc.)</p>	
	<p><b>16:15 H-2-01 (Invited)</b> <b>Photonic III-V semiconductor nanowires on Si toward wafer scale functionalization</b> °Fumitaro Ishikawa<sup>1</sup>, <sup>1</sup>Hokkaido Univ. (Japan)</p>	<p><b>16:15 J-2-01 (Invited)</b> <b>New material-based approaches in quantum devices</b> °Tomohiro Otsuka<sup>1</sup>, <sup>1</sup>Tohoku Univ. (Japan)</p>	<p><b>16:15 K-2-01 (Invited)</b> <b>High Mobility Thin film Transistors for Three Dimensional LSI fabricated by ALD process</b> Takanori Takahashi<sup>1</sup>, °Yukiharu Uraoka<sup>1</sup>, <sup>1</sup>Nara Institute of Science and Technology (Japan)</p>	<p><b>16:15 M-2-01 (Invited)</b> <b>Three-Level Charge Pumping Technique for SiC-MOS Interface Characterization</b> °Hiroshi Yano<sup>1</sup>, <sup>1</sup>Univ. of Tsukuba (Japan)</p>	
	<p><b>16:45 H-2-02</b> <b>A Monte Carlo method to reproduce anisotropic size effect on electrical resistivity in single-crystalline nanoscale metallic wires</b> °Takashi Kurusu<sup>1</sup>, Hiroyoshi Tanimoto<sup>1</sup>, Nobutoshi Aoki<sup>1</sup>, Masaru Kito<sup>1</sup>, Kazuya Ohuchi<sup>1</sup>, <sup>1</sup>Kioxia Corp. (Japan)</p>	<p><b>16:45 J-2-02</b> <b>Blockade Lifetime of a Multi-hole Spin State in Silicon Quantum Dots</b> °Chihiro Kondo<sup>1</sup>, Raisei Mizokuchi<sup>1</sup>, Go Sakamoto<sup>1</sup>, Ryuta Tsuchiya<sup>2</sup>, Toshiyuki Mine<sup>2</sup>, Dai Hisamoto<sup>2</sup>, Hiroyuki Mizuno<sup>2</sup>, Jun Yoneda<sup>1</sup>, Tetsuo Koderu<sup>1</sup>, <sup>1</sup>Tokyo Tech (Japan), <sup>2</sup>R&amp;D Group, Hitachi Ltd (Japan)</p>	<p><b>16:45 K-2-02</b> <b>PEALD IGZO TFT Implemented Inverters and Ring Oscillators Suitable for Back-end-of-Line Functional Circuits</b> °Wenhui Wang<sup>1</sup>, Meishan Zhang<sup>1</sup>, Jun Lan<sup>1</sup>, Xuwei Feng<sup>2</sup>, Panpan Zhang<sup>3</sup>, Kai Chen<sup>1</sup>, Mei Shen<sup>1</sup>, Feichi Zhou<sup>1</sup>, Longyang Lin<sup>1</sup>, Yida Li<sup>1</sup>, <sup>1</sup>Southern University of Science and Technology (China), <sup>2</sup>Shanghai Jiao Tong University (China), <sup>3</sup>Beijing University of Posts and Telecommunications (China)</p>	<p><b>16:45 M-2-02</b> <b>Time-dependent dielectric breakdown characterization of bulk boron nitride films in sp<sup>2</sup>-phase prepared by a reactive plasma assisted coating method</b> °Yuya Asamoto<sup>1</sup>, Masao Noma<sup>2</sup>, Shigehiko Hasegawa<sup>3</sup>, Michiru Yamashita<sup>4</sup>, Keiichiro Urabe<sup>1</sup>, Koji Eriguchi<sup>1</sup>, <sup>1</sup>Kyoto Univ. (Japan), <sup>2</sup>Shinko Seiki Corp. Ltd. (Japan), <sup>3</sup>Osaka Univ. (Japan), <sup>4</sup>Hyogo Prefectural Inst. Technol. (Japan)</p>	
	<p><b>17:00 H-2-03</b> <b>The carrier injection characteristic of AC-driven monolayer WSe<sub>2</sub> light transistor</b> °Chiao-Yun Chang<sup>1,2</sup>, Ya-Hui Chang<sup>3</sup>, Yen-Shou Lin<sup>2,3</sup>, Zheng-Zhe Chen<sup>2,4</sup>, Konthoujam James Singh<sup>2</sup>, Hsiang-Ting Lin<sup>2</sup>, Shih-Yen Lin<sup>2,4</sup>, Hao-Chung Kuo<sup>3</sup>, Min-Hsiung Shih<sup>2,3,5</sup>, <sup>1</sup>National Taiwan Ocean University (Taiwan), <sup>2</sup>Academia Sinica (Taiwan), <sup>3</sup>National Yang Ming Chiao Tung University (Taiwan), <sup>4</sup>National Taiwan University (Taiwan), <sup>5</sup>National Sun Yat-sen University (Taiwan)</p>	<p><b>17:00 J-2-03</b> <b>Proposal to implement single-qubit logical operations on the binomial code without ancillary qubits</b> °Yuki Tanaka<sup>1,2</sup>, Yuichiro Mori<sup>2</sup>, Yuta Shingu<sup>1</sup>, Aiko Yamaguchi<sup>2,4</sup>, Tsuyoshi Yamamoto<sup>2,4</sup>, Yuichiro Matsuzaki<sup>1</sup>, <sup>1</sup>Chuo Univ. (Japan), <sup>2</sup>AIST (Japan), <sup>3</sup>Tokyo Univ. of Sci. (Japan), <sup>4</sup>NEC Corp. (Japan)</p>	<p><b>17:00 K-2-03</b> <b>Insight into the Physical Origin of NBIS in ALD IGZO Transistors</b> °Liankai Zheng<sup>1</sup>, Yiyang Fan<sup>1</sup>, Yulong Dong<sup>1</sup>, Xiuyan Li<sup>1</sup>, Mengwei Si<sup>1</sup>, <sup>1</sup>Shanghai Jiao Tong Univ. (China)</p>	<p><b>17:00 M-2-03</b> <b>Nondestructive Evaluation of Thermal-Process-Induced Change of Sn/Cu/Ni Plating Thin Film Stacks Based on EDX Measurement and Bayesian Inference</b> °Yutaka Hoshina<sup>1</sup>, <sup>1</sup>Sumitomo Electric Industries, Ltd. (Japan)</p>	
	<p><b>17:15 H-2-04</b> <b>Prediction of Edge Structure Dependence on Carrier Mobility in SiC<sub>x</sub> and GeC<sub>x</sub> Nanoribbons by First-Principles Calculations</b> °kota iwaki<sup>1</sup>, yoshiyuki egami<sup>2</sup>, <sup>1</sup>Grad. Sch. Eng., Hokkaido Univ. (Japan), <sup>2</sup>Fac. Eng., Hokkaido Univ. (Japan)</p>		<p><b>17:15 K-2-04</b> <b>In-situ AlOx Passivation on Extremely Thin 2-nm InOx FETs for Mobility and Stability Improvement</b> °Chia-Tsong Chen<sup>1</sup>, Wen Hsin Chang<sup>1</sup>, Toshifumi Irisawa<sup>1</sup>, Tatsuro Maeda<sup>1</sup>, <sup>1</sup>AIST (Japan)</p>	<p><b>17:15 M-2-04</b> <b>Rapid Microwave Synthesis of Solution-Processed a-IGZO Thin-Film Transistors for High-Performance pH Sensing</b> °Ki-Ju Park<sup>1</sup>, Won-Ju Cho<sup>1</sup>, <sup>1</sup>The Univ. of Kwangju (Korea)</p>	

**18:30-20:30 Banquet (at World Heritage “Himeji Castle”)**

## Tuesday, September 3

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
	<p>02: Advanced and Emerging Memories / New Applications <b>B-3:Ferroelectric Devices</b></p> <p>(9:00-10:15) Session Chair: Laurent Grenouillet (CEA-Leti), Kouichi Nagai (Fujitsu Semiconductor Memory Solution Ltd.)</p>		<p>04: Power / High-speed Devices and Materials <b>D-3:Si-related Devices</b></p> <p>(9:00-10:00) Session Chair: Tsuyoshi Kachi (Toshiba Device &amp; storage), Shinsuke Harada (AIST)</p>	<p>05: Photonics: Devices / Integration / Related Technology <b>E-3:Si Photonics</b></p> <p>(9:00-10:15) Session Chair: Hideki Ono (OKI), Xuejun Xu (NTT Corp.)</p>	
	<p><b>9:00 B-3-01 (Invited)</b> <b>HfO<sub>2</sub>-based Ferroelectric Capacitors for Non-Volatile Memory:</b> <b>Going from Single Devices to Memory Arrays</b> °Ruben Alcalá<sup>1</sup>, Roberto Guido<sup>1</sup>, Pramoda Vishnumurthy<sup>1</sup>, Alfred Kersch<sup>2</sup>, Thomas Mikolajick<sup>1</sup>, Uwe Schroeder<sup>1</sup>, <sup>1</sup>NaMLab (Germany), <sup>2</sup>Univ. of Applied Sciences (Germany)</p>		<p><b>9:00 D-3-01</b> <b>The Reduction of Reverse Recovery Current in RC-IGBT by Controlling Hole Injection from IGBT Region with Partially Extended N-emitter</b> °Daiki Yoshikawa<sup>1</sup>, Kazutoshi Nakamura<sup>1</sup>, Yusuke Kawaguchi<sup>1</sup>, Shoko Hanagata<sup>1</sup>, Shunta Murai<sup>1</sup>, Norio Yasuhara<sup>1</sup>, Kenichi Matsushita<sup>1</sup>, Takeshi Suwa<sup>1</sup>, Keiko Kawamura<sup>1</sup>, Seiji Inumiya<sup>1</sup>, <sup>1</sup>Toshiba Electronic Devices &amp; Storage Corporation (Japan)</p> <p><b>9:15 D-3-02</b> <b>Mitigating Self-Turn-On in Scaled CSTBT: A Focus on Poly-Si Resistivity</b> °Srikanth Gollapudi<sup>1</sup>, Ichiro Omura<sup>1</sup>, <sup>1</sup>Kyushu Institute of Technology (Japan)</p>	<p><b>9:00 E-3-01 (Invited)</b> <b>High-Frequency Dynamics in Silicon Photonic Modulators</b> °Wei Shi<sup>1</sup>, Erwan Weckenmann<sup>1</sup>, Alireza Geravandand<sup>1</sup>, Abdolkhalegh Mohammad<sup>1</sup>, Zibo Zheng<sup>1</sup>, Simon Levasseur<sup>1</sup>, Leslie Rusch<sup>1</sup>, <sup>1</sup>Université Laval (Canada)</p>	
	<p><b>9:30 B-3-02</b> <b>Unipolar Polarization Switching and High-endurance Operation of HZO/Si Anti-ferroelectric FETs</b> °Shin-Yi Min<sup>1</sup>, Kasidit Toprasertpong<sup>1</sup>, Mitsuru Takenaka<sup>1</sup>, Shinichi Takagi<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan)</p>		<p><b>9:30 D-3-03</b> <b>Proposal of 1.2kV thin wafer Semi-SuperJunction IGBT (SSJ-IGBT) surpassing Full SuperJunction IGBT</b> °Masahiro Tanaka<sup>1</sup>, Naoki Abe<sup>2</sup>, Akio Nakagawa<sup>3</sup>, <sup>1</sup>Nihon Synopsys G.K. (Japan), <sup>2</sup>Nihon Synopsys G.K. (Japan), <sup>3</sup>Nakagawa Consulting Office, LLC. (Japan)</p>	<p><b>9:30 E-3-02</b> <b>Design of Triple Taper Structure for High-Performance Hybrid EA modulator on Silicon Waveguides</b> °Kei Masuyama<sup>1,2</sup>, Mizuki Shirao<sup>1</sup>, Nobuhiko Nishiyama<sup>2</sup>, Nobuo Ohata<sup>1</sup>, <sup>1</sup>Mitsubishi Electric Corp. (Japan), <sup>2</sup>Tokyo Tech. (Japan)</p>	
	<p><b>9:45 B-3-03</b> <b>Enhanced Ferroelectric Field Effect Transistor via Interlayer Engineering Featuring Memory Window of 3.6V, Endurance &gt; 10<sup>9</sup> cycles, and Multi-Level Storage for NAND Memory</b> °Jun Lan<sup>1</sup>, Haoran Peng<sup>1</sup>, Wenhui Wang<sup>1</sup>, Zhixiong Li<sup>1</sup>, Guobiao Zhang<sup>1</sup>, Mei Shen<sup>1</sup>, Xuwei Feng<sup>2</sup>, Jiamin Li<sup>1</sup>, Feichi Zhou<sup>1</sup>, Longyang Lin<sup>1</sup>, Yida Li<sup>1</sup>, <sup>1</sup>Southern University of Science and Technology (China), <sup>2</sup>Shanghai Jiao Tong University (China)</p>		<p><b>9:45 D-3-04</b> <b>Physics-based LSTM Neural Network Surrogate Model for SiGe HBT Intrinsic Profile Optimization</b> °Gregoire Caron<sup>1,2</sup>, Anatoli Juditsky<sup>2</sup>, Nicolas Guitard<sup>1</sup>, Didier Celi<sup>1</sup>, <sup>1</sup>STMicroelectronics (France), <sup>2</sup>Lab. Jean Kuntzmann (France)</p>	<p><b>9:45 E-3-03</b> <b>Record-low C-band TM mode propagation loss of 0.28 dB/cm in silicon single-mode waveguides with smooth top surface</b> °TSUYOSHI HORIKAWA<sup>1</sup>, Makoto Okano<sup>2</sup>, Nobuhiko Nishiyama<sup>1,3</sup>, <sup>1</sup>Tokyo Inst. of Tech. (Japan), <sup>2</sup>National Inst. of Advanced Indus. Sci. and Tech. (Japan), <sup>3</sup>Photonics Electronics Tech. Res. Association (Japan)</p>	
	<p><b>10:00 B-3-04 (Late News)</b> <b>BEOL Compatible High-reliability La-doped ZrO<sub>2</sub> Antiferroelectric Capacitor</b> °Jianguo Li<sup>1</sup>, Junliang Zhou<sup>1</sup>, Fan Wu<sup>2</sup>, ChoongHyun Lee<sup>1</sup>, Yi Zhao<sup>1,2</sup>, <sup>1</sup>Zhejiang University (China), <sup>2</sup>East China Normal University (China)</p>			<p><b>10:00 E-3-04</b> <b>Experimental Demonstration of Compact, Low-loss, and Broadband 2×2 Si Optical Coupler Designed by CMA-ES</b> °Yuto Miyatake<sup>1</sup>, Kasidit Toprasertpong<sup>1</sup>, Shinichi Takagi<sup>1</sup>, Mitsuru Takenaka<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan)</p>	

## Tuesday, September 3

Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
<p>07: Organic / Molecular / Bio-electronics <b>G-3:Organic / Molecular / Bio-electronics Late News Session</b></p> <p>(9:00-9:45) Session Chair: Masakazu Nakamura (NAIST), Takashi Tokuda (Tokyo Tech)</p>	<p>08: Low Dimensional Devices and Materials <b>H-3:Growth</b></p> <p>(9:00-10:00) Session Chair: Masafumi Jo (RIKEN), Takayuki Arie (Osaka Metropolitan Univ.)</p>	<p>09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-3:Novel Quantum Devices</b></p> <p>(9:00-10:00) Session Chair: Hidehiro Asai (AIST), Jun Yoneda (Tokyo Tech)</p>			
<p><b>9:00 G-3-01 (Late News)</b> <b>ESR Study on Organic Photoelectrochemical Transistors Using Quantum Dots</b></p> <p><sup>○</sup>WENHAO HE<sup>1</sup>, Seira Yamaguchi<sup>1,2</sup>, Yizhou Chen<sup>1</sup>, Jiayi Wang<sup>1</sup>, Sayo Okabe<sup>1</sup>, Yukihiko Shimoi<sup>1</sup>, Kazuhiro Marumoto<sup>1,2,3</sup>, <sup>1</sup>Dep. of Mater. Sci., Univ. of Tsukuba (Japan), <sup>2</sup>IQSST, Univ. of Tsukuba (Japan), <sup>3</sup>TREMS, Univ. of Tsukuba (Japan)</p>	<p><b>9:00 H-3-01 (Invited)</b> <b>Optimization and Localization of Molecular-Beam-Epitaxy-grown GaAs-based Quantum Dots</b></p> <p><sup>○</sup>Andreas Dirk Wieck<sup>1</sup>, Hans-Georg Babin<sup>1</sup>, Nikolai Bart<sup>1</sup>, Arne Ludwig<sup>1</sup>, <sup>1</sup>Ruhr-Universität Bochum (Germany)</p>	<p><b>9:00 J-3-01</b> <b>Coulomb Oscillations in Quantum Antidots in the Integer and Fractional Quantum Hall Regime Using an Airbridge Gate</b></p> <p><sup>○</sup>Tokuro Hata<sup>1</sup>, Hiroki Mitani<sup>1</sup>, Hidetoshi Uchiyama<sup>1</sup>, Takafumi Akiho<sup>2</sup>, Koji Muraki<sup>2</sup>, Toshimasa Fujisawa<sup>1</sup>, <sup>1</sup>Inst. of Tokyo Tech. (Japan), <sup>2</sup>NTT Basic Res. Labs. (Japan)</p>			
<p><b>9:15 G-3-02 (Late News)</b> <b>Laser-based fabrication of MoS<sub>2</sub>-Ag composites for molecular sensing</b></p> <p><sup>○</sup>Soobean Han<sup>1</sup>, Byoungyun Jeon<sup>1</sup>, Jaehan Lee<sup>1</sup>, Yoonkyung Lee<sup>1</sup>, Kyunghoon Kim<sup>1</sup>, <sup>1</sup>Sungkyunkwan Univ. (Korea), <sup>2</sup>Memory Implantation Tech. Team of Samsung Electronics (Korea)</p>		<p><b>9:15 J-3-02</b> <b>Asymmetric Hole Spin Resonance Spectrum in Silicon Quantum Dots</b></p> <p><sup>○</sup>Sayyid Irsyadul Ibad<sup>1</sup>, Yusaku Suzuki<sup>1</sup>, Masahiro Tadokoro<sup>1</sup>, Tokio Futaya<sup>1</sup>, Shimpei Nishiyama<sup>1,2</sup>, Kimihiko Kato<sup>2</sup>, Shigenori Murakami<sup>2</sup>, Takahiro Mori<sup>2</sup>, Raisei Mizokuchi<sup>1</sup>, Jun Yoneda<sup>1</sup>, Tetsuo Kodera<sup>1</sup>, <sup>1</sup>Tokyo Tech. (Japan), <sup>2</sup>AIST (Japan)</p>			
<p><b>9:30 G-3-03 (Late News)</b> <b>Design and Optimization towards Ultra-High Sensitivity in Impedance Flow Cytometry Devices</b></p> <p><sup>○</sup>Vishnuram Abhinav<sup>1</sup>, Tejas R. Naik<sup>1,2</sup>, <sup>1</sup>Indian Institute of Technology Bombay (India), <sup>2</sup>University of Glasgow (UK)</p>	<p><b>9:30 H-3-02</b> <b>Orthogonal Growth of a Few-Layer WS<sub>2</sub>: Channel and an Graphene to implement the atomic length gate and the atomically thinned channel simultaneously</b></p> <p>Hideaki Sugino<sup>1</sup>, Hirai Tanaka<sup>1</sup>, Kazuki Yonekubo<sup>1</sup>, Fuminori Sasaki<sup>1</sup>, Toshifumi Irisawa<sup>2</sup>, Takeo Matsuki<sup>2</sup>, Daisuke Ohori<sup>2</sup>, Kazuhiko Endo<sup>3</sup>, Issei Watanabe<sup>4</sup>, <sup>○</sup>Hirokazu Fukidome<sup>1</sup>, <sup>1</sup>Research Institute of Electrical Communication, Tohoku University (Japan), <sup>2</sup>National Institute of Advanced Science and Technology (Japan), <sup>3</sup>Institute of Fluid Science, Tohoku University (Japan), <sup>4</sup>National Institute of Information and Communications Technology (Japan)</p>	<p><b>9:30 J-3-03</b> <b>Magneto-transport Characterization of GeSn for Spintronics Applications</b></p> <p><sup>○</sup>Prateek Kaul<sup>1</sup>, Omar Concepcion<sup>1</sup>, Daan Wielens<sup>2</sup>, Patrick Zellekens<sup>2</sup>, Chuan Li<sup>2</sup>, Zoran Ikonc<sup>4</sup>, Koji Ishibashi<sup>3</sup>, Qing-Tai Zhao<sup>1</sup>, Detlev Gruetzmacher<sup>4</sup>, Alexander Brinkman<sup>2</sup>, Dan Mihai Boca<sup>1</sup>, <sup>1</sup>Peter Gruenberg Inst. - 9, Forschungszentrum Juelich (Germany), <sup>2</sup>MESA+ Inst. for Nanotech., Univ. of Twente (Netherlands), <sup>3</sup>RIKEN Center for Emergent Matter Sci. (Japan), <sup>4</sup>Univ. of Leeds (UK)</p>			
	<p><b>9:45 H-3-03</b> <b>PVD-WS<sub>2</sub>: Film Crystallinity Enhancement by Controlling Particle Energy with Target-Substrate Distance and Argon Pressure</b></p> <p><sup>○</sup>Soma Ito<sup>1</sup>, kaede Teraoka<sup>1</sup>, Naoki Matsunaga<sup>1</sup>, Shinya Imai<sup>1</sup>, Hitoshi Wakabayashi<sup>1</sup>, <sup>1</sup>Tokyo Tech (Japan)</p>	<p><b>9:45 J-3-04</b> <b>Device and Technology Codesign of Germanium Quantum-Dots/Si<sub>3</sub>N<sub>4</sub> Microdisk Light Emitters</b></p> <p><sup>○</sup>Shih-Hsiang Yang<sup>1</sup>, Chi-Chen Lai<sup>1</sup>, Pei-Wen Li<sup>1</sup>, <sup>1</sup>Institute of Electronics, National Yang Ming Chiao Tung University (Taiwan)</p>			



# Tuesday, September 3

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
<p>01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-4:Advanced CMOS: Device Technology</b></p> <p>(10:45-12:15) Session Chair: Anabela Veloso (imec), Keisuke Yamamoto (Kyushu Univ.)</p>	<p>02: Advanced and Emerging Memories / New Applications <b>B-4:Ferroelectric Memory Devices</b></p> <p>(10:45-12:15) Session Chair: Atsushi Himeno (Panasonic Holdings Corp.), Ming-Hsiu Lee (Macronix International Co., Ltd.)</p>	<p>03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-4:Advanced integration</b></p> <p>(10:45-12:00) Session Chair: Masayuki Kitamura (KIOXIA Corp.), Yoshiyuki Ohba (Sony Semiconductor Manufacturing Corp.)</p>	<p>04: Power / High-speed Devices and Materials <b>D-4:High-speed Devices</b></p> <p>(10:45-12:00) Session Chair: Akira Satou (Tohoku Univ.), Taketomo Sato (Hokkaido Univ.)</p>	<p>05: Photonics: Devices / Integration / Related Technology <b>E-4:UV and Visible Light Technology</b></p> <p>(10:45-12:00) Session Chair: Kouichi Akahane (NICT), Nobuhiko Ozaki (Wakayama Univ.)</p>	<p>06: Energy Harvesting and Converting Devices and Materials <b>F-4:Energy harvesting and solar cells</b></p> <p>(10:45-11:45) Session Chair: Shunsuke Yamada (Tohoku Univ.), Naoyuki Shibayama (Toin Univ. of Yokohama)</p>
<p><b>10:45 A-4-01</b> <b>High Performance (111)-Oriented Extremely-Thin Body Ge-On-Insulator nMOSFETs down to 2.1 nm</b> Xueyang Han<sup>1</sup>, Chia-Tsong Chen<sup>1</sup>, Kei Sumita<sup>1</sup>, Kasidit Toprasertpong<sup>1</sup>, Mitsuru Takenaka<sup>1</sup>, Shinichi Takagi<sup>1</sup>, <sup>1</sup>The University of Tokyo (Japan)</p>	<p><b>10:45 B-4-01</b> <b>High stability of the ferroelectricity against hydrogen gas in (Al,Sc)N thin films</b> Nana Sun<sup>1</sup>, Kazuki Okamoto<sup>1</sup>, Shinnosuke Yasuoka<sup>1</sup>, Soshun Doko<sup>2</sup>, Naoko Matsui<sup>2</sup>, Toshikazu Irisawa<sup>2</sup>, Koji Tsunekawa<sup>2</sup>, Hiroshi Funakubo<sup>1</sup>, <sup>1</sup>Tokyo Tech (Japan), <sup>2</sup>Canon ANELVA Corp (Japan)</p>	<p><b>10:45 C-4-01 (Invited)</b> <b>Backside Power Delivery Process Integration Challenges</b> Liesbeth Witters<sup>1</sup>, Peng Zhao<sup>1</sup>, Gerald Beyer<sup>1</sup>, Eric Beyne<sup>1</sup>, <sup>1</sup>imec (Belgium)</p>	<p><b>10:45 D-4-01 (Invited)</b> <b>Grating Gate GaN/AlGaN Plasmonic FETs for THz Optoelectronics Devices</b> Wojciech Knap<sup>1,2</sup>, Pavlo Sai<sup>1,2</sup>, Maksym Dub<sup>1,2</sup>, Vadym Korotyeyev<sup>3</sup>, <sup>1</sup>CENTERA Warsaw Univ. of Technology Warsaw (Poland), <sup>2</sup>UNIPRESS Polish Academy of Sciences (Poland), <sup>3</sup>V. Ye. Lashkaryov Institute of Semiconductor Physics, NASU, Kyiv, Ukraine (Ukraine)</p>	<p><b>10:45 E-4-01</b> <b>Surpassing ITO Transmittance Limit in Solar-blind Ultraviolet: Dual-mode Response for AlGaN/GaN Broadband UV Photodetector</b> Yuhan Pu<sup>1,2</sup>, Yung C. Liang<sup>1,2</sup>, <sup>1</sup>National Univ. of Singapore (Singapore), <sup>2</sup>National Univ. of Singapore (Suzhou) Res. Inst. (China)</p>	<p><b>10:45 F-4-01</b> <b>1 mV-input voltage step-up circuit for ultra-low voltage thermoelectric power generator</b> Shiyuan Sun<sup>1</sup>, Hang Yin<sup>1</sup>, Satoshi Hamasuna<sup>1</sup>, Satya Prakash Patti<sup>1,2</sup>, Takeaki Yajima<sup>1</sup>, <sup>1</sup>Kyushu Univ. (Japan), <sup>2</sup>North-Eastern Hill Univ. (India)</p>
<p><b>11:00 A-4-02</b> <b>Electron Transport in Ge(Sn) n-type Metal-Oxide-Semiconductor Field-Effect Transistors at Cryogenic Temperatures</b> Yen-Yang Chen<sup>1</sup>, Kai-Ying Tien<sup>1</sup>, Chia-You Liu<sup>1</sup>, Wei-Hsiang Kao<sup>1</sup>, Jiun-Yun Li<sup>1,2</sup>, <sup>1</sup>National Taiwan Univ. (Taiwan), <sup>2</sup>Taiwan Semiconductor Res. Inst. (Taiwan)</p>	<p><b>11:00 B-4-02</b> <b>Enhanced Ferroelectricity in HfO<sub>2</sub>/ZrO<sub>2</sub> Superlattice Ferroelectric Capacitor with TiO<sub>2</sub> Seed Layer at Low-Temperature Annealing Process</b> Dongya Li<sup>1,3</sup>, Huan Liu<sup>1,2,3</sup>, Peiyuan Du<sup>1</sup>, Fei Yu<sup>1</sup>, Chengji Jin<sup>1,3</sup>, Xiao Yu<sup>1,2,3</sup>, Yan Liu<sup>1</sup>, Yue Hao<sup>1</sup>, Genquan Han<sup>1,3</sup>, <sup>1</sup>State Key Discipline Laboratory of Wide Band Gap Semiconductor Technology, Xidian University (China), <sup>2</sup>Research Center for Intelligent Chips (China), <sup>3</sup>Hangzhou Institute of Technology, Xidian University (China)</p>	<p><b>11:15 C-4-02</b> <b>Development of Hybrid Bonding Using Area-Selective Passivation Layer Deposition Technology on Various Substrates for Heterogeneous Integrated Structure</b> Wen-Tzu Tsai<sup>1</sup>, Mu-Ping Hsu<sup>1</sup>, Yi-Hsuan Chen<sup>1</sup>, Yuan-Chiu Huang<sup>1</sup>, Kuan-Neng Chen<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung Univ. (Taiwan)</p>	<p><b>11:15 D-4-02</b> <b>Structure dependence of output power for a resonant-tunneling-diode terahertz oscillator integrated with rectangular cavity resonator</b> Ryuya Saito<sup>1</sup>, Hiroki Tanaka<sup>1</sup>, Feifan Han<sup>1</sup>, Safumi Suzuki<sup>1</sup>, <sup>1</sup>Tokyo Tech (Japan)</p>	<p><b>11:00 E-4-02</b> <b>NiO/β-Ga<sub>2</sub>O<sub>3</sub> p-n Heterojunction Material Epitaxial Growth on Mist-CVD for Field Controlled Ga<sub>2</sub>O<sub>3</sub> Ultraviolet Photodetector</b> Zeyulin Zhang<sup>1</sup>, Dinghe Liu<sup>1</sup>, Yiru Yan<sup>1</sup>, Qingwen Song<sup>1</sup>, Dazheng Chen<sup>1</sup>, Chunfu Zhang<sup>1</sup>, Yuming Zhang<sup>1</sup>, Yue Hao<sup>1</sup>, <sup>1</sup>Xidian University (China)</p>	<p><b>11:00 F-4-02</b> <b>Steady Energy Storage Density (ESD) and Efficiency of Antiferroelectric Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> with Unipolar Switching for Energy Harvesting</b> Cheng-Hong Liu<sup>1</sup>, Kuo-Yu Hsiang<sup>2</sup>, Fu-Sheng Chang<sup>3</sup>, Chee-Wee Liu<sup>1,3</sup>, Min-Hung Lee<sup>1</sup>, <sup>1</sup>Program for Semiconductor Devices, Materials, and Hetero-integration, Graduate School of Advanced Technology, National Taiwan University (Taiwan), <sup>2</sup>Institute of Electronics, National Yang Ming Chiao Tung University (Taiwan), <sup>3</sup>Graduate Institute of Electronics Engineering, National Taiwan University (Taiwan)</p>
<p><b>11:15 A-4-03</b> <b>Te-based layered materials for Fermi-level Depinning on n-Ge</b> Wen Hsin CHANG<sup>1</sup>, Shogo HATAYAMA<sup>1</sup>, Naoya OKADA<sup>1</sup>, Toshifumi IRISAWA<sup>1</sup>, Yuta SAITO<sup>1,2</sup>, <sup>1</sup>AIST (Japan), <sup>2</sup>Tohoku Univ. (Japan)</p>	<p><b>11:15 B-4-03</b> <b>Oxygen Dosage Adjusting in ALD Process for Highly-reliable and Fast Ferroelectric HZO Thin Film with a High Remanent Polarization</b> Yu-Chun Li<sup>1</sup>, Zi-Ying Huang<sup>1</sup>, Xiao-Na Zhu<sup>1,2</sup>, David Wei Zhang<sup>1,2</sup>, Hong-Liang Lu<sup>1,2</sup>, <sup>1</sup>Fudan Univ. (China), <sup>2</sup>Zhangjiang Fudan Int'l Innovation Center (China)</p>	<p><b>11:15 C-4-02</b> <b>Development of Hybrid Bonding Using Area-Selective Passivation Layer Deposition Technology on Various Substrates for Heterogeneous Integrated Structure</b> Wen-Tzu Tsai<sup>1</sup>, Mu-Ping Hsu<sup>1</sup>, Yi-Hsuan Chen<sup>1</sup>, Yuan-Chiu Huang<sup>1</sup>, Kuan-Neng Chen<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung Univ. (Taiwan)</p>	<p><b>11:15 D-4-02</b> <b>Structure dependence of output power for a resonant-tunneling-diode terahertz oscillator integrated with rectangular cavity resonator</b> Ryuya Saito<sup>1</sup>, Hiroki Tanaka<sup>1</sup>, Feifan Han<sup>1</sup>, Safumi Suzuki<sup>1</sup>, <sup>1</sup>Tokyo Tech (Japan)</p>	<p><b>11:15 E-4-03</b> <b>Ultra Low-Loss Al<sub>2</sub>O<sub>3</sub> Integrated Photonic Platform for UV and Visible Wavelengths</b> Gaudhman Jeevanandam<sup>1</sup>, Nga P. Pham<sup>1</sup>, Erfan Mafakheri<sup>1</sup>, Emma Vecchio<sup>1</sup>, Diego C. Altamirano<sup>1</sup>, Vittal Prakasam<sup>1</sup>, Zeinab Jafari<sup>1</sup>, Christian Haffner<sup>1</sup>, Philippe Helin<sup>1</sup>, <sup>1</sup>imec (Belgium)</p>	<p><b>11:15 F-4-03</b> <b>Controlling Onset Voltage in Mo:BiVO<sub>4</sub>/TiO<sub>2</sub> Photoanode for Improved PEC Water Splitting Performance</b> Lingga Ghufira Oktariza<sup>1</sup>, Yuta Sato<sup>1</sup>, Muhammad Monirul Islam<sup>1</sup>, Shigeru Ikeda<sup>2</sup>, Takeaki Sakurai<sup>1</sup>, <sup>1</sup>University of Tsukuba (Japan), <sup>2</sup>Konan University (Japan)</p>

## Tuesday, September 3

Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
<p>07: Organic / Molecular / Bio-electronics <b>G-4: Highly Sensitive Devices for Chem/Bio Detection</b></p> <p>(10:30-12:00) Session Chair: Takashi Tokuda (Tokyo Tech), Kazuhiro Takahashi (Toyoashi Univ. of Technology)</p>	<p>08: Low Dimensional Devices and Materials <b>H-4: Device-II</b></p> <p>(10:45-11:45) Session Chair: Takamasa Kawanago (AIST), Mahito Yamamoto (Kansai Univ.)</p>	<p>09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-4: Spintronics</b></p> <p>(10:45-12:00) Session Chair: Shinobu Ohya (The Univ. of Tokyo), Nozomi Nishizawa (Kitasato Univ.)</p>		<p>11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-4: Wide Bandgap Materials</b></p> <p>(10:45-12:00) Session Chair: Akihiko Kikuchi (Sophia Univ.), Yu-Lun Chueh (National Tsing-Hua Univ.)</p>	<p>02: Advanced and Emerging Memories / New Applications <b>N-4: Emerging Memory Devices, and DRAM</b></p> <p>(10:45-12:15) Session Chair: Wein-Town Sun (eMemory Technology Inc.), Akiyoshi Seko (Micron Technology Inc.)</p>
<p><b>10:30 G-4-01</b> "Advancing the pH Sensitivity in Ferroelectric-ISFETs Beyond the Nernst Limit via Sol-Gel Process PZT Thin Film Integration and Coplanar Gate Sensing Paradigm" <sup>○</sup>Dong-Gyun Mah<sup>1</sup>, Seong-Moo Oh<sup>2</sup>, Jin-Wook Shin<sup>2</sup>, Jong-Heon Yang<sup>3</sup>, Jongwan Jung<sup>2</sup>, Won-Ju Cho<sup>1</sup>, <sup>1</sup>The Univ. of Kwangwoon (Korea), <sup>2</sup>The Univ. of Sejong (Korea), <sup>3</sup>The Lab. of ETRI (Korea)</p>					
<p><b>10:45 G-4-02</b> Fabrication Process of CMOS Multi-Chemical Image Sensor for High-Resolution Imaging <sup>○</sup>Hideo Doi<sup>1</sup>, Junpei Otsuka<sup>1</sup>, Tomoko Horiai<sup>1</sup>, Yong-Joon Choi<sup>1</sup>, Toshihiko Noda<sup>1</sup>, Kazuhiro Takahashi<sup>1</sup>, Kazuaki Sawada<sup>1</sup>, <sup>1</sup>Toyoashi Univ. of Tech (Japan)</p>	<p><b>10:45 H-4-01 (Invited)</b> MX<sub>2</sub> Layer Transfer: A path towards integrating epitaxial 2D materials in a 300mm pilot line <sup>○</sup>Souvik Ghosh<sup>1</sup>, Quentin Smets<sup>1</sup>, Tom Schram<sup>1</sup>, Marie-Emmanuelle Boulon<sup>1</sup>, Damien J Leech<sup>1</sup>, Henry Medina Silva<sup>1</sup>, Anastasiia Krav<sup>1</sup>, Benjamin Groven<sup>1</sup>, Rudy Verheyen<sup>1</sup>, Bavo Storms<sup>1</sup>, Pawan Kumar<sup>1</sup>, Pierre Morin<sup>1</sup>, Inge Asselberghs<sup>1</sup>, Cesar J Lockhart de la Rosa<sup>1</sup>, Steven Brems<sup>1</sup>, Gouri Sankar Kar<sup>1</sup>, <sup>1</sup>imec (Belgium)</p>	<p><b>10:45 J-4-01 (Invited)</b> From spin-orbitronics to orbitronics: efficient manipulation of topological spin structures for memory and unconventional computing <sup>○</sup>Mathias Kläui<sup>1,2</sup>, <sup>1</sup>Johannes Gutenberg-Universität Mainz (Germany), <sup>2</sup>NTNU Trondheim (Norway)</p>		<p><b>10:45 M-4-01 (Invited)</b> Metrology informatics on semiconductor ~ Multimodal analysis of gallium nitride as examples ~ <sup>○</sup>Shigetaka Tomiya<sup>1</sup>, <sup>1</sup>NAIST (Japan)</p>	<p><b>10:45 N-4-01</b> Single Transistor Memory with Long Retention Time and High Endurance at 300 K Yi Han<sup>1</sup>, <sup>○</sup>Jingxuan Sun<sup>1</sup>, Jin-Hee Bae<sup>1</sup>, Ionut Radu<sup>2</sup>, Joachim Knoch<sup>3</sup>, Detlev Gruetzmacher<sup>4</sup>, Qing-Tai Zhao<sup>1</sup>, <sup>1</sup>Forschungszentrum Jülich GmbH (Germany), <sup>2</sup>SOITEC (France), <sup>3</sup>RWTH Aachen Univ. (Germany)</p>
<p><b>11:00 G-4-03</b> High Sensitive Detection of SARS-CoV-2 by Graphene FET Using Acetate Buffer <sup>○</sup>Kaori Yamamoto<sup>1</sup>, Natsuki Sato<sup>1</sup>, Mamiko Yano<sup>1</sup>, Kiyoji Sakano<sup>1</sup>, Eriko Ohmishi<sup>1</sup>, Shota Ushiba<sup>2</sup>, Shinsuke Tan<sup>2</sup>, Masahiko Kimura<sup>2</sup>, Yohei Watanabe<sup>3</sup>, Hidekazu Tanaka<sup>1</sup>, Kazuhiko Matsumoto<sup>1</sup>, <sup>1</sup>UOsaka (Japan), <sup>2</sup>Murata Manufac. (Japan), <sup>3</sup>Kyoto Prefecture Univ. of Medicine (Japan)</p>					<p><b>11:00 N-4-02</b> Ag/GeS/Ag Bidirectional Conductive-Bridge Selector with High Endurance, Low Turn-Off Latency and Switching Variability <sup>○</sup>Asif Ali<sup>1</sup>, Haider Abbas<sup>2</sup>, Jiayi Li<sup>1</sup>, Diing Shenp Ang<sup>1</sup>, <sup>1</sup>Nanyang Technological University (Singapore), <sup>2</sup>Sejong University (Korea)</p>
<p><b>11:15 G-4-04</b> Self-Amplifying Dual-Gate Field-Effect Transistor Biosensor Platform for Selective Ca<sup>2+</sup> Detection Using High-k Gate Oxide Structured Si Nanowire Channel <sup>○</sup>Tae-Hwan Hyun<sup>1</sup>, Won-Ju Cho<sup>1</sup>, Dae-Sik Lee<sup>2</sup>, <sup>1</sup>Kwangwoon Univ. (Korea), <sup>2</sup>Electronics and Telecommunications Res. Inst. (Korea)</p>	<p><b>11:15 H-4-02</b> High Performance and Low Variability in 2D Scaled Transistors with a Short Channel Length of 30 nm <sup>○</sup>Sifan Chen<sup>1</sup>, Shuiyuan Wang<sup>1</sup>, Zizheng Liu<sup>1</sup>, Tanjun Wang<sup>1</sup>, Peng Zhou<sup>1</sup>, <sup>1</sup>Fudan Univ. (China)</p>	<p><b>11:15 J-4-02</b> Spin-Orbit Torque Induced Spatial Asymmetric Switching in Ferrimagnets <sup>○</sup>Zhenhang Kong<sup>1</sup>, Zhengde Xu<sup>1</sup>, Xue Zhang<sup>1</sup>, Zhifeng Zhu<sup>1,2</sup>, <sup>1</sup>The Univ. of ShanghaiTech (China), <sup>2</sup>Shanghai Eng. Res. Center of Energy Efficient and Custom AI IC (China)</p>		<p><b>11:15 M-4-02</b> Realization of GaN-Drain at Si (100) n-MOS with High Field Effect Mobility <sup>○</sup>Cheng-Jun Huang<sup>1</sup>, Shuo Hwai<sup>2</sup>, Tsai-Fu Chung<sup>1</sup>, Chien-Nan Hsiao<sup>3</sup>, Edward Yi Chang<sup>2</sup>, Mau-Chung Frank Chang<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup>Univ. of California, Los Angeles (United States of America), <sup>3</sup>National Applied Res. Labs., Taiwan Instrument Res. Inst. (Taiwan)</p>	<p><b>11:15 N-4-03</b> "Enhancing Synaptic Performance through the Synergistic Effects of Indium Tungsten Oxide-based Electric Double Layer and Electrochemical Doping" <sup>○</sup>Dong-Gyun Mah<sup>1</sup>, Seong-Hwan Lim<sup>1</sup>, Jin-Wook Shin<sup>2</sup>, Jong-Heon Yang<sup>2</sup>, Won-Ju Cho<sup>1</sup>, <sup>1</sup>The Univ. of Kwangwoon (Korea), <sup>2</sup>The Lab. of ETRI (Korea)</p>

## Tuesday, September 3

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-4:Advanced CMOS: Device Technology</b>	02: Advanced and Emerging Memories / New Applications <b>B-4:Ferroelectric Memory Devices</b>	03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-4:Advanced integration</b>	04: Power / High-speed Devices and Materials <b>D-4:High-speed Devices</b>	05: Photonics: Devices / Integration / Related Technology <b>E-4:UV and Visible Light Technology</b>	06: Energy Harvesting and Converting Devices and Materials <b>F-4:Energy harvesting and solar cells</b>
<b>11:30 A-4-04 (Late News)</b> Low-temperature annealing effect on electrical/structural characteristics for SiO <sub>2</sub> /GeO <sub>2</sub> /Ge gate stack <sup>°</sup> Hajime Kuwazuru <sup>1</sup> , Taisei Aso <sup>1</sup> , Dong Wang <sup>2</sup> , Keisuke Yamamoto <sup>2</sup> , <sup>1</sup> IGSES, Kyushu Univ. (Japan), <sup>2</sup> FES, Kyushu Univ. (Japan)	<b>11:30 B-4-04</b> Optimization Strategies through Interfacial Layer Engineering in BEOL Ferroelectric Memory Devices for Diverse Applications <sup>°</sup> Tsung Ying Lin <sup>1</sup> , Cheng Hung Wu <sup>2</sup> , Chun Yung Chiu <sup>1</sup> , William Cheng Yu Ma <sup>3</sup> , Vita Pi Ho Hu <sup>2</sup> , Chun Jung Su <sup>1,4</sup> , <sup>1</sup> National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup> National Taiwan Univ. (Taiwan), <sup>3</sup> National Sun Yat-sen Univ. (Taiwan), <sup>4</sup> Taiwan Semiconductor Research Inst. (Taiwan)	<b>11:30 C-4-03</b> Large-Area Single-Crystal Ge Using Elevated Epitaxy Technique for Monolithic 3D Integration <sup>°</sup> Yu-Ming Pan <sup>1,2</sup> , Huan-Yu Chiu <sup>1</sup> , Nien-Chih Lin <sup>2</sup> , Hao-Tung Chung <sup>1</sup> , Bo-Jheng Shih <sup>1</sup> , Chiao-Yen Wang <sup>1</sup> , Chih-Chao Yang <sup>2</sup> , Po-Tsang Huang <sup>1</sup> , Chang-Hong Shen <sup>2</sup> , Po-Jung Sung <sup>2</sup> , Wen-Fa Wu <sup>2</sup> , Kuan-Neng Chen <sup>1</sup> , Chenming Hu <sup>1,3</sup> , <sup>1</sup> National Yang Ming Chiao Tung University (Taiwan), <sup>2</sup> Taiwan Semiconductor Research Institute (Taiwan), <sup>3</sup> University of California, Berkeley (United States of America)	<b>11:30 D-4-03</b> Adopting Thin Channel Layer to Achieve High Performance in InAlGaN/GaN HEMT <sup>°</sup> You-Chen WENG <sup>1</sup> , Chee-Hao Lu <sup>1</sup> , Chih-Yi Yang <sup>1</sup> , Chin-Han Chung <sup>1</sup> , Ching-Ting Lee <sup>2</sup> , Fu-Ching Tung <sup>3</sup> , Shih-Hsiang Lai <sup>3</sup> , Chan-Yuen Chang <sup>4</sup> , Chien-Wei Chen <sup>4</sup> , Hung-Wei Yu <sup>1</sup> , Yi Edward Chang <sup>2, 1</sup> , <sup>1</sup> National Yang Ming Chiao Tung University (Taiwan), <sup>2</sup> National Cheng Kung University (Taiwan), <sup>3</sup> Industrial Technology Research Institute (Taiwan), <sup>4</sup> Taiwan Instrument Research Institute (Taiwan)	<b>11:30 E-4-04</b> Fabrication and Demonstration of Optical Waveguides and Beam Splitters Using Aluminum Oxide with Low Loss at Visible Wavelength <sup>°</sup> Takuto Yamaguchi <sup>1</sup> , Naoki Fushimi <sup>1</sup> , Manabu Ohtomo <sup>1</sup> , Tetsuya Miyatake <sup>1</sup> , Shoichi Miyahara <sup>1</sup> , Hirokazu Hosoi <sup>1</sup> , Toshiyuki Miyazawa <sup>1</sup> , Kenichi Kawaguchi <sup>1</sup> , Ryoichi Ishihara <sup>2</sup> , Shintaro Sato <sup>1</sup> , <sup>1</sup> Fujitsu Ltd. (Japan), <sup>2</sup> QuTech, TU Delft (Netherlands)	<b>11:30 F-4-04</b> Enhanced photovoltaic performance and longevity of perovskite modules via interface engineering of transport layer <sup>°</sup> HUNG CHIEH HSU <sup>1</sup> , Shih Hsiung Wu <sup>2</sup> , Chuan Feng Shih <sup>1,3</sup> , <sup>1</sup> National Chung Kung Univ. (Taiwan), <sup>2</sup> Industry Technology Research Inst. (Taiwan), <sup>3</sup> Hierarchical Green-Energy Materials (Hi-GEM) Research Center (Taiwan)
<b>11:45 A-4-05</b> Determining factors of the Effective Work Function of TiN/TiAlC Metal Gates for Advanced Gate-all-around CMOS Integration <sup>°</sup> Kenzo Manabe <sup>1</sup> , Kazuya Uejima <sup>1</sup> , Hiroyuki Ota <sup>1</sup> , Yukinori Morita <sup>1</sup> , Toshifumi Irisawa <sup>1</sup> , Yoshihiro Hayashi <sup>1</sup> , <sup>1</sup> National Inst. of Advanced Indus. Sci. and Tech. (Japan)	<b>11:45 B-4-05</b> Comparative Studies of Thermal Stability Between Back-End-of-Line Superlattice and Solid Solution Hf <sub>0.5</sub> Zr <sub>0.5</sub> O <sub>2</sub> Ferroelectric Memories on Ferroelectricity and Switching Dynamics <sup>°</sup> Cheng-Hung Wu <sup>1</sup> , Tsung-Ying Lin <sup>2</sup> , Chun-Jung Su <sup>2,3</sup> , Vita Pi-Ho Hu <sup>1</sup> , <sup>1</sup> National Taiwan Univ. (Taiwan), <sup>2</sup> National Yang Ming Chiao Tung Univ. (Taiwan), <sup>3</sup> Taiwan Semiconductor Research Inst. (Taiwan)	<b>11:45 C-4-04</b> Optimization of Plasma Dicing Process for Die to Wafer Hybrid Bonding <sup>°</sup> Violeta Georgieva <sup>1</sup> , Filip Schleicher <sup>2</sup> , Ye Lin <sup>1</sup> , Samuel Suhard <sup>1</sup> , Anne Jourdain <sup>1</sup> , Edward Walsby <sup>2</sup> , Il Gyo Koo <sup>1</sup> , Frederic Lazararo <sup>1</sup> , Gerald Beyer <sup>1</sup> , Eric Beyne <sup>1</sup> , <sup>1</sup> IMEC (Belgium), <sup>2</sup> KLA-Tencor (UK)	<b>11:45 D-4-04</b> Enhancement of RF Characteristic in T-gate AlGaIn/GaN HEMTs with AlGaIn Back Barrier <sup>°</sup> Hsin Chu Chen <sup>1</sup> , Po Tsung Tu <sup>2,3</sup> , Chang Yan Hsieh <sup>3</sup> , Hui-Yu Chen <sup>3</sup> , Po Chun Yeh <sup>3</sup> , Hao Chung Kuo <sup>2,4</sup> , <sup>1</sup> Institute of Advanced Semiconductor Packaging and Testing, National Sun Yat-sen University (Taiwan), <sup>2</sup> Department of Photonics and Institute of Electro-Optical Engineering, National Yang Ming Chiao Tung University (Taiwan), <sup>3</sup> Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute (Taiwan), <sup>4</sup> Semiconductor Research Center, Hon Hai Research Institute (Taiwan)	<b>11:45 E-4-05</b> Long-Wavelength InGaN-Based Micro-LEDs for Visible Light Communication <sup>°</sup> Fu-He Hsiao <sup>1,2</sup> , Wen-Chien Miao <sup>1,2</sup> , Tzu-Yi Lee <sup>2,3</sup> , Chun-Liang Lin <sup>1</sup> , Chi-Wai Chow <sup>3</sup> , Gong-Ru Lin <sup>4</sup> , Kazuhiro Ohkawa <sup>5</sup> , Hao-Chung Kuo <sup>2,3</sup> , Yu-Heng Hong <sup>2</sup> , <sup>1</sup> Department of Electrophysics, College of Sci., National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup> Semiconductor Res. Center, Foxconn Res. (Taiwan), <sup>3</sup> Department of Photonics and Inst. of Electro-Optical Eng., College of Electrical and Computer Eng., National Yang Ming Chiao Tung Univ. (Taiwan), <sup>4</sup> Department of Electrical Eng., Graduate Inst. of Photonics and Optoelectronics, National Taiwan Univ. (Taiwan), <sup>5</sup> Computer, Electrical and Mathematical Sci. and Eng. Division, King Abdullah Univ. of Sci. and Tech. (Saudi Arabia)	
<b>12:00 A-4-06</b> Gate-All-Around Vertical Channel Transistor Based on Self-Aligned in 2 Pitch Process for Future DRAM <sup>°</sup> Seunguk Han <sup>1</sup> , <sup>1</sup> Samsung electronics Co., Ltd. (Korea)	<b>12:00 B-4-06</b> 50× Endurance Improvement for HfO <sub>2</sub> -based Ferroelectric Capacitor Utilizing Hybrid Recovery Scheme <sup>°</sup> Zhuohua Tang <sup>1,3</sup> , Wanwang Yang <sup>1,3</sup> , Xujin Song <sup>1,3</sup> , Haotong Zhu <sup>1,3</sup> , Nan Tang <sup>1,3</sup> , Haozhang Yang <sup>1,3</sup> , Yulin Feng <sup>2</sup> , Zheng Zhou <sup>1,3</sup> , Jinfeng Kang <sup>1,3</sup> , Peng Huang <sup>1,3</sup> , <sup>1</sup> Peking Univ. (China), <sup>2</sup> Beijing Info. Sci. and Tech. Univ. (China), <sup>3</sup> Beijing Advanced Innovation Center for Integrated Circuits (China)				

### Short Oral Presentation

(13:30-14:02) <b>01: Advanced CMOS: Material Science / Process Engineering / Device Technology</b> Session Chair: Hidetoshi Oishi (Sony Semiconductor Solutions Corp.), Kuniyuki Kakushima (Tokyo Tech)	(13:30-14:28) <b>02: Advanced and Emerging Memories / New Applications</b> Session Chair: Atsushi Himeno (Panasonic Holdings Corp.), Xu Bai (NanoBridge Semiconductor, Inc.)	(13:30-13:46) <b>03: Heterogeneous and 3D Integration / Interconnect / MEMS</b> Session Chair: Mayumi Takeyama (Kitami Inst. of Technology), Takeyasu Saito (Osaka Metropolitan Univ.)	(13:30-14:10) <b>04: Power / High-speed Devices and Materials</b> Session Chair: Taketomo Sato (Hokkaido Univ.), Naotaka Iwata (Toyota Technological Inst.)	(13:30-13:54) <b>05: Photonics: Devices / Integration / Related Technology</b> Session Chair: Nobuhiko Ozaki (Wakayama Univ.)	(13:30-13:46) <b>06: Energy Harvesting and Converting Devices and Materials</b> Session Chair: Takeshi Tayagaki (AIST)
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## Tuesday, September 3

Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
07: Organic / Molecular / Bio-electronics <b>G-4: Highly Sensitive Devices for Chem/Bio Detection</b>	08: Low Dimensional Devices and Materials <b>H-4: Device-II</b>	09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-4: Spintronics</b>		11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-4: Wide Bandgap Materials</b>	02: Advanced and Emerging Memories / New Applications <b>N-4: Emerging Memory Devices, and DRAM</b>
<b>11:30 G-4-05</b> <b>Reconfigurable Ion-Sensitive Field-Effect Transistors for Highly Integrated CMOS-Compatible Biosensor Platform</b> °Tae-Hwan Hyun <sup>1</sup> , Won-Ju Cho <sup>1</sup> , Dae-Sik Lee <sup>2</sup> , <sup>1</sup> Kwangwoon Univ. (Korea), <sup>2</sup> Electronics and Telecommunications Res. Inst. (Korea)	<b>11:30 H-4-03</b> <b>Ultra-thin and Low-EOT HfO<sub>2</sub> Seed Layer-assisted Deposition of High-κ Gate Dielectric on 2D Semiconductors</b> °Haofei Zheng <sup>1,2</sup> , Lingqi Li <sup>1</sup> , Chenyang Li <sup>2</sup> , Sujuan Ding <sup>3</sup> , Yu-Chieh Chien <sup>1</sup> , Mingxi Chen <sup>4</sup> , Heng Xiang <sup>1</sup> , Jianwei Chai <sup>1</sup> , Yi Wan <sup>2</sup> , Dongzhi Chi <sup>4</sup> , Chuanhong Jin <sup>2</sup> , Lain-Jong Li <sup>2</sup> , Kah-Wee Ang <sup>1</sup> , <sup>1</sup> National Univ. of Singapore (Singapore), <sup>2</sup> The Univ. of Hong Kong (Hong Kong), <sup>3</sup> Zhejiang Univ. (China), <sup>4</sup> Inst. of Materials Res. and Eng., A*STAR (Singapore)	<b>11:30 J-4-03</b> <b>Stable Field Writing in Magnetic Domain Wall Memory Devices by Suppression of Thermal Disturbances</b> °Michael Quinsat <sup>1</sup> , Naoharu Shimomura <sup>1</sup> , Yoshihiro Ueda <sup>1</sup> , Susumu Hashimoto <sup>1</sup> , Yasuaki Ootera <sup>1</sup> , Tsuyoshi Kondo <sup>1</sup> , Masaki Kado <sup>1</sup> , <sup>1</sup> KIOXIA Corp. (Japan)		<b>11:30 M-4-03</b> <b>Effects of Al<sub>2</sub>O<sub>3</sub>/SiO<sub>2</sub> double layer mask on nanotrench etching of GaN by hydrogen environment anisotropic thermal etching (HEATE)</b> °Shuya Sato <sup>1</sup> , Yuki Takahashi <sup>1</sup> , Tomoaki Momma <sup>1</sup> , Akihiko Kikuchi <sup>1,2,3</sup> , <sup>1</sup> Sophia Univ. (Japan), <sup>2</sup> Sophia Photonics Res. Center (Japan), <sup>3</sup> Sophia Semiconductor Research Inst. (Japan)	<b>11:30 N-4-04</b> <b>A Novel Logic-Process-Compatible Embedded Non-Volatile Memory for Display Driver IC (DDI) Applications</b> °Hsueh Wei Chen <sup>1</sup> , Wei Ren Chen <sup>1</sup> , Wein Town Sun <sup>1</sup> , Cheng Yu Chung <sup>1</sup> , Chia Ming Hu <sup>1</sup> , Hung Yi Liao <sup>1</sup> , Chi Wei An <sup>1</sup> , Ching Yuan Lin <sup>1</sup> , Ming Chou Ho <sup>1</sup> , <sup>1</sup> eMemory Technology Inc. (Taiwan)
<b>11:45 G-4-06</b> <b>ICT-Based Colorimetric and Ratiometric Fluorescent Chemodosimeter for Swift and Quantitative Naked-Eye Detection of Cyanide</b> °Kew-Yu Chen <sup>1</sup> , <sup>1</sup> Feng Chia University (Taiwan)		<b>11:45 J-4-04</b> <b>New method for suppression of magnetic domain wall shift error in 3D magnetic domain-wall memory</b> °Pham Nam Hai <sup>1</sup> , Takanori Shirokura <sup>1</sup> , Nguyen Huynh Duy Khang <sup>2</sup> , <sup>1</sup> Tokyo Tech. (Japan), <sup>2</sup> Hochiminh Univ. Edu. (Viet Nam)		<b>11:45 M-4-04</b> <b>Improvement of Fabrication Process for Top-down GaN Nanowires Using Contactless Photo-assisted Electrochemical Etching</b> °Hisahiro Furuuchi <sup>1,2</sup> , Taketomo Sato <sup>2</sup> , Junichi Motohisa <sup>1,2</sup> , <sup>1</sup> Graduate School of Info. Sci. and Tech., Hokkaido Univ. (Japan), <sup>2</sup> Res. Center for Integrated Quantum Electronics, Hokkaido Univ. (Japan)	<b>11:45 N-4-05</b> <b>Gate Oxide Technology Relieving Word-line Break in 10 nm-class DRAM</b> °Taehoon Park <sup>1</sup> , Dongkyu Jang <sup>1</sup> , Inkyum Lee <sup>1</sup> , Jongkyu Kim <sup>1</sup> , Sang Bin Ahn <sup>1</sup> , Jieun Lee <sup>1</sup> , Shindeuk Kim <sup>1</sup> , Hyodong Ban <sup>1</sup> , <sup>1</sup> Samsung Electronics (Korea)
					<b>12:00 N-4-06</b> <b>Comprehensive analysis of Intermittent Single-bit Failure in 10 nm-class DRAM</b> °Jieun Lee <sup>1</sup> , Donkyu Jang <sup>1</sup> , Hyon Namkung <sup>1</sup> , Sungwoon Choi <sup>1</sup> , Jinwon Jeong <sup>1</sup> , Sehoon Ko <sup>1</sup> , Taehoon Park <sup>1</sup> , Hyodong Ban <sup>1</sup> , <sup>1</sup> Samsung Electronics (Korea)

### Short Oral Presentation

(13:30-13:48) <b>07: Organic / Molecular / Bio-electronics</b> Session Chair: Hiroaki Iino (Tokyo Tech)	(13:30-13:52) <b>08: Low Dimensional Devices and Materials</b> Session Chair: Toshifumi Irisawa (AIST)	(13:30-13:52) <b>09: Novel Functional / Quantum / Spintronic Devices and Materials</b> Session Chair: Takafumi Fujita (Osaka Univ.), Hidehiro Asai (AIST)	(13:30-14:00) <b>10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process</b> Session Chair: Kaoru Toko (Univ. of Tsukuba), Ryo Matsumura (NIMS)	(13:30-13:54) <b>11: Advanced Materials: Synthesis / Crystal Growth / Characterization</b> Session Chair: Kentaro Watanabe (Shinshu Univ.), Shunjiro Fujii (Univ. of Hyogo)	(13:30-13:38) <b>12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials</b> Session Chair: Yasuhiro Ogasahara (AIST), Hongchin Lin (National Chung Hsing Univ.)
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# Tuesday, September 3

Poster Session (15:00-17:00) Poster Hall (Exhibition Hall A) (1st Floor)

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

### PS-01-01

#### A Novel Self-Aligned Backside Contact Architecture for Advanced Logic Nodes

<sup>°</sup>QingPeng Wang<sup>1</sup>, Sumant Sarkar<sup>2</sup>, TaeYeon Oh<sup>3</sup>, <sup>1</sup>Lam Research (China), <sup>2</sup>Lam Research (United States of America), <sup>3</sup>Lam Research (Korea)

### PS-01-02

#### Germanium Gate Stack Fabrication at Low Temperature using Nonheated Atomic Layer Deposition

<sup>°</sup>Taisei Aso<sup>1</sup>, Hajime Kuwazuru<sup>1</sup>, Dong Wang<sup>1</sup>, Keisuke Yamamoto<sup>1</sup>, <sup>1</sup>Kyushu Univ. (Japan)

### PS-01-03

#### Logic Cell of CFET Based on Double-Cell-Height to Enhance Intra-Cell Connectivity

<sup>°</sup>Liang-Chi Huang<sup>1</sup>, Pen-Yi Chu<sup>1</sup>, Ko-Cheng Lu<sup>1</sup>, Wei-Cheng Kang<sup>1</sup>, Bo-Hsun Juan<sup>1</sup>, Tzu-Yin Chen<sup>1</sup>, Bi-Xian Wu<sup>1</sup>, Tzu-Hsuan Chang<sup>1</sup>, <sup>1</sup>National Taiwan University (Taiwan)

### PS-01-04

#### Performance Evaluation of Cold CFET considering Contact-Placement dependent Gate Resistance Effects

<sup>°</sup>Shu-Han Li<sup>1</sup>, Pin Su<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung Univ. (Taiwan)

### PS-01-05

#### Neural Network Prediction of Cryogenic BSIM4 Model Parameters Utilizing a Small Experimental Data Set

<sup>°</sup>Takumi Inaba<sup>1</sup>, Yusuke Chiashi<sup>1</sup>, Hiroshi Oka<sup>1</sup>, Minoru Ogura<sup>1</sup>, Hidehiro Asai<sup>1</sup>, Shota Iizuka<sup>1</sup>, Kimihiko Kato<sup>1</sup>, Shunsuke Shitakata<sup>1</sup>, Hiroshi Fuketa<sup>1</sup>, Takahiro Mori<sup>1</sup>, <sup>1</sup>National Institute of Advanced Industrial Science and Technology (Japan)

### PS-01-06

#### Reconfigurable-FETs based on CMOS-Compatible Synapse Transistors with inorganic-organic hybrid Methyl-Silsesquioxanes-Based Electrical Double Layer

<sup>°</sup>Seung-Hyun Lee<sup>1</sup>, Won-Ju Cho<sup>1</sup>, <sup>1</sup>The Univ. of Kwangwoon (Korea)

### PS-01-07

#### Investigation of Layout Optimization on the Self-heating Effects and Logic Performance of 6T-SRAM Based on Nanosheet and Forksheet FET

<sup>°</sup>Pan Zhao<sup>1</sup>, Tao Yu Zhou<sup>1</sup>, Nai Qi Liu<sup>1</sup>, Yan Dong He<sup>1</sup>, Gang Du<sup>1</sup>, <sup>1</sup>Peking University (China)

### PS-01-08

#### Interfacial Trap Density Investigation of HfO<sub>2</sub>-ZrO<sub>2</sub> Superlattice Gate Stacks with Ultra-low Equivalent Oxide Thickness

<sup>°</sup>kun zhong<sup>1,2,3</sup>, Zhaohao Zhang<sup>1,2,3</sup>, Siyuan Liu<sup>1,2,3</sup>, Yueyuan Zhang<sup>1,2,3</sup>, Huaxiang Yin<sup>1,2,3</sup>, <sup>1</sup>University of Chinese Academy of Sciences (China), <sup>2</sup>Institute of Microelectronics of the Chinese Academy of Sciences (China), <sup>3</sup>Integrated Circuit Advanced Process R&D Center and State Key Laboratory of Fabrication Technologies for Integrated Circuits (China)

### PS-01-09

#### Charge-Trapping Optoelectronic Memcapacitors Achieving Photoelectric Perception, Storage, and Reconfigurable In-memory Logics

<sup>°</sup>Ning Liu<sup>1</sup>, Siying Zheng<sup>2</sup>, Jiuren Zhou<sup>1,2</sup>, Yan Liu<sup>1,2</sup>, Genquan Han<sup>1,2</sup>, Yue Hao<sup>1</sup>, <sup>1</sup>School of Microelectronics, Xidian Univ. (China), <sup>2</sup>Hangzhou Inst. of Tech., Xidian Univ. (China)

### PS-01-10

#### Effect of Random Potential on Two-dimensional Electronic States

<sup>°</sup>Nobuya Mori<sup>1</sup>, <sup>1</sup>Osaka University (Japan)

### PS-01-11

#### Comprehensive Study on the Frequency Stability Characteristics of HfO<sub>2</sub>-ZrO<sub>2</sub> Superlattice Ferroelectric Films

<sup>°</sup>Quxia Wu<sup>1</sup>, Yue Peng<sup>1</sup>, Mingshuang Kang<sup>1</sup>, Chunfu Zhang<sup>1</sup>, Xiaohua Ma<sup>1</sup>, Yue Hao<sup>1</sup>, <sup>1</sup>Wide Bandgap Semiconductor Tech. Disciplines State Key Lab., School of Microelectronics, Xidian Univ. (China)

### PS-01-12

#### Effect of Non-Uniform Polycrystallinity on Ferroelectric Electrostatic Doped Transistor Variability

<sup>°</sup>xinghui wang<sup>1</sup>, Siying Zheng<sup>2</sup>, Jiuren Zhou<sup>1,2</sup>, Hongrui Zhang<sup>2</sup>, Yan Liu<sup>1,2</sup>, Yue Hao<sup>1,2</sup>, Genquan Han<sup>1,2</sup>, <sup>1</sup>School of Microelectronics, xidian Univ. (China), <sup>2</sup>Hangzhou Inst. of Tech., Xidian Univ. (China)

### PS-01-13

#### Texture of Orthorhombic ScSi in Annealed TiN / Sc / Si(:P)(001) Contact Stacks

<sup>°</sup>Bert Polleffiet<sup>1</sup>, Clement Porret<sup>2</sup>, Christophe Detavernier<sup>3</sup>, Jean-Luc Everaert<sup>2</sup>, Kiroubanand Sankaran<sup>2</sup>, Erik Rosseeff<sup>2</sup>, Roger Loo<sup>2</sup>, André Vantomme<sup>1</sup>, Clement Merckling<sup>1</sup>, <sup>1</sup>KU Leuven (Belgium), <sup>2</sup>imec (Belgium), <sup>3</sup>Ghent University (Belgium)

### PS-01-14

#### AR-HXPES Evaluation of the Effect of Hydrogen Plasma Treatment on the Chemical Bonding State and Distribution of Hydrogen in SiN Films

<sup>°</sup>Yoshiharu Kirihara<sup>1</sup>, Haruto Omata<sup>1</sup>, Akira Yasui<sup>2</sup>, Kiyokazu Nakagawa<sup>2</sup>, Yuichiro Mitani<sup>1</sup>, Hiroshi Nohira<sup>1</sup>, <sup>1</sup>Tokyo City Univ. (Japan), <sup>2</sup>JASRI (Japan), <sup>3</sup>Abit Technologies (Co. Ltd.) (Japan)

### PS-01-15

#### Analysis of AC Degradation in SiON pMOSFET by Extraction of Threshold Voltage Degradation Profile

<sup>°</sup>Donghee Son<sup>1</sup>, Yeohyeok Yun<sup>2</sup>, <sup>1</sup>Samsung Electronics (Korea), <sup>2</sup>Korea University of Technology and Education (KOREATECH) (Korea)

### PS-01-16

#### Atomic-Scale Insights into the Effects of Biaxial Strain on the Electronic Structure of Orthorhombic Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub>

<sup>°</sup>Yu Hong Chen<sup>1</sup>, Chen You Wei<sup>2</sup>, Yi Ju Yao<sup>2</sup>, Fu Ju Hou<sup>3</sup>, Guang Li Luo<sup>3</sup>, Yung Chun Wu<sup>1,2</sup>,

## 02: Advanced and Emerging Memories / New Applications

### PS-02-01

#### Ozone SiO<sub>2</sub>/HfO<sub>2</sub> Interface Engineering for Performance and Reliability Optimization of Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> FeFETs: Device Integration and Electrical Investigation

<sup>°</sup>Xueyang Li<sup>1</sup>, Yaxuan Yuan<sup>1</sup>, Chengji Jin<sup>2</sup>, Xinze Li<sup>1</sup>, Xiao Yi<sup>1</sup>, Ran Cheng<sup>1</sup>, Genquan Han<sup>3</sup>, <sup>1</sup>The Univ. of Zhejiang (China), <sup>2</sup>The Lab. of Zhejiang (China), <sup>3</sup>The Univ. of Xidian (China)

### PS-02-02

#### Analysis of reliability improvement in HfO<sub>2</sub>-based ferroelectric capacitors by ozone oxidation of the bottom electrode

<sup>°</sup>Yuki Itoya<sup>1</sup>, Takuya Saraya<sup>1</sup>, Toshiro Hiramoto<sup>1</sup>, Masaharu Kobayashi<sup>1,2</sup>, <sup>1</sup>Univ. Tokyo Inst. Indus. Sci. (Japan), <sup>2</sup>Univ. Tokyo d.lab (Japan)

### PS-02-03

#### Improved Memory Window and Endurance of FeFET using Laminated Thin Films and Fluorine Plasma Passivation for Analog Synaptic Characteristics

<sup>°</sup>Kyungsoo Park<sup>1</sup>, Chulwon Chung<sup>2</sup>, Boncheol Ku<sup>1</sup>, Seung Hyeon Yun<sup>1</sup>, Junhyeok Park<sup>1</sup>, Changhwan Choi<sup>1</sup>, <sup>1</sup>Division of Materials Science and Engineering, Univ. of Hanyang (Korea), <sup>2</sup>Department of Energy Engineering, Univ. of Hanyang (Korea)

### PS-02-04

#### Comparative Analysis of Ferroelectric Domain Wall Motion Under Cycling Stress of HfZrO<sub>2</sub> Fabricated by Thermal and Plasma-Enhanced Atomic Layer Depositions

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### PS-02-05

#### Improvement of Memory Window of Silicon Channel Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> FeFET by Inserting Al<sub>2</sub>O<sub>3</sub>/HfO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Top Interlayer

<sup>°</sup>Runhao Han<sup>1</sup>, Tao Hu<sup>1</sup>, Jia Yang<sup>1</sup>, Mingkai Bai<sup>1</sup>, Yajing Ding<sup>1</sup>, Xianzhou Shao<sup>1</sup>, Saifei Dai<sup>1</sup>, Xiaoqing Sun<sup>1</sup>, Junshuai Chai<sup>1</sup>, Hao Xu<sup>1</sup>, Kai Han<sup>2</sup>, Xiaolei Wang<sup>1</sup>, Wenwu Wang<sup>1</sup>, Tianchun Ye<sup>1</sup>, <sup>1</sup>Inst. of Microelectronics Chinese Academy of Sci. (China), <sup>2</sup>School of Physics and Electronic Info., Weifang Univ. (China)

### PS-02-06

#### New insight into memory window engineering in FeFET with oxide semiconductor

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### PS-02-07

#### Comparative Study of Polysilicon and MoS<sub>2</sub> Channel Based 3D NAND

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### PS-02-08

#### Disturbance Induced Refresh Time Lowering in Nanowire RFET 1T-DRAM Array

<sup>°</sup>Rohit Kumar Nirala<sup>1</sup>, Manish Gupta<sup>2</sup>, <sup>°</sup>Abhinav Kranti<sup>1</sup>, <sup>1</sup>Indian Inst. of Tech. Indore (India), <sup>2</sup>Birla Inst. of Tech. and Sci., Pilani, K. K. Birla, Goa Campus (India)

### PS-02-09

#### Nitrogen Incorporated Interlayer for Enhanced Hf-Zr-O Ferroelectric Tunnel Junctions in Ternary-Content-Addressable-Memory

<sup>°</sup>Jaekyeong Kim<sup>1</sup>, Manh-Cuong Nguyen<sup>1,2</sup>, An Hoang-Thuy Nguyen<sup>1</sup>, Anh-Duy Nguyen<sup>1</sup>, Hyunsoo Kim<sup>1</sup>, Kyungsoo Hwang<sup>1</sup>, Geon Park<sup>1</sup>, Hoyeon Shin<sup>1</sup>, Siun Song<sup>1</sup>, Daewoong Kwon<sup>2</sup>, Rino Choi<sup>1</sup>, <sup>1</sup>Inha Univ. (Korea), <sup>2</sup>Hanyang Univ. (Korea)

### PS-02-10

#### Guidelines for Achieving Optimal Classification Accuracy through Unsupervised Learning in Spiking Neural Network Using FeFETs-based Synapses

<sup>°</sup>Chung-Li Chang<sup>1</sup>, Hao-Kai Peng<sup>1</sup>, Shun-Chi Wu<sup>1</sup>, Yung-Hsien Wu<sup>1</sup>, <sup>1</sup>National Tsing Hua Univ. (Taiwan)

### PS-02-11

#### Analysis of Cell Characteristic using Back Oxide Trap Charge Effect in 3D-NAND Flash

<sup>°</sup>Daewoong Kang<sup>1</sup>, <sup>°</sup>Chaeyeon Jung<sup>1,2</sup>, Minkyu Suh<sup>1,2</sup>, Gwansun Choi<sup>1,2</sup>, Youngho Jung<sup>1</sup>, <sup>1</sup>Seoul National University (Korea), <sup>2</sup>Soongsil University (Korea), <sup>3</sup>Chung-Ang University (Korea), <sup>4</sup>Daegu University (Korea)

### PS-02-12

#### Analysis of Cell Characteristics depending on Vertical Channel Profile and Multiple Dielectric WL Spacer in 3D NAND Flash Memory

<sup>°</sup>Daewoong Kang<sup>1</sup>, <sup>°</sup>Gwansun Choi<sup>1,2</sup>, Minkyu Suh<sup>1,2</sup>, Chaeyeon Jung<sup>1,2</sup>, Youngho Jung<sup>1</sup>, <sup>1</sup>Seoul National University (Korea), <sup>2</sup>Chung-Ang University (Korea), <sup>3</sup>Soongsil Univ. (Korea), <sup>4</sup>Daegu University (Korea)

### PS-02-13

#### Investigation of Void Effect Inside Epi-plug on Electrical Characteristics of NAND Flash Memory

<sup>°</sup>Dibyadrasta Sahoo<sup>1</sup>, Ankit Gaurav<sup>1</sup>, Mohd Ashraf Lone<sup>1</sup>, Sanjeev kumar Manhas<sup>1</sup>, <sup>1</sup>Indian Inst. of Tech. Roorkee (India)

### PS-02-14

#### Fatigue Recovery and Endurance Improvement under Low Operating Voltage of HfZrO<sub>2</sub>/Ge MF(I)S Capacitor fabricated at BEOL-Compatible Temperature

<sup>°</sup>Jai-Youn Jeong<sup>1,2</sup>, Kyeol Ko<sup>1</sup>, Kyunghwan Kim<sup>1</sup>, Changhwan Shin<sup>2</sup>, Jae-Hoon Han<sup>1</sup>, <sup>1</sup>The Korea Inst. of Science and Technology (KIST) (Korea), <sup>2</sup>The Korea Univ. (Korea)

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**PS-02-15**  
**Unipolar RRAM Cells Enabled by Hetero-Complex-Oxide Stack for Ultra-Speed Multilevel Programming**

<sup>°</sup>Jun-Peng Lee<sup>1</sup>, Chun-Chien Chiu<sup>1</sup>, Yu-Wei Chen<sup>1</sup>, Bo-Cheng Chen<sup>2</sup>, I-Ling Li<sup>3</sup>, Yu-Ting Wang<sup>2</sup>, Zhih-Yun Kuo<sup>3</sup>, Ning-Yuan Lue<sup>1</sup>, Jan-Chi Yang<sup>1</sup>, Chao-Hui Yeh<sup>1,2,3</sup>, <sup>1</sup>Inst. of Electronics Engineering, National Tsing Hua Univ. (Taiwan), <sup>2</sup>Department of Electrical Engineering, National Tsing Hua Univ., (Taiwan), <sup>3</sup>College of Semiconductor Research, National Tsing Hua Univ. (Taiwan), <sup>4</sup>Department of Physics, National Cheng Kung Univ. (Taiwan)

**PS-02-16**  
**Impact of SiON bottom interlayer on memory window of FeFET with the TiN/top interlayer/ferroelectric/bottom interlayer/Si substrate (MIFIS) structure**

<sup>°</sup>Jia Yang<sup>1</sup>, Runhao Han<sup>1</sup>, tao Hu<sup>1</sup>, saifei Dai<sup>1</sup>, xianzhou Shao<sup>1</sup>, xiaoqing Sun<sup>1</sup>, junshuai Chai<sup>1</sup>, hao Xu<sup>1</sup>, kai Han<sup>2</sup>, xiaolei Wang<sup>1</sup>, wenwu Wang<sup>1</sup>, tianchun Ye<sup>1</sup>, <sup>1</sup>Inst. of Microelectronics Chinese Academy of Sci. (China), <sup>2</sup>School of Physics and Electronic Info., Weifang Univ. (China)

**PS-02-17**  
**TiO<sub>2</sub>/TaO<sub>x</sub>-Based Optoelectronic Neuro-synaptic ReRAM Device**

<sup>°</sup>Saransh Shrivastava<sup>1</sup>, Jih-Ling Guo<sup>1</sup>, Hans Juliano<sup>1</sup>, Tseung-Yuen Tseng<sup>1</sup>, <sup>1</sup>Inst. of Electronics, National Yang Ming Chiao Tung Univ. (NYCU), Hsinchu 30010, Taiwan (Taiwan)

**PS-02-18**  
**High Performance BEOL-Compatible FeRAM with Robust Endurance >10<sup>9</sup> Cycles by Two P, >32 uC/cm<sup>2</sup> HfZrO<sub>2</sub> Ferroelectric Film and CAAC-IGZO as Low Leakage Transistor**

<sup>°</sup>Hiroshi Yoshida<sup>1</sup>, Min-Hung Lee<sup>2</sup>, Shang-Shiun Chuang<sup>1</sup>, Chuan-Hua Chang<sup>1</sup>, Wen-Hsiang Hsieh<sup>1</sup>, Yung-Lung Hsu<sup>1</sup>, Shih-Chi Yen<sup>1</sup>, Zong-Han Li<sup>2</sup>, Fu-Sheng Chang<sup>2</sup>, Ming-Han Liao<sup>3</sup>, Shou-Zen Chang<sup>1</sup>, <sup>1</sup>Powerchip Semiconductor Manufacturing Corporation (Taiwan), <sup>2</sup>Graduate School of Advanced Technology, National Taiwan University (Taiwan), <sup>3</sup>Graduate School of Advanced Technology and Department of Mechanical Engineering, National Taiwan University (Taiwan)

**PS-02-19**  
**Si-Te-N-O amorphous chalcogenide for selector device with high thermal stability**

<sup>°</sup>Kentaro Saito<sup>1</sup>, Shogo Hatayama<sup>1</sup>, Yuta Saito<sup>1,2</sup>, <sup>1</sup>The Inst. of AIST (Japan), <sup>2</sup>The Univ. of Tohoku (Japan)

**PS-02-20**  
**Analysis of Intermediate State in MgO-based MTJ Switching**

<sup>°</sup>Chihiro Watanabe<sup>1</sup>, Yuya Miyazaki<sup>1</sup>, Junichi Tsuchimoto<sup>2</sup>, Hiroyuki Hosoya<sup>2</sup>, Kazuto Yamanaka<sup>2</sup>, Yoshiteru Amemiya<sup>2</sup>, Akinobu Teramoto<sup>1,2,4</sup>, <sup>1</sup>Grad. Sch. of Adv. Sci. and Eng., Hiroshima Univ. (Japan), <sup>2</sup>Res. Inst. for Semiconductor Eng., Hiroshima Univ. (Japan), <sup>3</sup>CANON ANELVA Corp. (Japan), <sup>4</sup>Res. Inst. for Synchrotron Radiation Sci., Hiroshima Univ. (Japan)

**PS-02-21**  
**Improving the TER by Incorporating Antiferroelectric HZO Layer in 5 nm Thin MFM FTJ**

<sup>°</sup>Geon Park<sup>1</sup>, ManhCuong Nguyen<sup>1</sup>, AnHoang Nguyen<sup>1</sup>, AnhDuy Nguyen<sup>1</sup>, Hyunsoo Kim<sup>1</sup>, Kyungsoo Hwang<sup>1</sup>, Jaekyeong Kim<sup>1</sup>, Hoyeon Shin<sup>1</sup>, Siun Song<sup>1</sup>, Rino Choi<sup>1</sup>, <sup>1</sup>Inha Univ. (Korea)

**PS-02-22**  
**Comparative Study on Transistor Structures for IGZO-Based FeTFTs**

<sup>°</sup>He Young Kang<sup>1</sup>, Seung Hee Cha<sup>1</sup>, Jae Kyeong Jeong<sup>1</sup>, <sup>1</sup>Hanyang University (Korea)

**PS-02-23**  
**Improving switching uniformity through nitrogen doping in CMOS process-compatible Ta<sub>2</sub>O<sub>5</sub>-based ReRAM device**

<sup>°</sup>youna kwon<sup>1</sup>, Won-Chul Lee<sup>1</sup>, Gapseop Sim<sup>1</sup>, Woo-Suk Sul<sup>1</sup>, Jongwon Lee<sup>2</sup>, <sup>1</sup>The Inst. of NNFC (Korea), <sup>2</sup>Univ. of Chungnam (Korea)

**PS-02-24**  
**Time dependence changes of interface states in Nb-doped SrTiO<sub>3</sub>/Pt ReRAM**

<sup>°</sup>Yumeng Zheng<sup>1</sup>, Tomohiro Ishii<sup>1</sup>, Kentaro Kinoshita<sup>1</sup>, <sup>1</sup>Tokyo univ. of science (Japan)

**PS-02-25**  
**HfO<sub>2</sub>-ZrO<sub>2</sub> Superlattice Ferroelectric FinFET with Low-Temperature Poly-Siusing Green Laser Crystallization for BEOL applications**

<sup>°</sup>Chen-You Wei<sup>1</sup>, Yung-Teng Fang<sup>2</sup>, Yi-Ju Yao<sup>1</sup>, Chih-Chao Yang<sup>3</sup>, Fu-Ju Hou<sup>3</sup>, Guang-Li Luo<sup>3</sup>, Yung-Hsien Wu<sup>1</sup>, Yung-Chun Wu<sup>2</sup>, <sup>1</sup>College of Semiconductor Research, National Tsing Hua University (Taiwan), <sup>2</sup>Department of Engineering and System Science, National Tsing Hua University (Taiwan), <sup>3</sup>Taiwan Semiconductor Research Institute (Taiwan)

**PS-02-26**  
**Multibit P-type Fe-GAAFETs Utilizing HfO<sub>2</sub>/ZrO<sub>2</sub> Superlattice Dielectric and SiGe/Si Superlattice Channel with Record Characteristics via Quantum Mechanisms for High-Density IT NVM Applications**

<sup>°</sup>Yi Ju Yao<sup>1</sup>, Tsai Jung Lin<sup>1</sup>, Bo Xu Chen<sup>2</sup>, Chen You Wei<sup>1</sup>, Yung Teng Fang<sup>2</sup>, Heng Jia Chang<sup>2</sup>, Yu Min Fu<sup>1</sup>, Guang Li Luo<sup>3</sup>, Fu Ju Hou<sup>3</sup>, Yung Chun Wu<sup>2</sup>, <sup>1</sup>College of Semiconductor Research, National Tsing Hua University (Taiwan), <sup>2</sup>Department of Engineering and System Science, National Tsing Hua University (Taiwan), <sup>3</sup>Taiwan Semiconductor Research Institute (Taiwan)

**PS-02-27 (Late News)**  
**Mott Transition Switching Phenomenon of Carbon-doped HfO<sub>2</sub> Thin Film and Application to CeRAM**

<sup>°</sup>Masamichi Azuma<sup>1,2</sup>, Mamoru Ikeda<sup>1</sup>, Tsubasa Miyamoto<sup>1</sup>, Hiroyuki Nishinaka<sup>1</sup>, <sup>1</sup>Kyoto Institute of Technology (Japan), <sup>2</sup>Symetrix Corp. (United States of America)

**PS-02-28 (Late News)**  
**Experimental Implementation of 4-bit Carry Lookahead Adder in Memristor Crossbar Array using Threshold Logic**

<sup>°</sup>Sangwook Youn<sup>1</sup>, Jinwoo Park<sup>1</sup>, Hyungjin Kim<sup>1</sup>, <sup>1</sup>Hanyang University (Korea)

**PS-02-29 (Late News)**  
**“Correlation between fundamental properties and current density in perovskite oxide resistance change memory Pt/Nb:SrTiO<sub>3</sub>”**

<sup>°</sup>Ryosuke Ohtani<sup>1</sup>, Yumeng Zheng<sup>1</sup>, Kentaro Kinoshita<sup>1</sup>, <sup>1</sup>Tokyo Univ. of Sci. (Japan)

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**03: Heterogeneous and 3D Integration / Interconnect / MEMS**

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**PS-03-01**  
**Investigation of Propagation Directions on GaN Surface Acoustic Wave Resonators Toward Wide Temperature Range Applications**

<sup>°</sup>Guofang Yu<sup>1</sup>, Renrong Liang<sup>1</sup>, Jun Fu<sup>1</sup>, Jun Xu<sup>1</sup>, Tian-Ling Ren<sup>1</sup>, Jingqing Du<sup>2</sup>, Di Zhao<sup>2</sup>, <sup>1</sup>Tsinghua Univ. (China), <sup>2</sup>Beijing Sevenstar Flow Corp., Ltd. (China)

**PS-03-02**  
**Improvement of Uniformity by Face-to-Face Ultra-High-Pressure Annealing Observed by Scanning Internal Photoemission Microscopy Using Au/Ni/n-GaN Schottky Contacts**

<sup>°</sup>Kenji Shiojima<sup>1</sup>, Yasuho Matsumoto<sup>1</sup>, Hiroki Imabayashi<sup>1</sup>, Tetsu Kachi<sup>2</sup>, <sup>1</sup>Univ. of Fukui (Japan), <sup>2</sup>Nagoya Univ. (Japan)

**PS-03-03**  
**Size effect on mechanical characteristics of 3D-printed resin nanowires**

<sup>°</sup>Masao Torii<sup>1</sup>, <sup>1</sup>Kyoto University of Advanced Science in Nanomechanics Lab. (Japan)

**PS-03-04**  
**Consideration on the electrochemical behavior of graphene dispersed in aqueous solution**

<sup>°</sup>Naoki Okamoto<sup>1</sup>, Rei Miyake<sup>1</sup>, Takeyasu Saito<sup>1</sup>, <sup>1</sup>Osaka Metropolitan Univ. (Japan)

**PS-03-05**  
**Control of Surface Oxidation and Stress by Additives in Ni Electrodeposition**

<sup>°</sup>Takeyasu Saito<sup>1</sup>, Kohei Yamada<sup>1</sup>, Ryosuke Komoda<sup>1</sup>, Naoki Okamoto<sup>1</sup>, <sup>1</sup>Osaka Metropolitan University (Japan)

**PS-03-06**  
**Precise Measurements of Small Reverse-Biased-Currents for Large-Barrier Au/Ni/n-GaN Schottky Contacts**

<sup>°</sup>Kenji Shiojima<sup>1</sup>, Hiroki Imabayashi<sup>1</sup>, Kentaro Kawanishi<sup>1</sup>, Hiroshi Ohta<sup>2</sup>, Tomoyoshi Mishima<sup>2</sup>, <sup>1</sup>Univ. of Fukui (Japan), <sup>2</sup>Hosei Univ. (Japan)

**PS-03-07**  
**Low-temperature deposited thin ZrN films for backside Cu interconnect**

<sup>°</sup>Masaru Sato<sup>1</sup>, Mayumi B. Takeyama<sup>1</sup>, <sup>1</sup>Kitami Inst. of Tech. (Japan)

**PS-03-08**  
**Mechanical Characterization of Sintered Silver Films with Copper Particles for SiC Die Attach Applications**

<sup>°</sup>Chesadakorn - Chantawong<sup>1</sup>, Michiko Shindo<sup>1</sup>, Mitsuhiro Nishida<sup>2</sup>, Takahiro Namazu<sup>1</sup>, <sup>1</sup>Kyoto University of Advanced Science, Kyoto, Japan (Japan), <sup>2</sup>Nihon Superior Co., Ltd., Osaka, Japan (Japan)

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**04: Power / High-speed Devices and Materials**

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**PS-04-01**  
**Unipolar AC Bias Stress Degradation Mechanism in Heterogeneous Ga<sub>2</sub>O<sub>3</sub>-on-SiC MOSFET**

<sup>°</sup>Chenyu Liu<sup>1</sup>, Yibo Wang<sup>2</sup>, Chunxiao Yu<sup>1</sup>, Wenhui Xu<sup>2</sup>, Xiaolei Jia<sup>1</sup>, Shuai Huang<sup>1</sup>, Zeyu Yang<sup>1</sup>, Xiaoxi Li<sup>1</sup>, Bochang Li<sup>1</sup>, Zhengdong Luo<sup>1,4</sup>, Cizhe Fang<sup>1</sup>, Yan Liu<sup>1</sup>, Tianguai You<sup>1</sup>, Xin Ou<sup>1</sup>, Yue Hao<sup>1</sup>, Genquan Han<sup>1,4</sup>, <sup>1</sup>School of Microelectronics, Xidian Univ. (China), <sup>2</sup>Suzhou Inst. of Nano-Tech and Nano-Bionics, Chinese Academy of Sci. (China), <sup>3</sup>Shanghai Inst. of Microsystem and Info. Tech., Chinese Academy of Sci. (China), <sup>4</sup>Hangzhou Inst. of Tech., Xidian Univ. (China)

**PS-04-02**  
**Improvement in channel mobility of recess-gate GaN MOSFET with Al<sub>0.28</sub>Si<sub>0.72</sub>O gate dielectric using AlGaN/GaN selective-area regrowth method on GaN-on-Si substrate**

<sup>°</sup>Po-Chin Huang<sup>1</sup>, Daimotsu Kato<sup>1</sup>, Jumpei Tajima<sup>1</sup>, Hiroshi Ono<sup>1</sup>, Masahiko Kuraguchi<sup>1</sup>, Toshiki Hikosaka<sup>1</sup>, <sup>1</sup>Corporate Research & Development Center, Toshiba Corp. (Japan)

**PS-04-03**  
**Electrical Characteristics of Aluminum Oxide and Aluminum Oxynitride with a Thin SiO<sub>2</sub> Interfacial Layer as Gate Stack Dielectric on the Nitric Oxide (NO) Gas Treated Silicon Carbide (SiC) Substrate as the MOS Capacitor under Rapid Thermal Annealing**

<sup>°</sup>Cheng-Li Lin<sup>1</sup>, Bo-Xian Su<sup>1</sup>, Yu-Lun Lee<sup>1</sup>, Pi-Chun Juan<sup>2</sup>, <sup>1</sup>Feng Chia Univ. (FCU) (Taiwan), <sup>2</sup>Ming Chi Univ. of Tech. (MCUT) (Taiwan)

**PS-04-04**  
**Evaluation of Thermal Stress of N-type β-Ga<sub>2</sub>O<sub>3</sub> Crystals with Ti/Au Electrode Film by Micro-Raman Spectroscopy**

<sup>°</sup>Jun Suda<sup>1</sup>, Ryoya Kakamu<sup>1</sup>, <sup>1</sup>School of Engineering of Chukyo University (Japan)

**PS-04-05**  
**Characterization and Analysis on ESD Robustness of SiC VDMOSFET**

<sup>°</sup>Chao-Yang Ke<sup>1</sup>, Ya-Zhi Hu<sup>1</sup>, Ming-Dou Ker<sup>1</sup>, <sup>1</sup>Inst. of Electronics, National Yang Ming Chiao Tung Univ. (Taiwan)

**PS-04-06**  
**A Study of Heteroepitaxial Single Crystal β-Ga<sub>2</sub>O<sub>3</sub> δ-doped MESFET on C-plane Sapphire by Mist-CVD**

<sup>°</sup>FANG-YU HSU<sup>1</sup>, HAO-CHUN HUNG<sup>1</sup>, CHING-YU CHENG<sup>1</sup>, YIN-CHU HSIAO<sup>1</sup>, CHIA-CHENG HSU<sup>1</sup>, WEI-CHOU HSU<sup>1</sup>, <sup>1</sup>National Cheng Kung University, NCKU (Taiwan)

**PS-04-07**  
**Reduced Ohmic Contact Resistance in AlGaN/GaN HEMTs via Graphene Insertion and Recessed Patterns**

Chen-Hsiang Chung<sup>1</sup>, <sup>°</sup>Yue-ming Hsin<sup>1</sup>, Bo-Hao Chen<sup>1</sup>, Yu-Han Hung<sup>1</sup>, Ching-Yuan Su<sup>1</sup>, <sup>1</sup>National Central Univ. (Taiwan)

**PS-04-08**  
**Effects of Moderate-Temperature Annealing on Near-Surface Defects in Mg-Implanted GaN Studied Using MOS Structures**

<sup>°</sup>Genta Shindo<sup>1</sup>, Yuki Hatakeyama<sup>1</sup>, Masamichi Akazawa<sup>1</sup>, <sup>1</sup>Hokkaido University (Japan)

#### PS-04-09

##### Achieve E-mode GaN MIS-HEMTs Through Thin Barrier Technology

°TSUNG YING YANG<sup>1</sup>, Jui Sheng Wu<sup>1</sup>, You Chen Weng<sup>1</sup>, Tzu Fan Liu<sup>1</sup>, Tzu Hao Tseng<sup>1</sup>, Pei Xin Beh<sup>1</sup>, Fu Ching Tung<sup>2</sup>, Shih Hsiang Lai<sup>2</sup>, Edward Yi Chang<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung University (Taiwan), <sup>2</sup>Industrial Technology Research Institute (Taiwan)

#### PS-04-10

##### Photoelectron holographic study for atomic site occupancy of the Si dopant in $\kappa$ -Ga<sub>2</sub>O<sub>3</sub>(001)

°Yuhua TSAI<sup>1,2</sup>, Yusuke Hashimoto<sup>3</sup>, Piero Mazzolini<sup>4,5</sup>, Tomohiro Matsushita<sup>2</sup>, Yoshiyuki Yamashita<sup>1,2</sup>, <sup>1</sup>National Institute for Materials Science (NIMS) (Japan), <sup>2</sup>Kyushu University (Kyushu Univ.) (Japan), <sup>3</sup>Nara Institute of Science and Technology (NAIST) (Japan), <sup>4</sup>University of Parma (UNIPR) (Italy), <sup>5</sup>Institute of Materials for Electronics and Magnetism (IMEM-CNR) (Italy)

#### PS-04-11

##### TCAD-based Collector-Emitter Capacitance Model of an IGBT Compact Model for Accurate Power Efficiency Prediction

°Takeshi Mizoguchi<sup>1</sup>, Masahiro Tanaka<sup>1</sup>, <sup>1</sup>Nihon Synopsys G.K. (Japan)

#### PS-04-12

##### First-principles Study on Electronic Structure and Optoelectronic Properties of P-doped $\beta$ -Ga<sub>2</sub>O<sub>3</sub> with Intrinsic Defects

°Hui Li<sup>1</sup>, Dongyuan Zhai<sup>1</sup>, Qihao Zhang<sup>1</sup>, Jiwu Lu<sup>1</sup>, <sup>1</sup>The Univ. of Hunan (China)

#### PS-04-13

##### High-Frequency Performance of AlGaIn/GaN MIS-HEMTs for Cryogenic Applications

°Chuang-Ju Lin<sup>1,2</sup>, Bo-Jun Huang<sup>2</sup>, Bo-Yuan Chen<sup>1</sup>, Kun-Ming Chen<sup>1</sup>, Edward Yi Chang<sup>2</sup>, <sup>1</sup>The Inst. of Taiwan Semiconductor Research (Taiwan), <sup>2</sup>The Univ. of National Yang Ming Chiao Tung (Taiwan)

#### PS-04-14

##### Effect of Al<sub>2</sub>O<sub>3</sub> deposition temperature on the electrical properties of Al<sub>2</sub>O<sub>3</sub>/ $\beta$ -Ga<sub>2</sub>O<sub>3</sub> (001) metal oxide semiconductor capacitors

°qihao zhang<sup>1</sup>, Dongyuan Zhai<sup>1</sup>, Hui Li<sup>1</sup>, Min He<sup>1</sup>, Jiwu Lu<sup>1</sup>, <sup>1</sup>The Univ. of Hunan (China)

#### PS-04-15

##### Analysis of ESD Capability of SiC MOSFET with Various Cell Designs

°Wei-Shan Zou<sup>1</sup>, Kung-Yen Lee<sup>1,2</sup>, Yan-Yu Wen<sup>2</sup>, Pei-Chun Liao<sup>1</sup>, Jian-Jie Chen<sup>1</sup>, Tsai-Pei Lu<sup>1</sup>, Xue-Fen Hu<sup>1</sup>, <sup>1</sup>Department of Eng. Sci. and Ocean Eng., Nat'l Taiwan Univ. (Taiwan), <sup>2</sup>Graduate School of Advanced Tech., Nat'l Taiwan Univ. (Taiwan)

#### PS-04-16

##### Snapback in Diamond p-i-p Structure Containing a Small Amount of n-type Impurity in the i-layer

°Kohei Mishima<sup>1</sup>, Akihiko Watanabe<sup>1</sup>, <sup>1</sup>Kyushu Inst. of Tech. (Japan)

#### PS-04-17

##### RF Performance Analysis of Double-Channel Fin-HEMT with Small-Signal Modeling

°Ren-Hong Zhang<sup>1</sup>, Po-Hsun Hsu<sup>1</sup>, Yu-Hsuan Lu<sup>2</sup>, Yuan-Hung Huang<sup>2</sup>, Tsung-Hsien Lin<sup>1</sup>, Li-Wei Lin<sup>1</sup>, Chao-Hsin Wu<sup>1,2,3,4</sup>, <sup>1</sup>Graduate Inst. of Photonics and Optoelectronics, National Taiwan Univ. (Taiwan), <sup>2</sup>Center for Quantum Science and Engineering, National Taiwan Univ. (Taiwan), <sup>3</sup>Graduate School of Advanced Tech., National Taiwan Univ. (Taiwan), <sup>4</sup>Graduate Institute of Electronics Engineering, National Taiwan Univ. (Taiwan)

#### PS-04-18

##### Analysis of Errors in Junction Temperature Estimated by Temperature-Sensitive Electrical Parameter for Parallel-Connected Power Devices

°Shuhei Fukunaga<sup>1</sup>, Tsiyoshi Funaki<sup>1</sup>, <sup>1</sup>Osaka University (Japan)

#### PS-04-19 (Late News)

##### Impacts of Mechanical Uniaxial Stress on Mobility Enhancement of 4H-SiC Trench MOSFET

°Momoko Inayoshi<sup>1</sup>, Naotoshi Hikosaka<sup>1</sup>, Ryuki Kamiya<sup>1</sup>, Eiji Kagoshima<sup>2</sup>, Shigehisa Shibayama<sup>2</sup>, Mitsuo Sakashita<sup>2</sup>, Hidemoto Tomita<sup>2</sup>, Tsiyoshi Nishiwaki<sup>1</sup>, Hirokazu Fujiwara<sup>2</sup>, Osamu Nakatsuka<sup>2</sup>, Noriyuki Taoka<sup>1</sup>, Wakana Takeuchi<sup>1</sup>, <sup>1</sup>Aichi Institute of Tech. (Japan), <sup>2</sup>MIRISE Technologies (Japan), <sup>3</sup>Nagoya Univ. (Japan)

#### PS-04-20 (Late News)

##### Performance Enhancement of 3C-SiC n-MOSFET by Channel Structure Improvement and Forming Gas Annealing for a Gate Stack

°Rima Nishizaki<sup>1</sup>, Dong Wang<sup>1</sup>, Keisuke Yamamoto<sup>1</sup>, Hiroki Uratani<sup>2</sup>, Yoshiki Sakaida<sup>2</sup>, Shigeomi Hishiki<sup>2</sup>, <sup>1</sup>Kyushu Univ. (Japan), <sup>2</sup>Air Water Inc. (Japan)

### 05: Photonics: Devices / Integration / Related Technology

#### PS-05-01

##### High sensitivity and high-speed response surface-normal InGaAs photodetector with plasmonic grating for optical communication system

°Toshiki Masuzawa<sup>1</sup>, Takuo Tanemura<sup>2</sup>, Atsushi Ono<sup>1,3</sup>, <sup>1</sup>Graduate School of Sci. and Tech., Shizuoka Univ. (Japan), <sup>2</sup>School of Engineering, The Univ. of Tokyo (Japan), <sup>3</sup>Res. Inst. of Electronics, Shizuoka Univ. (Japan)

#### PS-05-02

##### Extended SWIR GeSn/Ge MQW photodiode for imaging of dim-light night vision

°Cheng Li<sup>1</sup>, <sup>1</sup>Xiamen University (China)

#### PS-05-03

##### Columnar 3D Silicon Photodiodes for Near-Infrared Sensing

°Tetsuya Ariyoshi<sup>1</sup>, Naoya Iwamoto<sup>1</sup>, <sup>1</sup>Fukuoka Inst. of Tech. (Japan)

#### PS-05-04

##### Development of Uni-Travelling Carrier Photodiode as a Terahertz Wave Emitter for Non-Destructive Applications

°Jin Chul Cho<sup>1</sup>, Dong Woo PARK<sup>1</sup>, Soo Cheol KANG<sup>1</sup>, Eui Su Lee<sup>1</sup>, <sup>1</sup>Electronics and Telecommunications Research Inst. (Korea)

#### PS-05-05

##### Development of A-plane ZnMgO Electro-optic Thin-films for UV Optical Modulators

°Lei Meng<sup>1</sup>, Xueyou Yuan<sup>2</sup>, Tianrui Zhai<sup>1</sup>, Tomoaki Yamada<sup>2</sup>, <sup>1</sup>Beijing Univ. of Tech. (China), <sup>2</sup>Nagoya Univ. (Japan)

#### PS-05-06

##### SiN Waveguide Development for Graphene-Based Modulators:

##### Thickness Influence on Light Propagation Loss

°Rasuolet Lukose<sup>1</sup>, Pawan Kumar Dubey<sup>1</sup>, Ashrafal Islam Raju<sup>1</sup>, Anna Peczek<sup>1</sup>, Aleksandra Kroh<sup>1</sup>, Andreas Krüger<sup>1</sup>, Marco Liske<sup>1,2</sup>, Mindaugas Lukosius<sup>1</sup>, Andreas Mai<sup>1,2</sup>, <sup>1</sup>Leibniz Institute for High Performance Microelectronics (Germany), <sup>2</sup>Technical University of Applied Science (Germany)

#### PS-05-07

##### Room Temperature Polarization-Dependent Photocurrent Characteristics of Near-Infrared Photodiode Based on Dilute Nitride GaNAs

°Daiki Mineyama<sup>1</sup>, Satoshi Hiura<sup>1</sup>, Kaito Nakama<sup>2</sup>, Hidetoshi Hashimoto<sup>2</sup>, Keisuke Minehisa<sup>2</sup>, Junichi Takayama<sup>1</sup>, Agus Subagyo<sup>1</sup>, Kazuhisa Sueoka<sup>1</sup>, Fumitaro Ishikawa<sup>2</sup>, Akihiro Murayama<sup>1</sup>, <sup>1</sup>IST, Hokkaido Univ. (Japan), <sup>2</sup>RCIQE, Hokkaido Univ. (Japan)

#### PS-05-08

##### Frequency Dependent Transient Behavior of 2D Semiconductor Electroluminescent Device Under AC drive

°James Singh Konthoujam<sup>1</sup>, Yen-Shou Lin<sup>1,2</sup>, Ya-Hui Chang<sup>1,2</sup>, Chiao-Yun Chang<sup>1</sup>, Yu-Wei Zhang<sup>1</sup>, Shih-Yen Lin<sup>1</sup>, Hao-Chung Kuo<sup>1,2</sup>, Min-Hsiung Shih<sup>1,2</sup>, <sup>1</sup>Academia Sinica (Taiwan), <sup>2</sup>National Yang Ming Chiao Tung University (Taiwan)

#### PS-05-09

##### Propose of Filter-Free Spectroscopic Sensors on Epitaxial Layer Substrate to Realize Single-pixel Spectrometer

°Yui Kato<sup>1</sup>, Yong-Joon Choi<sup>1</sup>, Tomoya Ide<sup>1</sup>, Takeshi Hizawa<sup>1</sup>, Daisuke Akai<sup>1</sup>, Yasuyuki Kimura<sup>1</sup>, Kazuhiro Takahashi<sup>1</sup>, Toshihiko Noda<sup>1</sup>, Kazuaki Sawada<sup>1</sup>, <sup>1</sup>Toyoashi Univ. of Tech. (Japan)

#### PS-05-10

##### Modeling of Electroluminescence from n-Ge Metal-Insulator-Semiconductor Tunneling Junctions

°Weijia Wang<sup>1</sup>, Min Xie<sup>1</sup>, Jihai He<sup>1</sup>, Xiaohua Ma<sup>1</sup>, Yue Hao<sup>1</sup>, <sup>1</sup>Xidian Univ. (China)

#### PS-05-11

##### Investigation of Measurement Properties of Subsurface damaged layer on Silicide Semiconductor Wafer by Micro-Raman Tomographic Imaging

°Tepppei Onuki<sup>1</sup>, Kazuma Watanabe<sup>1</sup>, Haruhiko Udono<sup>1</sup>, <sup>1</sup>Ibaraki Univ. (Japan)

#### PS-05-12

##### 20- $\mu$ m-Diameter Organic/Metal Thin-Film Whispering Gallery Mode Resonators and its Effect of Suppression of Exciton Quenching

°Minami Takaishi<sup>1</sup>, Tokuji Yokomatsu<sup>1</sup>, Kazusuke Maenaka<sup>2</sup>, Takeshi Komino<sup>1</sup>, <sup>1</sup>Grad. Sch. Sci., Univ. Hyogo (Japan), <sup>2</sup>Grad. Sch. Eng., Univ. Hyogo (Japan)

### 06: Energy Harvesting and Converting Devices and Materials

#### PS-06-01

##### Optimization of Heat Guide Structure of an Integrated Silicon Micro Thermoelectric Generator

°Mai Awata<sup>1</sup>, Keita Kuga<sup>1</sup>, Md Mehdee Hasan Mahfuz<sup>1</sup>, Takeo Matsuki<sup>1</sup>, Takanobu Watanabe<sup>1</sup>, <sup>1</sup>Waseda Univ. (Japan)

#### PS-06-02

##### Thermal Stability and Energy Storage Performances of MIM Capacitors Based on Antiferroelectric 10 nm- Hf<sub>1-x</sub>Zr<sub>x</sub>O<sub>2</sub>

°Rabeii Barhoumi<sup>1,2</sup>, Nicolas Vaxelaire<sup>1</sup>, Zineb Saghil<sup>1</sup>, Patrice gonon<sup>2</sup>, Vincent Jousseume<sup>1</sup>, Messaoud Bedjaoui<sup>1</sup>, <sup>1</sup>Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France (France), <sup>2</sup>Univ. Grenoble Alpes, CNRS, LTM, Grenoble 38000, France (France)

#### PS-06-03

##### Evaluation of Mg<sub>2</sub>Si TPV cells fabricated on n-Mg<sub>2</sub>Si substrate by thermal diffusion of Ag acceptor

°Takumi Shimizu<sup>1</sup>, Daisuke Miyago<sup>1</sup>, Syunya Sakane<sup>1</sup>, Haruhiko Udono<sup>1</sup>, <sup>1</sup>The Univ. of Ibaraki (Japan)

#### PS-06-04

##### Improvement of Output Performance of Triboelectric Nanogenerator by Edding Ionic Liquid into Polydimethylsiloxane

°Qingyang Zhou<sup>1</sup>, Yumeng Zheng<sup>1</sup>, Kentaro Kinoshita<sup>1</sup>, Takashi Ikuno<sup>1</sup>, <sup>1</sup>Tokyo Univ. of Science (Japan)

#### PS-06-05

##### A-LLTO Nanofillers Boost the Ionic Conductivity of the Jeffamine-based Composite Solid Polymer Electrolyte

°Rohan Paste<sup>1</sup>, Chih Wei Chu<sup>1</sup>, <sup>1</sup>Academia Sinica, Taipei (Taiwan)

#### PS-06-06

##### ESR study on the effect of PDINO cathode buffer layers on the performance of RP Sn-based perovskite solar cells

°Yizhou Chen<sup>1</sup>, Seira Yamaguchi<sup>1,2</sup>, Kaito Inoue<sup>1</sup>, Atsushi Sato<sup>1</sup>, Kazuhiro Marumoto<sup>1,2,3</sup>, <sup>1</sup>Dep. of Mater. Sci., Univ. of Tsukuba (Japan), <sup>2</sup>OIQST, Univ. of Tsukuba (Japan), <sup>3</sup>TREMS, Univ. of Tsukuba (Japan)

#### PS-06-07

##### Interface engineering with grinded Nickel Oxide Powder (NiO) as hole transport layer for p-i-n type perovskite solar cells

°Chih Wei Chu<sup>1</sup>, Anjali Thakran<sup>1</sup>, <sup>1</sup>Academia Sinica (Taiwan)

#### PS-06-08

##### Effect of Intentionally Changed Nitrogen Distribution on Nitrogen Localized level in GaAsN thin films

°Kyoosuke Yamashita<sup>1</sup>, Tomoki Harada<sup>1</sup>, Masahiro Kawano<sup>1</sup>, Hidetoshi Suzuki<sup>1</sup>, Tetsuo Ikari<sup>1</sup>, Atsuhiko Fukuyama<sup>1</sup>, <sup>1</sup>Univ. of Miyazaki (Japan)

**PS-07-01****Enhanced performance of pH sensors with advanced TaO<sub>x</sub>/Ta stacked sensitive films in extended-gate field-effect transistors**

Tung-Ming Pan<sup>1</sup>, Wen-Hsin Chien<sup>1</sup>, Chen-Hung Lin<sup>1</sup>, Chang Gung University (Taiwan)

**PS-07-02****Proposal for Compact LSPR Biosensor System to Realized Multiplex Molecular Detection Using Filter-Free Wavelength Sensor**

Yuki Iiboshi<sup>1</sup>, Yong-Joon Choi<sup>1</sup>, Tomoya Ide<sup>1</sup>, Ikhyun Kwon<sup>1</sup>, Yasuyuki Kimura<sup>1</sup>, Kazuhiro Takahashi<sup>1</sup>, Toshihiko Noda<sup>1</sup>, Kazuaki Sawada<sup>1</sup>, Toyohashi Univ. of Tech. (Japan)

**PS-07-03****Thrombosis Analysis System Using Actuator-Based Stenosis**

Dong-Hwi Ham<sup>1</sup>, Ji-Seob Choi<sup>1</sup>, Woo-jun Jung<sup>2</sup>, Seong-hyeon Lee<sup>2</sup>, Yong-ha Hwang<sup>2</sup>, Woo-Tae Park<sup>1</sup>, Seoul National Univ. of Sci. and Tech. (Korea), Korea Univ. Sejong Campus (Korea)

**PS-07-04****Pyramid CNT Sensor Enabled Intravascular Catheters**

Chao-Wei Dong<sup>1</sup>, Ki-Jeong Moon<sup>1</sup>, Jong-Hyun Na<sup>1</sup>, Woo-Tae Park<sup>1</sup>, Seoul National Univ. of Sci. and Tech. (Korea)

**PS-07-05****Development of Wireless Optically Stimulable UCNP (Upconversion-Nanoparticle) Devices for Photodynamic Therapy**

Shutaro Oba<sup>1</sup>, Naoki Iwanuma<sup>1</sup>, Chenxi Qiu<sup>1</sup>, Kazushi Tsuji<sup>2</sup>, Hisashi Kino<sup>3</sup>, Takafumi Fukushima<sup>1</sup>, Tetsu Tanaka<sup>1,2</sup>, The Graduate School of Eng., Univ. of Tohoku (Japan), The Graduate School of Biomedical Eng., Univ. of Tohoku (Japan), The Graduate School of ISEE, Univ. of Kyushu (Japan)

**PS-07-06****RISC-V based digital processing platform for intermittently-operated IoT and Biomedical applications**

Panithan Srisinsuphya<sup>1</sup>, Yasufumi Yokoshiki<sup>2</sup>, Takashi Tokuda<sup>1</sup>, Tokyo Inst. of Tech. (Japan), Aoyama Gakuin Univ. (Japan)

**PS-07-07****Crystal and Electronic Structure of Acenaphtho[1,2-k]fluoranthene Analogues**

Seiya Yokokura<sup>1,2</sup>, Takuma Yuki<sup>1</sup>, Hiroki Waizumi<sup>1,2</sup>, Toshihiro Shimada<sup>1,2</sup>, Grad. Sch. of Chem. Sci. and Eng., Hokkaido Univ. (Japan), Division of Appl. Chem., Fac. of Eng., Hokkaido Univ. (Japan)

**PS-07-08****Impact of the Gate Dielectric Interface on Contact Resistance in Organic Field-Effect Transistor**

Riki Matsumoto<sup>1</sup>, Manish Pandey<sup>2</sup>, Hiroaki Bente<sup>1</sup>, Masakazu Nakamura<sup>1</sup>, NAIST (Japan), IIT Bhilai (India)

**PS-07-09****Construction of hybrid quantum wells combined with organic semiconductor layer and inorganic semiconductor layer in lead bromide-based layered perovskites by “Molecular LEGO Technique” and superlayer structure formation.**

Masanao Era<sup>1</sup>, Saga Univ. (Japan)

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**08: Low Dimensional Devices and Materials**

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**PS-08-01****Low Ohmic Contact of Ti/Al on few-layer 2H-MoTe<sub>2</sub> achieved using stacked 1T'-MoTe<sub>2</sub> interlayers**

Jinn-Kong Sheu<sup>1</sup>, Yung-Lan Chuang<sup>1</sup>, Ping-Feng Chi<sup>1</sup>, Jing-Wen Zhang<sup>1</sup>, Jing-Jie Wang<sup>1</sup>, Chung-Kai Li<sup>1</sup>, Hao-Wei Lee<sup>1</sup>, Ming-Lun Lee<sup>1</sup>, National Cheng Kung University (Taiwan), Southern Taiwan University of Science and Technology (Taiwan)

**PS-08-02****Operando Investigation of Optospinronic Devices Based on van der Waals Magnets**

Martin Zacek<sup>1</sup>, Vaibhav Varade<sup>1</sup>, Satyam Sahu<sup>2</sup>, Matěj Velický<sup>2</sup>, Martin Kalbáč<sup>2</sup>, Jana Vějpravová<sup>1</sup>, Charles University, Faculty of Mathematics and Physics (Czech Republic), J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences, v.v.i. (Czech Republic)

**PS-08-03****Control of Strain of Chemical Vapor Deposition Grown Monolayer MoS<sub>2</sub> During Transfer Process**

Mitsuhiro Okada<sup>1</sup>, Yuki Okigawa<sup>1</sup>, Takatoshi Yamada<sup>1</sup>, AIST (Japan)

**PS-08-04****Effective Treatments for Aggregation of Au Thin Films in Selective-Area VLS Growth Process of Ge Nanowires on Si (111)**

SHUMA YUZAWA<sup>1</sup>, Shuya Yamaguchi<sup>1</sup>, Shohei Okuda<sup>1</sup>, Wipakorn Jevasuwan<sup>2</sup>, Naoki Fukada<sup>2</sup>, Shinjiro Hara<sup>1</sup>, Hokkaido University (Japan), National Institute for Materials Science (Japan)

**PS-08-05****Enhancing the resistive switching properties of transparent HfO<sub>2</sub>-based memristor devices for reliable gasistor**

Taegi Kim<sup>1</sup>, Doowon Lee<sup>1,2</sup>, Myoungsu Chae<sup>3</sup>, Hee-Dong Kim<sup>1</sup>, Sejong University (Korea), IHP GmbH—Leibniz Institute for Innovative Microelectronics (Germany), Institute of Industrial Science, University of Tokyo (Japan)

**PS-08-06****Al-Catalyzed SiNW-based Si/Ge Core-Shell Heteroarchitectures and Hole Gas Accumulation Enhancement for Transistor Applications**

Wipakorn Jevasuwan<sup>1</sup>, Naoki Fukada<sup>1</sup>, National Institute for Materials Science (NIMS) (Japan)

**PS-08-07****Analytical Modeling of WSe<sub>2</sub> Negative Capacitance Field-Effect Transistor for Highly Sensitive Biosensors**

Xian Wu<sup>1</sup>, Sen Gao<sup>1</sup>, Lei Xiao<sup>1</sup>, Jing Wang<sup>1</sup>, Tsinghua university (China)

**PS-08-08****CNT/PDMS Composite Based Sensors for Tactile Sensation**

Kang-Hyuk Lee<sup>1</sup>, Jong-Hyun Na<sup>1</sup>, Woo-Tae Park<sup>1</sup>, Seoul National Univ. of Sci. and Tech. (Korea)

**PS-08-09****Specific Target Detection beyond Debye Screening Length in Antibody-Modified Epitaxial Graphene FETs on a SiC substrate**

Keita Murayama<sup>1</sup>, Yasuhide Ohno<sup>1</sup>, Masao Nagase<sup>1</sup>, Tokushima Univ. (Japan)

**PS-08-10****Evaluation of Electron-Phonon Coupling Strength and Average Phonon Energies in MoS<sub>2</sub> Thin Film**

Umidakhon Rayimjonova<sup>1,3</sup>, Daisuki Kawai<sup>1</sup>, Ryu Hasumuma<sup>2</sup>, Muhammad Monirul Islam<sup>2</sup>, Takeaki Sakurai<sup>2</sup>, Degree Programs in Pure and Applied Sciences, Graduate School of Science and Technology, University of Tsukuba (Japan), Department of Applied Physics, Institute of Pure and Applied Sciences, University of Tsukuba (Japan), Uzbek-Japan Innovation Center of Youth (Uzbekistan)

**PS-08-11****Enhancement of Memory Window for Few-Layer Black Phosphorous FeFET**

Yen-Shuo Su<sup>1</sup>, Min-Hung Lee<sup>2</sup>, Shu-Tong Chang<sup>1</sup>, National Chung Hsing University (Taiwan), National Taiwan University (Taiwan)

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**09: Novel Functional / Quantum / Spintronic Devices and Materials**

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**PS-09-01****The effects of dissipation in reservoir computing using spin qubit array**

Shion Mifune<sup>1</sup>, Taro Kanao<sup>2</sup>, Tetsufumi Tanamoto<sup>1</sup>, Teikyo Univ. (Japan), Shibaura Institute of Technology (Japan)

**PS-09-02****Improvement of spin orbital torque in Pt/Co/Ni system by insertion layer**

LIN ZHANG<sup>1</sup>, Kazuhiko Tokunaga<sup>1</sup>, Yuichiro Kurokawa<sup>1</sup>, Hiromi Yuasa<sup>1</sup>, kyushu university (Japan)

**PS-09-03****Role of Interfacial Layers in the Inverse Spin Hall Effect for the Ferromagnetic CoFeB and Layered Material Bi<sub>2</sub>Te<sub>3</sub> Stacked Films**

Misako Morota<sup>1</sup>, Shogo Hatayama<sup>1</sup>, Wipakorn Jevasuwan<sup>2</sup>, Naoki Fukada<sup>2</sup>, Yuta Saito<sup>3</sup>, AIST (Japan), NIMS (Japan), Tohoku Univ. (Japan)

**PS-09-04****Temperature and Magnon Wave-vector Dependence of Gilbert Damping Processes for Two Magnon Modes in Antiferromagnetic NiO**

Andi Gumarilang<sup>1</sup>, Nawa Kenji<sup>1,2</sup>, Nakamura Kohji<sup>1</sup>, Mie Univ. (Japan), NIMS (Japan)

**PS-09-05****Schottky Diode Enhanced AlGaIn/GaN Magnetoresistive Sensor for 200 mV Ultra-low Bias Operation**

Lingxi Xia<sup>1,2</sup>, Yung C. Liang<sup>1,2</sup>, National Univ. of Singapore (Singapore), National Univ. of Singapore (Suzhou) Res. Inst. (China)

**PS-09-06****Magnetism of Ultrathin Small-Grain MoS<sub>2</sub> Film on Number of Layers for Low Power Two-Dimensional Spintronic Devices**

Shungo Okamura<sup>1</sup>, Iriya Muneta<sup>1</sup>, Takanori Shirokura<sup>1</sup>, Hitoshi Wakabayashi<sup>1</sup>, Tokyo Inst. of Tech. (Japan)

**PS-09-07****Imaging of AC Magnetic Field by Multipulse Quantum Sensing Sequences and Multifrequency Resonance**

Shunta Onodera<sup>1</sup>, Yoshikatsu Ohkubo<sup>1</sup>, Yusuke Azuma<sup>1</sup>, Hideyuki Watanabe<sup>2</sup>, Satoshi Kashiwaya<sup>3</sup>, Shintaro Nomura<sup>1</sup>, Univ. of Tsukuba (Japan), AIST (Japan), Nagoya Univ. (Japan)

**PS-09-08****Effect of Interface Trap Charge on Coulomb Oscillation in MOS-type Quantum Dots**

Hidehiro Asai<sup>1</sup>, Shota Iizuka<sup>1</sup>, Junichi Hattori<sup>1</sup>, Koichi Fukuda<sup>1</sup>, Tsutomu Ikegami<sup>1</sup>, Hiroshi Oka<sup>1</sup>, Takumi Inaba<sup>1</sup>, Shunsuke Shitakata<sup>1</sup>, Kimihiko Kato<sup>1</sup>, Takahi Nakayama<sup>1</sup>, Takahiro Mori<sup>1</sup>, National Institute of Advanced Industrial Science and Technology (Japan)

**PS-09-09****Temperature-dependent electron scattering in AlGaAs/GaAs superlattices**

Nagi Maeda<sup>1</sup>, Xiangyu Zhu<sup>1</sup>, Marc Bescond<sup>2</sup>, Naomi Nagai<sup>1</sup>, Kazuyuki Kuroyama<sup>1</sup>, Kazuhiko Hirakawa<sup>1</sup>, Institute of Industrial Science, Univ. of Tokyo (Japan), IN2MP, Aix-Marseille Univ. (France)

**PS-09-10****Linear Regression Using Quantum Annealing with Continuous Variables**

Asuka Koura<sup>1</sup>, Takashi Imoto<sup>2</sup>, Katsuki Ura<sup>2</sup>, Yuichiro Matsuzaki<sup>1</sup>, Chuo University (Japan), AIST (Japan)

**PS-09-11****Design and characterization of an inductor-shunted matching circuit for radio-frequency reflectometry of a silicon quantum dot**

Shimpei Nishiyama<sup>1</sup>, Ryo Matsuda<sup>1</sup>, Jun Kamioka<sup>2</sup>, Raisei Mizokuchi<sup>1</sup>, Jun Yoneda<sup>1</sup>, Tetsuo Kodera<sup>1</sup>, Tokyo Tech (Japan), Information Technology R & D Center, Mitsubishi Electric Corporation (Japan)

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

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**PS-10-01****Utilizing Ultrasonic Spray Pyrolysis Deposition and Various Precursor Combinations to Fabricate High-Performance Zinc-Tin Oxide Thin-Film Transistors**

HAO-CHUN HUNG<sup>1</sup>, HUNG-CHI CHANG<sup>1</sup>, YU-YUE LIN<sup>1</sup>, HAN-YIN LIU<sup>2</sup>, WEI-CHOU HSU<sup>1</sup>, National Cheng Kung University, NCKU (Taiwan), National Sun Yat-Sen University, NSYSU (Taiwan)



## PS-10-02

### Fluorination Mechanism and Physical Properties of In<sub>2</sub>O<sub>3</sub>:F Thin-film Transistors

<sup>◦</sup>Jiayi Wang<sup>1,2</sup>, Kuo Zhang<sup>1,2,3</sup>, Ziheng Bai<sup>2</sup>, Nannan You<sup>1,2</sup>, Yang Xu<sup>1,2</sup>, Ling Li<sup>2,3</sup>, Di Geng<sup>2,3</sup>, Shengkai Wang<sup>2,3</sup>, <sup>1</sup>High-Frequency High-Voltage Device and Integrated Circuits Research & Development Center, Institute of Microelectronics, Chinese Academy of Sciences (China), <sup>2</sup>Key Laboratory of Fabrication Technologies for Integrated Circuits, Chinese Academy of Sciences (China), <sup>3</sup>University of Chinese Academy of Sciences (China)

## PS-10-03

### A Novel Poly-Si/IGZO Thin-Film Transistor CMOS Inverter

<sup>◦</sup>PingChe Liu<sup>1</sup>, Chien-Wei Chen<sup>2</sup>, Chi-Chung Ke<sup>2</sup>, Pei-Wen Li<sup>1</sup>, Horng-Chih Lin<sup>1</sup>, <sup>1</sup>Inst. of Electronics, National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup>National Applied Res. Labs., Taiwan Instrument Research Inst. (Taiwan)

## PS-10-04

### Effects of Plasma Hydrogenation on the Performance of T-shaped Gate Poly-Si Thin-Film Transistors

<sup>◦</sup>Geng-Yuan Xie<sup>1</sup>, Cheng-Kuei Lee<sup>1</sup>, Pei-Wen Li<sup>1</sup>, Ke-Yin Jhou<sup>2</sup>, Kun-Ming Chen<sup>2</sup>, Guo-Wei Huang<sup>2</sup>, Horng-Chih Lin<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung University (Taiwan), <sup>2</sup>Taiwan Semiconductor Research Institute (Taiwan)

## PS-10-05

### Crystal Structure Changes and Their Impact on Electrical Properties through ALD Sub-Cycle Control in the IGO System

<sup>◦</sup>Gwang Bok Kim<sup>1</sup>, Jae Kyeong Jeong<sup>1</sup>, <sup>1</sup>Hanyang Univ. (Korea)

## PS-10-06

### Stabilization of P-type Semiconducting TeO<sub>2</sub> Based on Surface Energy Effects

<sup>◦</sup>Rui-Yi Chen<sup>1</sup>, Shao-Chen Lee<sup>1</sup>, Ying-Tsan Tang<sup>1</sup>, <sup>1</sup>National Central University (Taiwan)

## PS-10-07

### Nonlinear Electric Field Enhancement in the THz Range by Self-organized Metal Networks through Phase Transition of the VO<sub>2</sub>

<sup>◦</sup>Ai Isohashi Osaka<sup>1,2</sup>, Masaya Nagai<sup>2</sup>, Hui Ren<sup>2</sup>, Shingo Genchi<sup>2</sup>, Boyuan Yu<sup>2</sup>, Hidekazu Tanaka<sup>2</sup>, Azusa N. Hattori<sup>2</sup>, <sup>1</sup>University of Hyogo (Japan), <sup>2</sup>SANKEN, Osaka Univ. (Japan), <sup>3</sup>Osaka Univ. (Japan)

## PS-10-08

### Hot-Wire-Type Micromachined Chemiresistive Gas Sensors for Battery-Powered City Gas Alarms

<sup>◦</sup>Shoichiro Nakao<sup>1</sup>, Takafumi Taniguchi<sup>1</sup>, Taishi Orita<sup>1</sup>, Rui Kakunaka<sup>1</sup>, Hirokazu Mitsuhashi<sup>1</sup>, <sup>1</sup>New Cosmos Electric Co., Ltd. (Japan)

## PS-10-09

### Complementary Poly-Si Thin-Film Transistors Fabricated Using

### Ni-Induced Crystallization Technology Through an Ultra-Thin Oxide Layer

<sup>◦</sup>Po-Yi Kuo<sup>1</sup>, Hao-Yu Wang<sup>2</sup>, <sup>1</sup>National Chin Yi University of Technology (Taiwan), <sup>2</sup>Feng Chia University (Taiwan)

## PS-10-10

### Investigation of Indium-optimized IGZO TFT via Plasma Enhanced Atomic Layer Deposition Suitable for CMOS Backend of Line Integration

<sup>◦</sup>Meishan Zhang<sup>1</sup>, <sup>◦</sup>Wenhui Wang<sup>1</sup>, Jiqing Lu<sup>1</sup>, Jun Lan<sup>1</sup>, Haoran Peng<sup>1</sup>, Jiamin Li<sup>1</sup>, Feichi Zhou<sup>1</sup>, Longyang Lin<sup>1</sup>, Mei Shen<sup>1</sup>, Yida Li<sup>1</sup>, <sup>1</sup>Southern University of Science and Technology (China)

## PS-10-11

### Effect of oxygen plasma pulse time of Plasma-Enhanced Atomic Layer Deposition on the stability of Back-End-of-Line-Compatible a-InGaZnO thin film transistors

<sup>◦</sup>Shaocong Lv<sup>1</sup>, Xianglong Li<sup>1</sup>, Weilin Wang<sup>1</sup>, Yuxiang Li<sup>1</sup>, Qian Xin<sup>1</sup>, Chuan Liu<sup>2</sup>, Aimin Song<sup>2,4</sup>, Jiawei Zhang<sup>1</sup>, <sup>1</sup>Shandong University (China), <sup>2</sup>Sun Yat-Sen University (China), <sup>3</sup>Southern University of Science and Technology (China), <sup>4</sup>University of Manchester (UK)

## PS-10-12

### Investigation of HfO<sub>2</sub>/ZrO<sub>2</sub> Superlattice Gate Stack for Scaling

<sup>◦</sup>TZU-I KAO<sup>1</sup>, Kai-Wei Huang<sup>1</sup>, Yi-Wen Lin<sup>1</sup>, Jun-Wei Wu<sup>2</sup>, Yung-Chun Wu<sup>1,2</sup>, Fu Ju Hou<sup>2</sup>, <sup>1</sup>Dept. of Engineering and System Science, National Tsing Hua Univ (Taiwan), <sup>2</sup>College of Semiconductor Research, National Tsing Hua Univ., (Taiwan), <sup>3</sup>Taiwan Semiconductor Research Institute (Taiwan)

## PS-10-13

### Extremely Downscaling Ultra-thin ALD-ZnO Transistors to Sub-20nm

<sup>◦</sup>Minghe Zhang<sup>1</sup>, Tingzhen Yi<sup>1</sup>, Dengqin Xu<sup>1</sup>, Ruibin Duan<sup>1</sup>, Junchen Dong<sup>2</sup>, Yi Wang<sup>1</sup>, Dedong Han<sup>1,3,4</sup>, Xing Zhang<sup>2,5</sup>, <sup>1</sup>Peking Univ. (China), <sup>2</sup>Beijing Info. Sci. and Tech. Univ. (China), <sup>3</sup>Beijing Advanced Innovation Center for Integrated Circuits (China), <sup>4</sup>Beijing Superstring Academy of Memory Tech. (China), <sup>5</sup>Peking Univ. Shenzhen Graduate School (China)

## PS-10-14

### Investigation of W/L Ratio of Load Transistors for ZnO Inverter Applications

<sup>◦</sup>Jingye Xie<sup>1</sup>, Chuanlin Sun<sup>2</sup>, Qinyuan Wang<sup>1</sup>, Junchen Dong<sup>2</sup>, Dedong Han<sup>1,3</sup>, Xing Zhang<sup>1,4</sup>, <sup>1</sup>Peking Univ. (China), <sup>2</sup>Beijing Info. Sci. and Tech. Univ. (China), <sup>3</sup>Beijing Superstring Academy of Memory Tech. (China), <sup>4</sup>Peking Univ. Shenzhen Graduate School (China)

## PS-10-15

### Humidity-Tolerant Neuromorphic Olfactory Systems Based on Hardware-Deployable Spiking Neural Networks and SnO<sub>2</sub> Resistor-Type Gas Sensors

<sup>◦</sup>Donghee Kim<sup>1,2</sup>, Gyuho Yeom<sup>1,2</sup>, Woo Young Choi<sup>1,2</sup>, Jong-Ho Lee<sup>1,2</sup>, <sup>1</sup>Department of Electrical and Computer Engineering, Seoul National University, Seoul, Republic of Korea (Korea), <sup>2</sup>Inter-University Semiconductor Research Center (ISRC), Seoul National University, Seoul, Republic of Korea (Korea)

## 11: Advanced Materials: Synthesis / Crystal Growth / Characterization

## PS-11-01

### Analysis of inclined structure of threading screw dislocation in SiC using deep X-ray topography

<sup>◦</sup>Kotaro Ishiji<sup>1</sup>, Akio Yoneyama<sup>1</sup>, Isaho Kamata<sup>2</sup>, Fumihiko Fujie<sup>2</sup>, <sup>1</sup>SAGA Light Source (Japan), <sup>2</sup>Cen. Res. Inst. Elec. Power Indus. (Japan)

## PS-11-02

### Defect Annihilation in Sn-Doped Ge Thin-Films on Insulator with High Carrier Mobility by Post-Annealing

<sup>◦</sup>Ryu Hashimoto<sup>1</sup>, Taishiro Koga<sup>1</sup>, Takaya Naganol<sup>1</sup>, Takashi Kajiwara<sup>1</sup>, Kenta Moto<sup>1</sup>, Keisuke Yamamoto<sup>1</sup>, Taizoh Sadoh<sup>1</sup>, <sup>1</sup>Kyushu Univ. (Japan)

## PS-11-03

### Low-Temperature Reduction and N Doping of Graphene Oxide by Soft X-ray Irradiation and Atomic Hydrogen/Nitrogen

<sup>◦</sup>Misora Ueshimo<sup>1</sup>, Junichi Inamoto<sup>1</sup>, Yoshiaki Matsuo<sup>1</sup>, Kazuhiro Kanda<sup>1</sup>, Koji Sumitomo<sup>1</sup>, Akira Heya<sup>1</sup>, <sup>1</sup>The Univ. of Hyogo (Japan)

## PS-11-04

### Thermal scanning probe lithography assisted broadband silicon photodetectors

<sup>◦</sup>yang Xu<sup>1</sup>, <sup>◦</sup>Zongwen Li<sup>1</sup>, Zishun Li<sup>2</sup>, Qianqian Zhang<sup>1</sup>, Yunfei Xie<sup>1</sup>, Feng Tian<sup>1</sup>, Muhammad Abid Anwar<sup>1</sup>, Srikrishna Chanakya Bodepudi<sup>1</sup>, Zhi-Xiang Zhang<sup>1</sup>, Jian Chai<sup>1</sup>, Xiaorui Zheng<sup>2</sup>, Huan Hu<sup>1</sup>, Bin Yu<sup>1</sup>, Yang Xu<sup>1</sup>, <sup>1</sup>Zhejiang Univ. (China), <sup>2</sup>Westlake Univ. (China)

## PS-11-05

### Nanographene Synthesis on Quartz Substrate by Polymerization of Pentacene and Dihydropentacene

<sup>◦</sup>Misaki Nakayama<sup>1</sup>, Koji Sumitomo<sup>1</sup>, Akira Heya<sup>1</sup>, <sup>1</sup>Univ. of Hyogo (Japan)

## PS-11-06

### GeSn on Insulator Metal-Semiconductor-Metal PhotodetectorBy Layer Transfer Technique

<sup>◦</sup>Tatsuro Maeda<sup>1</sup>, Hiroyuki Ishii<sup>1</sup>, Wen Hsin Chang<sup>1</sup>, Komei Takagi<sup>2</sup>, Shigehisa Shibayama<sup>2</sup>, Masashi Kurosawa<sup>2</sup>, Osamu Nakatsuka<sup>2</sup>, <sup>1</sup>AIST (Japan), <sup>2</sup>Nagoya Univ. (Japan)

## PS-11-07

### Theoretical Study on Structural Stability and Miscibility of ScAlN alloys: Effect of Lattice Constraints

<sup>◦</sup>Takuto Miyamoto<sup>1</sup>, Toru Akiyama<sup>1,2</sup>, Takahiro Kawamura<sup>1,2</sup>, <sup>1</sup>School of Engineering, Mie Univ. (Japan), <sup>2</sup>Innovation Center for Semiconductor and Digital Future, Mie Univ. (Japan)

## PS-11-08

### Molecular Dynamics Simulation of Si-Cr-C Solutions:

### The Effect of Al Addition on SiC Solution Growth

<sup>◦</sup>Takumi Fukunaga<sup>1</sup>, Ryo Iwasa<sup>1</sup>, Takahiro Kawamura<sup>1</sup>, Shota Seki<sup>2</sup>, Shunta Harada<sup>2</sup>, Toru Ujihara<sup>2</sup>, <sup>1</sup>The Univ. of Mie (Japan), <sup>2</sup>The Univ. of Nagoya (Japan)

## PS-11-09

### Electronic Structures of the Interface in $\gamma$ -Nb<sub>2</sub>N<sub>3</sub>/AlN Superlattice Structures

<sup>◦</sup>Tomoki Yamaguchi<sup>1</sup>, Takahiro Kawamura<sup>1</sup>, Toru Akiyama<sup>1</sup>, Atsushi Kobayashi<sup>2</sup>, <sup>1</sup>The Univ. of Mie (Japan), <sup>2</sup>The Univ. of Tokyo (Japan)

## PS-11-10

### Structural Stability and Electronic Properties of (RhGa)<sub>2</sub>O<sub>3</sub> and (RhAl)<sub>2</sub>O<sub>3</sub> Alloys:A First-Principles Study

<sup>◦</sup>Kenta Matsubara<sup>1</sup>, Toru Akiyama<sup>1,2</sup>, Takahiro Kawamura<sup>1,2</sup>, <sup>1</sup>The Univ. of Mie (Japan), <sup>2</sup>Innovation Center for Semiconductor and Digital Future (Japan)

## PS-11-11

### Minority Carrier Distribution and Response at Inversion Bias Conditions in MOS Capacitor with Si/SiGe Multi-Quantum Well Structure

<sup>◦</sup>Noriyuki Taoka<sup>1</sup>, Katsunori Makihara<sup>2</sup>, Yuji Yamamoto<sup>3</sup>, Kentaro Yabashi<sup>1</sup>, Satoshi Ohyama<sup>1</sup>, Jialun Cai<sup>2</sup>, Yusuke Ichino<sup>1</sup>, Yoshiyuki Seike<sup>1</sup>, Tatsuo Mori<sup>1</sup>, <sup>1</sup>Aichi Institute of Technology (Japan), <sup>2</sup>Nagoya University (Japan), <sup>3</sup>IHP (Germany)

## PS-11-12

### Improved Polarization and Large Memory window of 3.8V Ferroelectric Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> Capacitor via IGZO Seeding Layer with Hydrogen Plasma Treatment.

<sup>◦</sup>Miao-Hua Hstung<sup>1</sup>, <sup>◦</sup>Yu-Chi Chen<sup>1</sup>, Ying-Tsan Tang<sup>1</sup>, <sup>1</sup>National Central University (Taiwan)

## 12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials

## PS-12-01

### A Scalable Equivalent Circuit Model with Lossy Substrate and Layout Dependent Effects for mm-Wave CMOS Simulation and Design

<sup>◦</sup>Adhi Cahyo Wijaya<sup>1</sup>, Jinq Min Lin<sup>1</sup>, Jyh Chyurn Guo<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung University (Taiwan)

## PS-12-02

### Design Method of an SoC Emulator with Nonvolatile FPGAs

<sup>◦</sup>Daisuke Suzuki<sup>1</sup>, Tahahiro Hanyu<sup>2</sup>, <sup>1</sup>The Univ. of Aizu (Japan), <sup>2</sup>Tohoku Univ. (Japan)

## PS-12-03

### Reference sampling for high-precision direct ToF sensing

<sup>◦</sup>Keita Yasutomi<sup>1</sup>, Kazuki Tada<sup>1</sup>, Hirofumi Saita<sup>2</sup>, Osamu Watase<sup>2</sup>, Keiichiro Kagawa<sup>1</sup>, Shoji Kawahito<sup>1</sup>, <sup>1</sup>Shizuoka University (Japan), <sup>2</sup>Suruga Seiki Corporation (Japan)

## PS-12-04 (Late News)

### A 59–93 GHz Low-Noise Amplifier with 15.7 ± 1.5 dB Gain for Wireless Communications in 90-nm CMOS

<sup>◦</sup>Tzu-Wei Cheng<sup>1</sup>, Chia-Sung Chiu<sup>2</sup>, Guo-Wei Huang<sup>2</sup>, Kun-Ming Chen<sup>2</sup>, Liang-Chung Shen<sup>2</sup>, Lin-Kun Wu<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup>Taiwan Semiconductor Research Inst. (Taiwan)



## Wednesday, September 4

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
<p>01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-5:Ferroelectric Devices</b></p> <p>(9:00-10:00) Session Chair: Kasidit Toprasertpong (The Univ. of Tokyo), Shibun Tsuda (Renesas Electronics Corp.)</p>	<p>02: Advanced and Emerging Memories / New Applications <b>B-5:In-Memory and Unconventional Computing II</b></p> <p>(9:00-10:30) Session Chair: Kazuyuki Kouno (Nuvoton Technology Corp. Japan), Halid Mulaosmanovic (GlobalFoundries)</p>	<p>03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-5:Advanced Metallization II</b></p> <p>(9:00-10:00) Session Chair: Xun Gu (ASM Japan), Takashi Matsumoto (Tokyo Electron Technology Solutions Ltd.)</p>	<p>04: Power / High-speed Devices and Materials <b>D-5:SiC MOS Interfaces</b></p> <p>(9:00-10:30) Session Chair: Tomoya Ono (Kobe Univ.), Katsuhiro Kutsuki (Toyota Central R&amp;D Labs., Inc.)</p>		
<p><b>9:00 A-5-01 (Invited)</b> <b>Gate Stack Engineering of Ferroelectric HfZrO<sub>2</sub> from Multi-Level Non-Volatile Memory (NVM) to Analog-based Synapse</b> <i><sup>o</sup>Min-Hung Lee<sup>1</sup>, Zhao-Feng Luo<sup>1</sup>, Kuo-Yu Hsing<sup>2</sup>, Fu-Shen Chang<sup>1</sup>, Jia-Yang Lee<sup>1</sup>, Yi-Tay Chang<sup>1</sup>, Cheng-Hong Liu<sup>1</sup>, <sup>1</sup>National Taiwan Univ. (Taiwan), <sup>2</sup>National Yang Ming Chiao Tung Univ. (Taiwan)</i></p>	<p><b>9:00 B-5-01 (Invited)</b> <b>Online Training with Analog RRAM Chips</b> <i>Qi Qin<sup>1</sup>, Yue Xi<sup>1</sup>, <sup>o</sup>Bin Gao<sup>1</sup>, <sup>1</sup>Tsinghua Univ. (China)</i></p>	<p><b>9:00 C-5-01</b> <b>Stabilization of Liquid-Vapor Two-Phase Flow Boiling in Microchannel by Manifold with Flow Diode Structure for Advanced Thermal Management</b> <i><sup>o</sup>Hongyuan SH<sup>1</sup>, Paul BRUAND<sup>2</sup>, Ryoto YANAGISAWA<sup>1</sup>, Laurent JALABERT<sup>1,2</sup>, Soo Hyeon KIM<sup>1,2</sup>, Masahiro NOMURA<sup>1</sup>, <sup>1</sup>IIS, The Univ. of Tokyo (Japan), <sup>2</sup>LIMMS/IIS-CNRS, The Univ. of Tokyo (Japan)</i></p> <p><b>9:15 C-5-02</b> <b>From design to manufacturing: new methods to fix the mechanical problems associated with device production</b> <i><sup>o</sup>Lionel VIGNOUD<sup>1</sup>, Benjamin VAVRILLE<sup>3</sup>, Laurent Luc CHAPELON<sup>3</sup>, Rafael ESTEVEZ<sup>2</sup>, <sup>1</sup>Univ. Grenoble Alpes, CEA, Leti (France), <sup>2</sup>Univ. Grenoble Alpes, Laboratoire SIMaP (France), <sup>3</sup>STMicroelectronics (France)</i></p>	<p><b>9:00 D-5-01 (Invited)</b> <b>Comprehensive Research on Nitrided SiO<sub>2</sub>/4H-SiC Interfaces</b> <i><sup>o</sup>Heiji Watanabe<sup>1</sup>, Takuma Kobayashi<sup>1</sup>, <sup>1</sup>Osaka Univ. (Japan)</i></p>		
<p><b>9:30 A-5-02</b> <b>Impact of Amorphous TiN Metal-Cap with High Residual Stress on Ferroelectricity of Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> for FeFET Memory with Low Voltage Operation</b> <i><sup>o</sup>TADASHI YAMAGUCHI<sup>1</sup>, Shibun Tsuda<sup>1</sup>, Takahiro Kono<sup>1</sup>, Yoshiki Yamamoto<sup>1</sup>, Atsushi Amo<sup>1</sup>, Kazuyuki Omori<sup>1</sup>, Seiji Muranaka<sup>1</sup>, Masao Inoue<sup>1</sup>, <sup>1</sup>Renesas Electronics Corp. (Japan)</i></p>	<p><b>9:30 B-5-02</b> <b>Voltage-Operating Reservoir Computing Utilizing a Ferroelectric Source Follower</b> <i><sup>o</sup>Rikuo Suzuki<sup>1</sup>, Kasidit Toprasertpong<sup>1</sup>, Ryosho Nakane<sup>1</sup>, Eishin Nako<sup>1</sup>, Mitsuru Takenaka<sup>1</sup>, Shinichi Takagi<sup>1</sup>, <sup>1</sup>Univ. of Tokyo (Japan)</i></p>	<p><b>9:30 C-5-03</b> <b>Material Parameter Extraction Method at Low Temperature With Simple Measurement and 3D Electromagnetic Analysis</b> <i><sup>o</sup>Taiga Fukumori<sup>1,2</sup>, Norinao Kouma<sup>1,2</sup>, Yoshiyasu Doi<sup>1,2</sup>, Shintaro Sato<sup>1,2</sup>, <sup>1</sup>Fujitsu Ltd. (Japan), <sup>2</sup>RIKEN Center for Quantum Computing (Japan)</i></p>	<p><b>9:30 D-5-02</b> <b>Understanding of the effect of thermodynamic conditions on 4H-SiC surface nitridation kinetics based on modeling of surface nitridation kinetics</b> <i><sup>o</sup>Tianlin Yang<sup>1</sup>, Takashi Onaya<sup>2</sup>, Koji Kita<sup>1,2</sup>, <sup>1</sup>Department of Materials Engineering, The University of Tokyo (Japan), <sup>2</sup>Department of Advanced Materials Science, The University of Tokyo (Japan)</i></p>		

## Wednesday, September 4

Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
<p>07: Organic / Molecular / Bio-electronics <b>G-5:Advanced Devices for Medical Applications</b></p> <p>(9:00-10:15) Session Chair: Hisashi Kino (Kyushu Univ.), Hiroaki Takehara (The Univ. of Tokyo)</p>	<p>08: Low Dimensional Devices and Materials <b>H-5:Characterization-II</b></p> <p>(9:00-10:15) Session Chair: Satoshi Hiura (Hokkaido Univ.), Toshifumi Irisawa (AIST)</p>	<p>09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-5:Novel devices for neuromorphic applications</b></p> <p>(9:00-10:00) Session Chair: Yoshifumi Nishi (Toshiba Corp.), Takashi Tsuchiya (NIMS)</p>		<p>11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-5:Advanced Materials and Thin Films</b></p> <p>(9:00-10:15) Session Chair: Taizoh Sadoh (Kyushu Univ.), Hirokazu Tatsuoka (Shizuoka Univ.)</p>	
<p><b>9:00 G-5-01</b> <b>CMOS Chip for Retinal Prosthesis with Supply Voltage Monitoring Circuit for Constant-Current Stimulation</b> °Yuki Nakanishi<sup>1</sup>, Hattori Takaya<sup>1</sup>, Wisaroot Sriitsaranusorn<sup>1</sup>, Kuang-Chih Tso<sup>1</sup>, Kenzo Shodo<sup>2</sup>, Hironari Takehara<sup>1</sup>, Yoshinori Sunaga<sup>1</sup>, Makito Haruta<sup>1,3</sup>, Hiroyuki Tashiro<sup>1,4</sup>, Yasuo Terasawa<sup>1,2</sup>, Jun Ohta<sup>1</sup>, Kiyotaka Sasagawa<sup>1</sup>, <sup>1</sup>Nara Inst. of Sci. and Tech. (Japan), <sup>2</sup>Nidek Co. LTD. (Japan), <sup>3</sup>Chitose Inst. of Sci. and Tech. (Japan), <sup>4</sup>Kyushu Univ. (Japan)</p> <p><b>9:15 G-5-02</b> <b>Development of Invisible Human-Machine Interface Using Intraoral PPG Sensor</b> °Aoi Kataura<sup>1</sup>, Bang Du<sup>2</sup>, Kohei Nakamura<sup>2</sup>, Ryo Hasegawa<sup>2</sup>, Beiyutong Huang<sup>1</sup>, Takafumi Fukushima<sup>2</sup>, Koji Kiyoyama<sup>3</sup>, Tetsu Tanaka<sup>1</sup>, <sup>1</sup>Department of Biomedical Eng., Graduate School of Biomedical Eng., Tohoku Univ. (Japan), <sup>2</sup>Department of Mechanical Systems Eng., Graduate School of Eng., Tohoku Univ. (Japan), <sup>3</sup>Department of Electrical and Electronics Eng., Nagasaki Inst. of Applied Sci. (Japan)</p> <p><b>9:30 G-5-03</b> <b>Fabrication of Three-Dimensional Force Image Sensor with 22.6µm Spatial Resolution and 70ms Temporal Resolution</b> °Hiromasa Ito<sup>1</sup>, Mizuki Odaira<sup>1</sup>, Hideo Doi<sup>1</sup>, Kensuke Murakami<sup>1</sup>, Ken Ogasahara<sup>2</sup>, Satoshi Shimizu<sup>2</sup>, Tomoko Horio<sup>1</sup>, Daisuke Akai<sup>1</sup>, Takeshi Hizawa<sup>1</sup>, Yong-Joon Choi<sup>1</sup>, Kazuhiro Takahashi<sup>1</sup>, Toshihiko Noda<sup>1</sup>, Kazuaki Sawada<sup>1</sup>, <sup>1</sup>Toyohashi Univ. of Tech (Japan), <sup>2</sup>Daikin Finetech Ltd. (Japan)</p>	<p><b>9:00 H-5-01 (Invited)</b> <b>Modulation of 2D semiconductors by chemical procedures</b> °Daisuke Kiriya<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan)</p> <p><b>9:15 H-5-02</b> <b>Why does everyone transfer MoS<sub>2</sub> grown on sapphire to a Si substrate?-Interaction between MoS<sub>2</sub>/sapphire-</b> °Shuhong Li<sup>1</sup>, Keisuke Atsumi<sup>1</sup>, Tomonori Nishimura<sup>1</sup>, Kaito Kanahashi<sup>1</sup>, Yoshiki Sakuma<sup>2</sup>, Kosuke Nagashio<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan), <sup>2</sup>NIMS (Japan)</p>	<p><b>9:00 J-5-01 (Invited)</b> <b>2D lead-tin halides for energy-efficient neuromorphic electronic devices</b> °Maria Loi Antonietta<sup>1</sup>, <sup>1</sup>Univ. of Groningen (Netherlands)</p> <p><b>9:30 J-5-02</b> <b>Iono-magnonic Reservoir Computing utilizing Spin Wave Manipulation by Proton-Gating</b> °Wataru Namiki<sup>1</sup>, Daiki Nishioka<sup>1</sup>, Yuki Nomura<sup>2</sup>, Kazuo Yamamoto<sup>3</sup>, Kazuya Terabe<sup>1</sup>, Takashi Tsuchiya<sup>1</sup>, <sup>1</sup>NIMS (Japan), <sup>2</sup>JFCC (Japan)</p>		<p><b>9:00 M-5-01</b> <b>Suppressed density-change of Cr-incorporated MnTe thin film for phase-change memory</b> °Mihyeon Kim<sup>1</sup>, Yi Shuang<sup>2</sup>, Daisuke Ando<sup>1</sup>, Yuta Saito<sup>1,3</sup>, Yuji Sutou<sup>1,2</sup>, <sup>1</sup>Graduate Sch. of Engineering, Tohoku Univ. (Japan), <sup>2</sup>WPI Advanced Institute for Materials Research, Tohoku Univ. (Japan), <sup>3</sup>Research center for Green X-Tech, Tohoku Univ. (Japan)</p> <p><b>9:15 M-5-02</b> <b>Ni-Induced Layer Exchange of Multilayer Graphene Interconnects on Insulator</b> °Hiromasa Murata<sup>1</sup>, Katsuhisa Murakami<sup>1</sup>, Kaoru Toko<sup>2</sup>, Masayoshi Nagao<sup>1</sup>, <sup>1</sup>AIST (Japan), <sup>2</sup>Univ. of Tsukuba (Japan)</p> <p><b>9:30 M-5-03</b> <b>Crystalline Phase Transition of Ultra-thin Ni-silicide Film during SiH<sub>4</sub> Exposure</b> °Shun Tanida<sup>1</sup>, Noriyuki Taoka<sup>2</sup>, Katsunori Makihara<sup>1</sup>, <sup>1</sup>Nagoya Univ. (Japan), <sup>2</sup>Aichi Inst. of tech. (Japan)</p>	

## Wednesday, September 4

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-5: Ferroelectric Devices</b>	02: Advanced and Emerging Memories / New Applications <b>B-5: In-Memory and Unconventional Computing II</b>	03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-5: Advanced Metallization II</b>	04: Power / High-speed Devices and Materials <b>D-5: SiC MOS Interfaces</b>		
<b>9:45 A-5-03</b> <b>Correlative Behavior between Defect Generation and Ferroelectricity in <math>\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2</math></b> <i>Yukinori Morita<sup>1</sup>, Hiroyuki Ota<sup>1</sup>, Shutaro Asanuma<sup>1</sup>, Shinji Migita<sup>1</sup>, <sup>1</sup>AIST (Japan)</i>	<b>9:45 B-5-03</b> <b>Domain-Specific CIM Design for 3D Object Detection Network with Augmented Point Cloud, Multi-Stage Quantization Aware Training, and U-Quantization</b> <i>Ayumu Nagai<sup>1</sup>, Yuya Ichikawa<sup>1</sup>, Chihiro Matsui<sup>1</sup>, Ken Takeuchi<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan)</i>	<b>9:45 C-5-04</b> <b>Introduction of thick AlN coating on Si for 3D-IC thermal management</b> <i>Takeki Ninomiya<sup>1</sup>, Takeshi Takagi<sup>1</sup>, Masakazu Mori<sup>2</sup>, Masaaki Niwa<sup>1</sup>, Tadahi Kuroda<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan), <sup>2</sup>Ryukoku Univ. (Japan)</i>	<b>9:45 D-5-03</b> <b>Transient current measurements and analysis in charge pump method for SiC p-MOSFETs</b> <i>Takuya Hoshii<sup>1</sup>, Kotaro Ano<sup>1</sup>, Takashi Yoda<sup>2</sup>, Takayuki Ohba<sup>2</sup>, Kuniyuki Kakushima<sup>1</sup>, <sup>1</sup>School of Eng., Tokyo Tech (Japan), <sup>2</sup>WOW Alliance, Tokyo Tech (Japan)</i>		
	<b>10:00 B-5-04</b> <b>Highly Robust and Large-Scale Quantized Neural Networks Using Hemi-Cylindrical Vertical NAND Flash Memory</b> <i>Jin Ho Chang<sup>1</sup>, Ji Ho Uhm<sup>2</sup>, Joonggyu Kim<sup>3</sup>, Eunmee Kwon<sup>3</sup>, Woo Young Choi<sup>1</sup>, <sup>1</sup>Seoul National University (Korea), <sup>2</sup>Sogang University (Korea), <sup>3</sup>SK hynix Inc. (Korea)</i>		<b>10:00 D-5-04</b> <b>Impact of Interface Structure on Electronic States in 4H-SiC Inversion Layer</b> <i>Sachika Nagamizo<sup>1</sup>, Hajime Tanaka<sup>1</sup>, Nobuya Mori<sup>1</sup>, <sup>1</sup>Osaka Univ. (Japan)</i>		
	<b>10:15 B-5-05 (Late News)</b> <b>Quantized Convolutional Neural Network with Memristor Crossbar Array-based Kernel and Activation Operations</b> <i>Jinwoo Park<sup>1</sup>, Sangwook Youn<sup>1</sup>, Hyungjin Kim<sup>1</sup>, <sup>1</sup>Hanyang Univ. (Korea)</i>		<b>10:15 D-5-05</b> <b>DFT study on relation between electronic structure and areal N atom density at 4H-SiC/SiO<sub>2</sub> after NO annealing</b> <i>Nahoto Funaki<sup>1</sup>, Kosei Sugiyama<sup>1</sup>, Mitsuharu Uemoto<sup>1</sup>, Tomoya Ono<sup>1</sup>, <sup>1</sup>Grad. Schl. Eng., Kobe Univ. (Japan)</i>		

## Wednesday, September 4

Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
07: Organic / Molecular / Bio-electronics <b>G-5:Advanced Devices for Medical Applications</b>	08: Low Dimensional Devices and Materials <b>H-5:Characterization-II</b>	09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-5:Novel devices for neuromorphic applications</b>		11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-5:Advanced Materials and Thin Films</b>	
<b>9:45 G-5-04</b> <b>Development of CSC-bypass Cuff Electrode for Recording Neural Activity on the Full Circumference of Cervical Spinal Cord</b> °Kazushi Tsuji <sup>1</sup> , Atsuhiko Ninomiya <sup>2</sup> , Naoki Iwanuma <sup>3</sup> , Chenxi Qiu <sup>3</sup> , Shutaro Oba <sup>3</sup> , Hisashi Kino <sup>4</sup> , Takafumi Fukushima <sup>1,3</sup> , Kuniyasu Niizuma <sup>2,3,6</sup> , Hidenori Endo <sup>2</sup> , Tetsu Tanaka <sup>1,3</sup> , <sup>1</sup> Graduate School of Biomedical Eng., Tohoku Univ. (Japan), <sup>2</sup> Department of Neurosurgery, Tohoku Univ. Graduate School of Medicine (Japan), <sup>3</sup> Graduate School of Eng., Tohoku Univ. (Japan), <sup>4</sup> Graduate School of ISEE, Kyushu Univ. (Japan), <sup>5</sup> Department of Neurosurgical Eng. and Translational Neuroscience, Graduate School of Biomedical Eng., Tohoku Univ. (Japan), <sup>6</sup> Department of Neurosurgical Eng. and Translational Neuroscience, Tohoku Univ. Graduate School of Medicine (Japan)	<b>9:45 H-5-03</b> <b>Thermal-activation-type Electron Transport Behavior in MOCVD MoS<sub>2</sub> Film</b> °Keisuke Atsumi <sup>1</sup> , Shuhong Li <sup>1</sup> , Tomonori Nishimura <sup>1</sup> , Kaito Kanahashi <sup>1</sup> , Vincent Tung <sup>1</sup> , Yoshiki Sakuma <sup>2</sup> , Kosuke Nagashio <sup>1</sup> , <sup>1</sup> The Univ. of Tokyo (Japan), <sup>2</sup> National Institute of Materials Science (Japan)	<b>9:45 J-5-03</b> <b>Threshold Adjustable Artificial Neuron</b> °Qian He <sup>1</sup> , Hailiang Wang <sup>1</sup> , Yishu Zhang <sup>1</sup> , Yang Xu <sup>1</sup> , Bin Yu <sup>1</sup> , <sup>1</sup> Zhejiang University (China)		<b>9:45 M-5-04</b> <b>Dispersibility of Colloidal PbS Quantum Dot in Organic Solvents and its Effect on the Size Classification Process Using Membranes</b> °Jun Tanaka <sup>1</sup> , Seiya Ikeda <sup>1</sup> , Nozomu Yoshikuni <sup>1</sup> , Kohki Mukai <sup>1</sup> , <sup>1</sup> Yokohama National Univ. (Japan)	
<b>10:00 G-5-05</b> <b>Lactate Sensing Probe with Deep Trench Structure for Analyzing Cancer Cells in Brain Tissue</b> °CHENXI QIU <sup>1</sup> , Naoki Iwanuma <sup>1</sup> , Kazushi Tsuji <sup>1</sup> , Shutaro Oba <sup>1</sup> , Takafumi Fukushima <sup>1</sup> , Tetsu Tanaka <sup>1</sup> , <sup>1</sup> Univ. TOHOKU (Japan)	<b>10:00 H-5-04</b> <b>Development of a highly sensitive detection module incorporating a charge-sensitive infrared phototransistor and a Ge hemispherical mirror</b> °Souichi Nakai <sup>1</sup> , Fumiyuki Inamura <sup>1</sup> , Sunmi Kim <sup>2</sup> , Mikhail Patrashin <sup>2</sup> , Iwao Hosako <sup>2</sup> , Susumu Komiyama <sup>2,3</sup> , Kenji Ikushima <sup>1</sup> , <sup>1</sup> Tokyo Univ. of agriculture and Technology (Japan), <sup>2</sup> NICT (Japan), <sup>3</sup> Dept. of Basic Science, Univ. of Tokyo (Japan)			<b>10:00 M-5-05 (Late News)</b> <b>Epitaxial Growth of CoFe/Ge Stacked Structures on Perpendicularly Magnetized MnGa for Spin-Valve Devices</b> °Makoto Nishioka <sup>1</sup> , Michihiro Yamada <sup>2</sup> , Deepak Kumar <sup>3</sup> , Takamasa Usami <sup>2,1,4</sup> , Shinya Yamada <sup>2,1,4</sup> , Sigemi Mizukami <sup>3,5</sup> , Kohei Hamaya <sup>2,1,4</sup> , <sup>1</sup> Grad. Sch. Eng. Sci., Osaka Univ. (Japan), <sup>2</sup> CSRN, Grad. Sch. Eng. Sci., Osaka Univ. (Japan), <sup>3</sup> WPI-AIMR, Tohoku Univ. (Japan), <sup>4</sup> OTRI-SPIN, Osaka Univ. (Japan), <sup>5</sup> CSIS, Tohoku Univ. (Japan)	

## Wednesday, September 4

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
<p>01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-6: Modeling, Simulation and Characterization</b></p> <p>(10:45-12:15) Session Chair: Pin Su (NYCU), Nobuyuki Mise (Hitachi High-Tech Corp.)</p>	<p>02: Advanced and Emerging Memories / New Applications <b>B-6: 3D NAND Flash Memory</b></p> <p>(10:45-12:15) Session Chair: Ken Takeuchi (The Univ. of Tokyo), Keiji Hosotani (KIOXIA Corp.)</p>	<p>03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-6: MEMS and Advanced Metallization II</b></p> <p>(10:45-12:00) Session Chair: Takeo Minari (NIMS), Akinobu Yamaguchi (Toyo Univ.)</p>	<p>04: Power / High-speed Devices and Materials <b>D-6: SiC Power Devices</b></p> <p>(11:00-12:15) Session Chair: Shinsuke Harada (AIST), Kohei Adachi (Mitsubishi Electric)</p>		<p>06: Energy Harvesting and Converting Devices and Materials <b>F-6: Solar cells</b></p> <p>(10:30-12:00) Session Chair: Takeshi Tayagaki (AIST), Kentaro Watanabe (The Univ. of Tokyo)</p>
					<p><b>10:30 F-6-01 (Invited)</b> <b>Development of functional thin-film materials for Si solar cells and their application to perovskite/Si tandems</b> <sup>°</sup>Takuya Matsui<sup>1</sup>, Hitoshi Sai<sup>1</sup>, <sup>1</sup>AIST (Japan)</p>
<p><b>10:45 A-6-01 (Invited)</b> <b>Milli-Kelvin Analysis Revealing the Role of Band-edge States in Cryogenic MOSFETs</b> <sup>°</sup>Hiroshi Oka<sup>1</sup>, Hidehiro Asai<sup>1</sup>, Takumi Inaba<sup>1</sup>, Shunsuke Shitakata<sup>1</sup>, Hitoshi Yui<sup>1</sup>, Hiroshi Fuketa<sup>1</sup>, Shota Iizuka<sup>1</sup>, Kimihiko Kato<sup>1</sup>, Takashi Nakayama<sup>1</sup>, Takahiro Mori<sup>1</sup>, <sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST) (Japan)</p>	<p><b>10:45 B-6-01 (Invited)</b> <b>Metal Induced Lateral Crystallization (MILC) Techniques for Highly Scalable Vertical Si Channel in 3D Flash Memory</b> <sup>°</sup>Noritaka Ishihara<sup>1</sup>, Yusuke Shimada<sup>1</sup>, Takamitsu Ochi<sup>1</sup>, Satoshi Seto<sup>1</sup>, Haruki Matsuo<sup>1</sup>, Hiroki Yamashita<sup>1</sup>, Sho Morita<sup>1</sup>, Masafumi Ukishima<sup>1</sup>, Yusuke Arayashiki<sup>1</sup>, Suzuka Kajiwara<sup>1</sup>, Katsuya Nishiyama<sup>1</sup>, Akiyuki Murayama<sup>1</sup>, Kikuko Sugimae<sup>1</sup>, Shinji Mori<sup>1</sup>, Yuta Saito<sup>1</sup>, Takeshi Shundo<sup>1</sup>, Aki Maeda<sup>1</sup>, Hiroyuki Kamiya<sup>2</sup>, Yasuhiro Uchiyama<sup>1</sup>, Makoto Fujiwara<sup>1</sup>, Fumiki Aiso<sup>1</sup>, Katsuyuki Sekine<sup>1</sup>, Norio Ohtani<sup>1</sup>, <sup>1</sup>Kioxia Corporation (Japan), <sup>2</sup>Western Digital Corporation (Japan)</p>	<p><b>10:45 C-6-01 (Invited)</b> <b>MEMS Activities at AIST: Ultrathin Piezoelectric MEMS</b> <sup>°</sup>Yusuke Takei<sup>1</sup>, <sup>1</sup>Natl. Inst. of Adv. Indus. Sci. and Tech. (AIST) (Japan)</p>			
			<p><b>11:00 D-6-01 (Invited)</b> <b>Ultra-high Voltage SiC Bipolar Devices for Green Infrastructure</b> <sup>°</sup>Naoki Watanabe<sup>1</sup>, Haruka Shimizu<sup>1</sup>, Akio Shima<sup>1</sup>, <sup>1</sup>Hitachi, Ltd. (Japan)</p>		<p><b>11:00 F-6-02</b> <b>Our Recent Approaches for Si Tandem Solar Cells and Modules</b> <sup>°</sup>MASAFUMI YAMAGUCHI<sup>1</sup>, Tatsuya Takamoto<sup>2</sup>, Hiroyuki Juso<sup>2</sup>, Kyotaro Nakamura<sup>1</sup>, Ryo Ozaki<sup>1</sup>, Nobuaki Kojima<sup>1</sup>, Yoshio Ohshita<sup>1</sup>, <sup>1</sup>Toyota Tech Inst. (Japan), <sup>2</sup>Sharp Corp. (Japan)</p>
<p><b>11:15 A-6-02</b> <b>Comparative Analysis of Cryogenic Threshold Voltage and On-current Variability in 65nm Bulk and FDSOI MOSFETs</b> <sup>°</sup>Zihao Liu<sup>1</sup>, Tomoko Mizutani<sup>1</sup>, Kiyoshi Takeuchi<sup>1</sup>, Takuya Saraya<sup>1</sup>, Hiroshi Oka<sup>2</sup>, Takahiro Mori<sup>2</sup>, Masaharu Kobayashi<sup>1</sup>, Toshiro Hiramoto<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan), <sup>2</sup>The National Inst. of Advanced Indus. Sci. and Tech. (Japan)</p>	<p><b>11:15 B-6-02</b> <b>Optical Emission Spectrum Feature-based Machine Learning Technology for Monitoring High Aspect Ratio Contact Etching-induced Defects of 3D NAND Flash Memory</b> <sup>°</sup>Byung Yong Choi<sup>1</sup>, Gae-won You<sup>1</sup>, Deokwon Sim<sup>1</sup>, Jongik Hong<sup>1</sup>, Hyun Soo Lee<sup>1</sup>, Jonghyun Kim<sup>1</sup>, Sangwon Baek<sup>1</sup>, Won Jun Choi<sup>1</sup>, Minsun Ryu<sup>1</sup>, Seungyeon Kim<sup>1</sup>, Hoyun Jung<sup>1</sup>, Jun Haeng Lee<sup>1</sup>, Sung-Il Cho<sup>1</sup>, Mincheol Park<sup>1</sup>, Bong-Tae Park<sup>1</sup>, Sung Hoi Hur<sup>1</sup>, <sup>1</sup>Samsung Electronics Co., Ltd. (Korea)</p>	<p><b>11:15 C-6-02</b> <b>Pilot-Line Ready Fabrication Process of High Aspect Ratio Nanoneedles for Biomedical Applications</b> <sup>°</sup>Moeen Ghafoor Piracha<sup>1</sup>, Jun Wang<sup>1</sup>, Alnazer Mohamed<sup>1</sup>, Antonio Palombizio<sup>1</sup>, Bivragh Majeed<sup>1</sup>, Abhilash Paneri<sup>1</sup>, <sup>1</sup>Imec (Belgium)</p>			<p><b>11:15 F-6-03</b> <b>Scheil-Gulliver Model Studies on Al-paste-based SiGe Film Growth for on-silicon Multi-junction Solar Cells</b> <sup>°</sup>Yohkoh Hinen<sup>1</sup>, Kiyohide Murakami<sup>2</sup>, Kohei Ito<sup>3</sup>, Takeshi Sato<sup>3</sup>, Satoru Miyamoto<sup>3</sup>, Shota Suzuki<sup>4</sup>, Hideaki Minamiyama<sup>4</sup>, Marwan Dhamrin<sup>4,5</sup>, Noritaka Usami<sup>3,6,7</sup>, <sup>1</sup>Tokai High School (Japan), <sup>2</sup>Tajimi Kita High School (Japan), <sup>3</sup>Grad. Eng., Nagoya Univ. (Japan), <sup>4</sup>Toyo Aluminium K.K. (Japan), <sup>5</sup>Osaka Univ. (Japan), <sup>6</sup>InFuS, Nagoya Univ. (Japan), <sup>7</sup>IMaSS, Nagoya Univ. (Japan)</p>

## Wednesday, September 4

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<p>07: Organic / Molecular / Bio-electronics <b>G-6:Advanced Lab-on-Chip Devices and Organic/Inorganic Hybrid Electronics</b></p> <p>(10:45-12:15) Session Chair: Cheng-Hsien Liu (National Tsing Hua Univ.), Toshinori Matsushima (Kyushu Univ.)</p>	<p>08: Low Dimensional Devices and Materials <b>H-6:Device-III</b></p> <p>(10:45-11:45) Session Chair: Takamasa Kawanago (AIST), Yusuke Hoshi (Tokyo City Univ.)</p>	<p>09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-6:Novel advanced materials</b></p> <p>(10:45-11:30) Session Chair: Michael Quinsat (KIOXIA Corp.), Takafumi Fujita (Osaka Univ.)</p>	<p>10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process <b>K-6:Group-IV Thin-film Technologies</b></p> <p>(10:30-12:00) Session Chair: Toshiya Murakami (KIOXIA Corp.), Shin-ichiro Kuroki (Hiroshima Univ.)</p>	<p>11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-6:Low Dimensional Materials</b></p> <p>(10:45-12:00) Session Chair: Kentaro Watanabe (Shinshu Univ.), Tomohiro Yamaguchi (Kogakuin Univ.)</p>	<p>12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials <b>N-6:Compute-in-Memory</b></p> <p>(10:45-11:45) Session Chair: Koh Johguchi (Shinshu Univ.), Jun Furuta (Okayama Prefectural Univ.)</p>
<p><b>10:45 G-6-01</b> <b>Construction of Lung Tumor Microenvironment Lab Chip using Dielectrophoresis and Micropillar for Drug Testing</b> Sin-Huei Wang<sup>1</sup>, °Xiao-Han Wang<sup>1</sup>, Kang-Yun Lee<sup>2</sup>, Wei-Lun Sun<sup>3</sup>, Cheng-Hsien Liu<sup>1</sup>, <sup>1</sup>Department of Power Mechanical Engineering, National Tsing Hua Univ. (Taiwan), <sup>2</sup>Department of Division of Thoracic Medicine, Taipei Medical Univ. (Taiwan), <sup>3</sup>Pythia Biotech Ltd. (Taiwan)</p>	<p><b>10:45 H-6-01</b> <b>Probing super-hydrophobic Cytop/MoS<sub>2</sub> interface properties</b> °Yuta Kono<sup>1</sup>, Tomonori Nishimura<sup>1</sup>, Kaito Kanahashi<sup>1</sup>, Shunto Arai<sup>2</sup>, Yasumitsu Myata<sup>3</sup>, Kosuke Nagashio<sup>1</sup>, <sup>1</sup>the Univ. of Tokyo (Japan), <sup>2</sup>NIMS (Japan), <sup>3</sup>Tokyo Metropolitan Univ. (Japan)</p>	<p><b>10:45 J-6-01</b> <b>Polarization-Dependent Photocurrent in a Quadrilateral-Shaped Crystalline Te Chip</b> °Hiro Munekata<sup>1</sup>, Takuya Satoh<sup>1,2</sup>, <sup>1</sup>Tokyo Inst. Tech. (Japan), <sup>2</sup>Inst. Molecular Sci. (Japan)</p>	<p><b>10:30 K-6-01 (Invited)</b> <b>Low temperature poly-Ge TFTs on glass and plastic substrates</b> °Akito Hara<sup>1</sup>, Hitoshi Suzuki<sup>1</sup>, Sho Suzuki<sup>1</sup>, Yuto Ito<sup>1</sup>, Daiki Goshima<sup>1</sup>, Akito Kurihara<sup>1</sup>, <sup>1</sup>Tohoku Gakuin University (Japan)</p>	<p><b>10:45 M-6-01 (Invited)</b> <b>High pressure synthesis of boron nitride and diamond single crystals and their impurity control</b> °Takashi Taniguchi<sup>1</sup>, <sup>1</sup>NIMS (Japan)</p>	<p><b>10:45 N-6-01 (Invited)</b> <b>Towards Efficient and Precise Analog Compute-in-Memory Circuits</b> °Kentaro Yoshioka<sup>1</sup>, Shimpei Ando<sup>1</sup>, Satomi Miyagi<sup>1</sup>, Yung-Chin Chen<sup>1</sup>, Wenlun Zhang<sup>1</sup>, <sup>1</sup>Keio Univ. (Japan)</p>
<p><b>11:00 G-6-02</b> <b>Tumor Lab Chip with Oxygen Concentration Regulation for Drug Studies under Hypoxia</b> Wei-Yu Huang<sup>1</sup>, °Tsai-Yu Shih<sup>2</sup>, Kang-Yun Lee<sup>3</sup>, Wei-Lun Sun<sup>4</sup>, Cheng-Hsien Liu<sup>1</sup>, <sup>1</sup>Department of Power Mechanical Engineering, National Tsing Hua Univ. (Taiwan), <sup>2</sup>Institute of NanoEngineering and MicroSystems, National Tsing Hua Univ. (Taiwan), <sup>3</sup>Department of Division of Thoracic Medicine, Taipei Medical Univ. (Taiwan), <sup>4</sup>Pythia Biotech Ltd. (Taiwan)</p>	<p><b>11:00 H-6-02</b> <b>Wrinkle-Free MoS<sub>2</sub> Transistors with Improved Characteristic Variation Achieved by Vacuum Transfer</b> °Yuan-Chun Eric Su<sup>1</sup>, Hstang-Chi Hu<sup>1</sup>, Jian-Chen Tsai<sup>1</sup>, Chih-Yao Shih<sup>1</sup>, Wen-Hao Chang<sup>1,2</sup>, <sup>1</sup>National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup>Academia Sinica (Taiwan)</p>	<p><b>11:00 J-6-02</b> <b>Plasmonic modulation of chiral valley-exciton emission in two-dimensional transition metal dichalcogenides</b> yang Xu<sup>1</sup>, °Yunfei Xie<sup>1</sup>, Jianhua Huang<sup>2</sup>, Zongwen Li<sup>1</sup>, Qianqian Zhang<sup>1</sup>, Zhi-Xiang Zhang<sup>1</sup>, Ming Huang<sup>2</sup>, Yue Dai<sup>1</sup>, Yance Chen<sup>1</sup>, Jian Chai<sup>1</sup>, Yuan Ma<sup>1</sup>, Xiaochen Wang<sup>1</sup>, Hao Ning<sup>1</sup>, Xinyu Liu<sup>1</sup>, Bin Yu<sup>1</sup>, Ziwei Li<sup>2</sup>, <sup>1</sup>Zhejiang Univ. (China), <sup>2</sup>Human Univ. (China)</p>	<p><b>11:00 K-6-02</b> <b>Improved mobility in polycrystalline GeSn thin-film transistors by multilayered solid-phase crystallization</b> °Shintaro Maeda<sup>1</sup>, Kenta Moto<sup>2</sup>, Huang Linyu<sup>2</sup>, Atsuki Morimoto<sup>2</sup>, Keisuke Yamamoto<sup>2</sup>, Takashi Suemasu<sup>1</sup>, Kaoru Toko<sup>1</sup>, <sup>1</sup>Univ. of Tsukuba (Japan), <sup>2</sup>Kyushu Univ. (Japan)</p>	<p><b>11:15 M-6-02</b> <b>Tuning growth conditions for enlarging CVD h-BN crystals on Si substrate</b> °Tomohiro Okamoto<sup>1</sup>, Kentaro Watanabe<sup>1,2</sup>, <sup>1</sup>Shinshu Univ. (Japan), <sup>2</sup>IFES, Shinshu Univ. (Japan)</p>	<p><b>11:15 N-6-02</b> <b>A Saliency-Aware Analog Computing-In-Memory Macro with SAR-Embedded Saliency Detection Technique</b> °Shimpei Ando<sup>1</sup>, Yung-Chin Chen<sup>1,2</sup>, Satomi Miyagi<sup>1</sup>, Wenlun Zhang<sup>1</sup>, Kentaro Yoshioka<sup>1</sup>, <sup>1</sup>Keio Univ. (Japan), <sup>2</sup>National Taiwan Univ. (Taiwan)</p>
<p><b>11:15 G-6-03 (Invited)</b> <b>Semiconductor Physics of Lead Halide Perovskites</b> °Yoshihiko Kanemitsu<sup>1</sup>, <sup>1</sup>Kyoto Univ. (Japan)</p>	<p><b>11:15 H-6-03</b> <b>Band Modulation with Insulator Insertion between Ni and PVD-WS<sub>2</sub> Films for P-type Contact</b> °Kaede Teraoka<sup>1</sup>, Shinya Imai<sup>1</sup>, Naoki Matsunaga<sup>1</sup>, Keita Kurohara<sup>1</sup>, Soma Ito<sup>1</sup>, Kuniyuki Kakushima<sup>1</sup>, Hitoshi Wakabayashi<sup>1</sup>, <sup>1</sup>Tokyo Inst. of Tech. (Japan)</p>	<p><b>11:15 J-6-03 (Late News)</b> <b>Variational Neural-Simulation Hybrid Eigensolver with Classical Shadow</b> °Yuta Shingu<sup>1</sup>, Yukun Zhang<sup>2,4</sup>, Yuichiro Matsuzaki<sup>2</sup>, Tetsuro Nikuni<sup>1</sup>, Xiao Yuan<sup>3,4</sup>, Yiming Huang<sup>2,4</sup>, <sup>1</sup>Tokyo Univ. of Sci. (Japan), <sup>2</sup>Chuo Univ. (Japan), <sup>3</sup>Peking Univ. (China), <sup>4</sup>Faculty of Sci. and Engineering (China)</p>	<p><b>11:15 K-6-03</b> <b>Demonstration of CMOS Inverter on Polycrystalline Ge Formed by Solid-phase Crystallization</b> °Atsuki Morimoto<sup>1</sup>, Linyu Huang<sup>1</sup>, Kota Igura<sup>2</sup>, Takamitsu Ishiyama<sup>2</sup>, Kaoru Toko<sup>2</sup>, Dong Wang<sup>1</sup>, Keisuke Yamamoto<sup>1</sup>, <sup>1</sup>Kyushu Univ. (Japan), <sup>2</sup>Univ. of Tsukuba (Japan)</p>	<p><b>11:15 M-6-02</b> <b>Tuning growth conditions for enlarging CVD h-BN crystals on Si substrate</b> °Tomohiro Okamoto<sup>1</sup>, Kentaro Watanabe<sup>1,2</sup>, <sup>1</sup>Shinshu Univ. (Japan), <sup>2</sup>IFES, Shinshu Univ. (Japan)</p>	<p><b>11:15 N-6-02</b> <b>A Saliency-Aware Analog Computing-In-Memory Macro with SAR-Embedded Saliency Detection Technique</b> °Shimpei Ando<sup>1</sup>, Yung-Chin Chen<sup>1,2</sup>, Satomi Miyagi<sup>1</sup>, Wenlun Zhang<sup>1</sup>, Kentaro Yoshioka<sup>1</sup>, <sup>1</sup>Keio Univ. (Japan), <sup>2</sup>National Taiwan Univ. (Taiwan)</p>



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Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-6: Modeling, Simulation and Characterization</b>	02: Advanced and Emerging Memories / New Applications <b>B-6: 3D NAND Flash Memory</b>	03: Heterogeneous and 3D Integration / Interconnect / MEMS <b>C-6: MEMS and Advanced Metallization II</b>	04: Power / High-speed Devices and Materials <b>D-6: SiC Power Devices</b>		06: Energy Harvesting and Converting Devices and Materials <b>F-6: Solar cells</b>
<b>11:30 A-6-03</b> <b>Accurate Evaluation of Effective Mobility in Si nMOSFETs at Cryogenic Temperature by Introducing Quasi-Static C-V Method</b> °Yutong Chen <sup>1</sup> , Zhao Jin <sup>1</sup> , Xueyang Han <sup>1</sup> , Hiroshi Oka <sup>2</sup> , Takahiro Mori <sup>2</sup> , Kasidit Toprasertpong <sup>1</sup> , Mitsuru Takenaka <sup>1</sup> , Shinichi Takagi <sup>1</sup> , <sup>1</sup> The Univ. of Tokyo (Japan), <sup>2</sup> National Inst. of Advanced Indus. Sci. and Tech. (Japan)	<b>11:30 B-6-03</b> <b>Analysis of Mechanical Stress Induced in Multi-Stack and Number of Wordlines of 3D NAND Flash Memory</b> °Donghyun Kim <sup>1</sup> , Kihoon Nam <sup>1</sup> , Chanyang Park <sup>1</sup> , Jiyeon Kim <sup>1</sup> , Jinsu Jung <sup>1</sup> , Sanguk Lee <sup>1</sup> , Yunsu Kim <sup>2</sup> , Seongjo Park <sup>2</sup> , Rock-Hyun Baek <sup>1</sup> , <sup>1</sup> Pohang Univ. of Science and Technology (Korea), <sup>2</sup> SK hynix Inc. (Korea)	<b>11:30 C-6-03</b> <b>Non-localized Filaments for the Robust Resistive Switching in Halide Perovskites</b> °Yu Yan <sup>1</sup> , Hongwei Ge <sup>1</sup> , Junxin Cheng <sup>1</sup> , Xiaohang Zhang <sup>1</sup> , Cancan Cui <sup>1</sup> , Mengwei Wang <sup>1</sup> , Xuying Liu <sup>1</sup> , Li Zhang <sup>1</sup> , Qingqing Sun <sup>1</sup> , <sup>1</sup> Zhengzhou University (China)	<b>11:30 D-6-02</b> <b>Double-Implanted 4H-SiC Superjunction UMOFET without Bipolar Degradation</b> °Kensuke Takenaka <sup>1</sup> , Takeshi Tawara <sup>1,2</sup> , Syunki Narita <sup>2</sup> , Shinsuke Harada <sup>1</sup> , <sup>1</sup> AIST (Japan), <sup>2</sup> Fuji Electric Co., Ltd. (Japan)		<b>11:30 F-6-04 (Invited)</b> <b>Prospects of PV-Recycling in Germany</b> °Andreas Obst <sup>1</sup> , Peter Henatsch <sup>1</sup> , Susanne Richter <sup>1</sup> , Peter Dold <sup>2</sup> , Elmar Lohmüller <sup>3</sup> , Sabrina Lohmüller <sup>3</sup> , Stephan Riepe <sup>3</sup> , Dirk Wagenmann <sup>3</sup> , <sup>1</sup> Fraunhofer CSP (Germany), <sup>2</sup> Fraunhofer IWKS (Germany), <sup>3</sup> Fraunhofer ISE (Germany)
<b>11:45 A-6-04</b> <b>A Correction Method of Split C-V Characteristics in MOSFETs by Using Transmission Line Model for Accurate Extraction of Effective Mobility</b> °Zhao Jin <sup>1</sup> , Yutong Chen <sup>1</sup> , Xueyang Han <sup>1</sup> , Hiroshi Oka <sup>2</sup> , Takahiro Mori <sup>2</sup> , Kasidit Toprasertpong <sup>1</sup> , Mitsuru Takenaka <sup>1</sup> , Shinichi Takagi <sup>1</sup> , <sup>1</sup> The Univ. of Tokyo (Japan), <sup>2</sup> National Inst. of Advanced Indus. Sci. and Tech. (Japan)	<b>11:45 B-6-04</b> <b>First Demonstration of 3D Stacked FeFET Memory Devices with Vertical IGZO Channel-Last Process for Dense Non-Volatile Memory</b> °Roman Izmilov <sup>1,2</sup> , Nicolò Ronchi <sup>1</sup> , Jie Li <sup>1</sup> , Mihaela Ioana Popovici <sup>1</sup> , Kostantine Katcko <sup>1</sup> , Zhuo Chen <sup>1,2</sup> , Laurent Breuil <sup>1</sup> , Nina Bazzazian <sup>1</sup> , Kaustuv Banerjee <sup>1</sup> , Iuliana Rachita <sup>1</sup> , Geert Van den bosch <sup>1</sup> , Maarten Rosmeulen <sup>1</sup> , Jan Van Houdt <sup>1,2</sup> , <sup>1</sup> imec (Belgium), <sup>2</sup> KU Leuven (Belgium)	<b>11:45 C-6-04</b> <b>Solution-processable, Cross-linked High-k Polymers for High-resolution Photopatterning and Low-voltage Electronics</b> °Hongwei Ge <sup>1</sup> , Yu Yan <sup>1</sup> , Xiaohang Zhang <sup>1</sup> , Cancan Cui <sup>1</sup> , Junxin Chen <sup>1</sup> , Mengwei Wang <sup>1</sup> , Qingqing Sun <sup>1</sup> , Xuying Liu <sup>1</sup> , <sup>1</sup> Zhengzhou University (China)	<b>11:45 D-6-03</b> <b>A Study of Electrical Characteristics of State-of-the-Art 1.2-kV SiC Planar and Trench MOSFETs</b> °Kazuhiro Suzuki <sup>1</sup> , Hiroshi Yano <sup>1</sup> , Noriyuki Iwamuro <sup>1</sup> , <sup>1</sup> Univ. of Tsukuba (Japan)		
<b>12:00 A-6-05</b> <b>Assessment and optimization of the cascaded transistor method for the direct extraction of access resistance components in FinFET and NSFET devices.</b> °Pierre Eyben <sup>1</sup> , An De Keersgieter <sup>1</sup> , Philippe Matagne <sup>1</sup> , Hans Mertens <sup>1</sup> , Thomas Chiarella <sup>1</sup> , Clément Porret <sup>1</sup> , Camilla Toledo de Carvalho Cavalcante <sup>1</sup> , Yong Kong Siew <sup>1</sup> , Jerome Mitard <sup>1</sup> , Naoto Horiguchi <sup>1</sup> , <sup>1</sup> Imec (Belgium)	<b>12:00 B-6-05</b> <b>A Novel Structure Using P-doped Polysilicon in IGZO Channel-based 3D NAND Flash</b> Daewoong Kang <sup>1</sup> , °Minkyu Suh <sup>1,2</sup> , Gwansun Choi <sup>1,2</sup> , Chaeyeon Jung <sup>1,3</sup> , Youngho Jung <sup>4</sup> , <sup>1</sup> Seoul National University (Korea), <sup>2</sup> Chung-Ang University (Korea), <sup>3</sup> Soongsil University (Korea), <sup>4</sup> Daegu University (Korea)		<b>12:00 D-6-04 (Late News)</b> <b>Detection of carbon-related defects in near-surface region of SiC induced by low-oxygen-partial-pressure annealing</b> °Chuyang Lyu <sup>1</sup> , Takashi Onaya <sup>1</sup> , Koji Kita <sup>1</sup> , <sup>1</sup> The University of Tokyo (Japan)		

## Wednesday, September 4

Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
07: Organic / Molecular / Bio-electronics <b>G-6:Advanced Lab-on-Chip Devices and Organic/Inorganic Hybrid Electronics</b>	08: Low Dimensional Devices and Materials <b>H-6:Device-III</b>	09: Novel Functional / Quantum / Spintronic Devices and Materials <b>J-6:Novel advanced materials</b>	10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process <b>K-6:Group-IV Thin-film Technologies</b>	11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-6:Low Dimensional Materials</b>	12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials <b>N-6:Compute-in-Memory</b>
11:45 G-6-04 <b>Improved Perovskite Solar Cell Performance with Alkali Metal Hydroxide</b> <i>Yuki Fujita<sup>1</sup>, Zhanglin Guo<sup>1</sup>, Toshinori Matsushima<sup>1</sup>,<sup>1</sup>Kyushu Univ. (Japan)</i>	11:30 H-6-04 <b>Layered NbS<sub>2</sub> Contacts Formed via H<sub>2</sub>S Reaction with Nb for High Performance WSe<sub>2</sub>-channel P-type Transistors</b> <i><sup>o</sup>Koki Hori<sup>1,2</sup>, Wen-Hsin Chang<sup>1</sup>, Toshifumi Irisawa<sup>1</sup>, Atsushi Ogura<sup>2,3</sup>, Naoya Okada<sup>1</sup>,<sup>1</sup>AIST (Japan),<sup>2</sup>Meiji Univ. (Japan),<sup>3</sup>MREL, Meiji Univ. (Japan)</i>		11:30 K-6-04 <b>Lateral crystallization of germanium monosulfide thin films and its application for field-effect transistors</b> <i><sup>o</sup>Qinqiang ZHANG<sup>1</sup>, Ryo MATSUMURA<sup>1</sup>, Kazuhito TSUKAGOSHI<sup>1</sup>, Naoki FUKATA<sup>1,2</sup>,<sup>1</sup>MANA, NIMS (Japan),<sup>2</sup>Univ. of Tsukuba (Japan)</i>	11:30 M-6-03 <b>Influence of Hydrogen Desorption Temperature on Interlayer Distance of Multilayered GeH Nanosheets under Ultrahigh Vacuum Ambient</b> <i><sup>o</sup>Kazuho Matsumoto<sup>1</sup>, Masaaki Arada<sup>2</sup>, Shigehisa Shibayama<sup>1</sup>, Mitsuo Sakashita<sup>1</sup>, Osamu Nakatsuka<sup>1,2</sup>, Tomonori Nishimura<sup>3</sup>, Kosuke Nagashio<sup>3</sup>, Masashi Kurosawa<sup>1</sup>,<sup>1</sup>Grad. Sch. of Eng., Nagoya Univ. (Japan),<sup>2</sup>Inst. of Materials and Systems for Sustainability, Nagoya Univ. (Japan),<sup>3</sup>The Univ. of Tokyo (Japan)</i>	11:30 N-6-03 <b>An Ultra-low Power SNN Co-processor with Reconfigurable Computing-in-Memory Cell Array based on Differential-pair SRAM and Memristive Memory</b> <i><sup>o</sup>yaolei Guo<sup>1</sup>, Liangyao Deng<sup>1</sup>, Jinxu Liu<sup>1</sup>, Chenhao Tang<sup>1</sup>, Yue Cheng<sup>1</sup>, Yishu Zhang<sup>1,2,3</sup>, Yongpeng Cheng<sup>1,2,3</sup>, Yitao Ma<sup>1,2,3</sup>,<sup>1</sup>College of intergrated circuits, Zhejiang University (China),<sup>2</sup>ZJU-Hangzhou Global Scientific and Technological Innovation Center (China),<sup>3</sup>Zhejiang ICsprout Semiconductor Co., Ltd (China)</i>
12:00 G-6-05 <b>Exciton Dynamics of Organic/2D-Inorganic Heterostructures</b> <i>Shuo Xiong<sup>1</sup>, Jialong Yao<sup>1</sup>, Yuwei Wang<sup>1</sup>,<sup>o</sup>Mingsheng Xu<sup>1</sup>,<sup>1</sup>Zhejiang University (China)</i>			11:45 K-6-05 <b>Significant improvement of Li-ion battery anode properties of Si thin films by preparing interlayer</b> <i><sup>o</sup>Yo Eto<sup>1</sup>, Koki Nozawa<sup>1</sup>, Reno Ito<sup>1</sup>, Takashi Suemasu<sup>1</sup>, Kaoru Toko<sup>1</sup>,<sup>1</sup>The Univ. of Tsukuba (Japan)</i>	11:45 M-6-04 <b>Comprehensive Study on Crystal Growth of CaSi<sub>2</sub> Layers on Si(111) Using Solid Phase Epitaxy</b> <i><sup>o</sup>Kagiri Kato<sup>1</sup>, Shigehisa Shibayama<sup>1</sup>, Mitsuo Sakashita<sup>1</sup>, Osamu Nakatsuka<sup>1,2</sup>, Masashi Kurosawa<sup>1</sup>,<sup>1</sup>Grad. Sch. of Eng., Nagoya Univ. (Japan),<sup>2</sup>Inst. of Materials and Systems for Sustainability, Nagoya Univ. (Japan)</i>	

## Wednesday, September 4

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<p>01: Advanced CMOS: Material Science / Process Engineering / Device Technology <b>A-7:Advanced CMOS: CFET</b></p> <p>(13:30-14:45) Session Chair: Kuniyuki Kakushima (Tokyo Tech), Anabela Veloso (imec)</p> <p><b>13:30 A-7-01 (Invited)</b> <b>Realization of CMOS Operation in 3-Dimensional Stacked FET with Self-Aligned Direct Backside Contact</b> °Juhun Park<sup>1</sup>, Jaehyun Park<sup>1</sup>, Jejune Park<sup>1</sup>, Kyuman Hwang<sup>1</sup>, Jinchan Yun<sup>1</sup>, Dahye Kim<sup>1</sup>, Sungil Park<sup>1</sup>, Jinwook Yang<sup>1</sup>, Jae Won Jeong<sup>1</sup>, Chuljin Yun<sup>1</sup>, Jinho Bae<sup>1</sup>, Daihong Huh<sup>1</sup>, Deukho Yeon<sup>1</sup>, Sanghyeon Kim<sup>1</sup>, Seungeun Baek<sup>1</sup>, Soomin Son<sup>1</sup>, Junghan Lee<sup>1</sup>, Tae-sun Kim<sup>1</sup>, Seungjun Lee<sup>1</sup>, Sun-Jung Lee<sup>1</sup>, Sang Wuk Park<sup>1</sup>, Bong Jin Kuh<sup>1</sup>, Daewon Ha<sup>1</sup>, Sangjin Hyun<sup>1</sup>, Su Jin Ahn<sup>1</sup>, Jaihyuk Song<sup>1</sup>, <sup>1</sup>Samsung Electronics Co., Ltd. (Korea)</p>	<p>02: Advanced and Emerging Memories / New Applications <b>B-7:ReRAM, PCRAM, and FeRAM</b></p> <p>(13:30-14:45) Session Chair: Xu Bai (NanoBridge Semiconductor, Inc.), Yoshihiro Sato (Tohoku Univ.)</p> <p><b>13:30 B-7-01</b> <b>Resistive Switching Element scaling toward 22nm embedded ReRAM and beyond</b> °Masahiro Morimoto<sup>1</sup>, Shunsaku Muraoka<sup>1</sup>, Satoshi Awamura<sup>1</sup>, Ken Kawai<sup>1</sup>, Norio Hattori<sup>1</sup>, Satoru Ito<sup>1</sup>, Shinichi Yoneda<sup>1</sup>, <sup>1</sup>Nuvoton Technology Corp. Japan (Japan)</p> <p><b>13:45 B-7-02</b> <b>Metal Doping and Interface Effects on Oxygen Vacancy Properties of HfO<sub>2</sub>-based RRAM: A First-principles Computational Study</b> Di Wu<sup>1</sup>, °Pengpeng Sang<sup>1</sup>, Wei Wei<sup>2</sup>, Lu Tai<sup>1</sup>, Jixuan Wu<sup>1</sup>, Xuepeng Zhan<sup>1</sup>, Jiezhai Chen<sup>1</sup>, <sup>1</sup>Shandong University (China), <sup>2</sup>Institute of Microelectronics of Chinese Academy of Sciences (China)</p> <p><b>14:00 B-7-03</b> <b>Room temperature produced chalcogenide superlattices on 300 mm wafer for interfacial phase-change memory</b> °Yusuke Miyaguchi<sup>1</sup>, Kazumasa Horita<sup>1</sup>, Takehito Jimbo<sup>1</sup>, Takeshi Masuda<sup>1</sup>, Shutaro Asanuma<sup>2</sup>, Noriyuki Miyata<sup>2</sup>, Junji Tominaga<sup>2</sup>, <sup>1</sup>ULVAC, Inc. (Japan), <sup>2</sup>AIST (Japan)</p>		<p>04: Power / High-speed Devices and Materials <b>D-7:GaN Power Devices</b></p> <p>(13:30-14:30) Session Chair: Shigeyoshi Usami (Osaka Univ.), Shinya Takashima (Fuji electric)</p> <p><b>13:30 D-7-01 (Invited)</b> <b>Engineering of Channel Mobility and Threshold Voltage in AlSiO/AlN/p-type GaN Metal-Oxide-Semiconductor Field-Effect Transistors</b> °Tetsuo Narita<sup>1</sup>, Kenji Ito<sup>1</sup>, Masakazu Kanechika<sup>2</sup>, Hiroko Iguchi<sup>1</sup>, Shiro Iwasaki<sup>1</sup>, Daigo Kikuta<sup>1</sup>, Emi Kano<sup>2</sup>, Nobuyuki Ikarashi<sup>2</sup>, Kazuyoshi Tomita<sup>2</sup>, Masahiro Horita<sup>2</sup>, Jun Suda<sup>2</sup>, Tetsu Kachi<sup>2</sup>, <sup>1</sup>Toyota Central R&amp;D Labs. (Japan), <sup>2</sup>Nagoya Univ. (Japan)</p> <p><b>14:00 D-7-02</b> <b>Metal/Al<sub>2</sub>O<sub>3</sub>/NiO<sub>x</sub>/AlGaIn/GaN MIS devices with NiO<sub>x</sub> interfacial layer: Threshold voltage and interface trap density in comparison with metal/Al<sub>2</sub>O<sub>3</sub>/AlGaIn/GaN MIS devices</b> °Yuchen Deng<sup>1</sup>, Jieensi Gelan<sup>1</sup>, Kazuya Uryu<sup>1,2</sup>, Toshi-kazu Suzuki<sup>1</sup>, <sup>1</sup>Japan Advanced Institute of Science and Technology (Japan), <sup>2</sup>Advantest Laboratories Ltd. (Japan)</p>	<p>05: Photonics: Devices / Integration / Related Technology <b>E-7:Metamaterials and Metasurfaces</b></p> <p>(13:30-14:30) Session Chair: Atsushi Ono (Shizuoka Univ.), Yuhki Ito (Sumitomo Electric Industries, Ltd.)</p> <p><b>13:30 E-7-01 (Invited)</b> <b>Optical Coatings for Metamaterials and Metasurfaces</b> °Yi-Jun Jen<sup>1</sup>, <sup>1</sup>National Taipei Univ. of Technology (Taiwan)</p> <p><b>14:00 E-7-02</b> <b>Polarization-Division Multiplexing of PCSEL Enabled by Metasurfaces for Free-Space Optical Communications</b> °Wen-Chien Miao<sup>1,2</sup>, Fu-He Hsiao<sup>1,2</sup>, Chun-Liang Lin<sup>1</sup>, Chi-Wai Chow<sup>3</sup>, Yu-Heng Hong<sup>2</sup>, Hao-Chung Kuo<sup>2,3</sup>, <sup>1</sup>Department of Electrophysics, College of Science, National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup>Semiconductor Res. Center, Foxconn Res. (Taiwan), <sup>3</sup>Department of Photonics, College of Electrical and Computer Engineering, National Yang Ming Chiao Tung Univ. (Taiwan)</p>	

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07: Organic / Molecular / Bio-electronics <b>G-7:Organic Electronics I</b>	08: Low Dimensional Devices and Materials <b>H-7:Device-IV</b>		10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process <b>K-7:Ferroelectric Materials and Late News</b>	11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-7:Group IV Materials</b>	12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials <b>N-7:Advanced Circuits and Devices</b>
(13:30-14:45) Session Chair: Huang-Ming Philip Chen (NYCU), Seiya Yokokura (Hokkaido Univ.)	(13:30-14:30) Session Chair: Takayuki Arie (Osaka Metropolitan Univ.), Satoshi Hiura (Hokkaido Univ.)		(13:30-15:00) Session Chair: Chih-Yu Chang (TSMC), Hiroyuki Nishimaka (Kyoto Inst. of Technology)	(13:30-14:45) Session Chair: Yuji Yamamoto (IHP), Katsunori Makihara (Nagoya Univ.)	(13:30-14:30) Session Chair: Kousuke Miyaji (Shinshu Univ.), Takeshi Yoshida (Hiroshima Univ.)
<b>13:30 G-7-01 (Invited)</b> <b>Molecular design of organic thermoelectric materials: From precise doping to device functionalization</b> °Chong-an Di <sup>1</sup> , <sup>1</sup> Institute of Chemistry, Chinese Academy of Sciences (China)	<b>13:30 H-7-01</b> <b>Electrical Detection of Parts-per-billion NO<sub>2</sub> in Air Atmosphere Using Cophthalocyanine-Modified Graphene Field-Effect Transistors</b> °Kazuki Kikawada <sup>1</sup> , Naoki Yazawa <sup>1</sup> , Ryudai Nakanishi <sup>1</sup> , Takashi Ikuta <sup>1</sup> , Kenzo Maehashi <sup>1</sup> , <sup>1</sup> Tokyo Univ. of Agri. and Tech. (Japan)		<b>13:30 K-7-01</b> <b>An Ultra-thin Hf1-xZrxO2 (4nm) Processing for a Low Thermal Budget (350°C) but Promising Ferroelectricity</b> °Chia-Wei Hsu <sup>1</sup> , Jia-Hua Jhang <sup>1</sup> , Zheng-Lin Yang <sup>1</sup> , Chih-Yu Teng <sup>1</sup> , Yuan-Chieh Tseng <sup>1</sup> , <sup>1</sup> National Yang Ming Chiao Tung Univ. (Taiwan)	<b>13:30 M-7-01 (Invited)</b> <b>High-precision 3D integration of catalytic silicon nanowires for high performance electronics</b> °Linwei Yu <sup>1</sup> , <sup>1</sup> Nanjing Univ. (China)	<b>13:30 N-7-01</b> <b>"A 0.67A/mm<sup>2</sup> Fully Package Integrated CMOS Class-D LC Oscillator Converter"</b> °Atsuya Kakuta <sup>1</sup> , Kousuke Miyaji <sup>1</sup> , <sup>1</sup> Shinshu University (Japan)
	<b>13:45 H-7-02</b> <b>WS2 gas sensor based on the evolution of hyperpolarizability: evaluating the influence of water molecules</b> °Kuang Yao Lo <sup>1</sup> , Ting-Yu Yen <sup>1</sup> , Yang-Hao Hung <sup>1</sup> , Yu-Zen Lee <sup>1</sup> , Yen-Teng Ho <sup>2</sup> , Yann-Wen Lan <sup>3</sup> , Chiu-Hsien Wu <sup>4</sup> , Kuan-Ming Hung <sup>5</sup> , <sup>1</sup> National Cheng Kung University (Taiwan), <sup>2</sup> National Yang Ming Chiao Tung University (Taiwan), <sup>3</sup> National Taiwan Normal University (Taiwan), <sup>4</sup> National Chung Hsing University (Taiwan), <sup>5</sup> National Kaohsiung University of Science and Technology (Taiwan)		<b>13:45 K-7-02</b> <b>BEOL-Compatible In<sub>2</sub>O<sub>3</sub> Ferroelectric Transistors by Sputtering with Maximum Mobility of 60 cm<sup>2</sup>V<sup>-1</sup>s and Memory Window of 3V</b> °Zhao-Feng Lou <sup>1</sup> , Cheng-Hong Liu <sup>1</sup> , Che-Chuan Lee <sup>2</sup> , Kuan-Chou Bui <sup>2</sup> , Yi-Tay Chang <sup>1</sup> , Shu-Tong Chang <sup>3</sup> , Yu-De Lin <sup>4</sup> , Ming-Han Liao <sup>3</sup> , I-Chun Cheng <sup>2</sup> , Min-Hung Lee <sup>1</sup> , <sup>1</sup> Program for Semiconductor Devices, Materials, and Hetero-integration, Graduate School of Advanced Technology, National Taiwan Univ. (Taiwan), <sup>2</sup> Graduate Institute of Photonics and Optoelectronics, National Taiwan Univ. (Taiwan), <sup>3</sup> Department of Electrical Engineering, National Chung Hsing Univ. (Taiwan), <sup>4</sup> Electronic and Optoelectronic System Research Laboratories, Indus. Tech. Res. Inst. (Taiwan), <sup>5</sup> Department of Mechanical Engineering, National Taiwan Univ. (Taiwan)		<b>13:45 N-7-02</b> <b>Ultra-low quiescent current capacitor-less low-dropout linear regulator with enhanced load-regulator response</b> °Jingbo Li <sup>1</sup> , Yosuke Mizuno <sup>1</sup> , Hikaru Sebe <sup>1</sup> , Shintaro Sumi <sup>1</sup> , Daisuke Kanemoto <sup>1</sup> , Tetsuya Hirose <sup>1</sup> , <sup>1</sup> Osaka Univ. (Japan)
<b>14:00 G-7-02 (Invited)</b> <b>Fabrication of Single-Molecule Electret Memory Devices based on Fe-FET Architecture</b> °Masaru Fujibayashi <sup>1</sup> , Sadafumi Nishihara <sup>2</sup> , <sup>1</sup> National Institute of Technology, Ube College (Japan), <sup>2</sup> Graduate School of Advanced Science and Engineering, Hiroshima University (Japan)	<b>14:00 H-7-03</b> <b>2D Material Hetero-structures for High Responsivity Photo-transistors in Lateral Device Architecture</b> °Yu-Han Huang <sup>1,2</sup> , Po-Cheng Tsai <sup>2</sup> , Dun-Jei Zhang <sup>2</sup> , Chao-Hsin Wu <sup>1</sup> , Shih-Yen Lin <sup>2</sup> , <sup>1</sup> National Taiwan University (Taiwan), <sup>2</sup> Res. Center for Applied Sci. (Taiwan)		<b>14:00 K-7-03</b> <b>Comparison of Low-Frequency Noise Characteristics in Ferroelectric field-effect transistors for Two Opposite Gate Voltage Sweep Directions</b> °Ciao-Fen Chen <sup>1,2</sup> , Dong-Ru Hsieh <sup>1</sup> , Tien-Sheng Chao <sup>1</sup> , Shun-Tsung Lo <sup>1,3</sup> , Yen-Fu Lin <sup>2</sup> , <sup>1</sup> The Univ. of Yang Ming Chiao Tung (Taiwan), <sup>2</sup> The Univ. of Chung Hsing (Taiwan), <sup>3</sup> Center for Emergent Functional Matter Science, The Univ. of Yang Ming Chiao Tung (Taiwan)	<b>14:00 M-7-02</b> <b>Photoluminescence of Three-Dimensional Self-Aligned SiGe Nanodots</b> °Wei-Chen Wen <sup>1</sup> , Dong Wang <sup>2</sup> , Keisuke Yamamoto <sup>2</sup> , Markus Andreas Schubert <sup>1</sup> , Roland Sorge <sup>1</sup> , Bernd Tillack <sup>1,3</sup> , Yuji Yamamoto <sup>1</sup> , <sup>1</sup> IHP - Leibniz-Institut für innovative Mikroelektronik (Germany), <sup>2</sup> Kyushu Univ. (Japan), <sup>3</sup> Technische Universität Berlin (Germany)	<b>14:00 N-7-03</b> <b>Cascade Current Mirror of GAA Si NS MOSFETs with Metal Sidewall Source/Drain</b> °Kuan-Ju Chou <sup>1</sup> , Yiming Li <sup>1</sup> , <sup>1</sup> National Yang Ming Chiao Tung Univ. (Taiwan)

## Wednesday, September 4

Room A (407, 4th Floor)	Room B (408, 4th Floor)	Room C (409, 4th Floor)	Room D (Medium Hall, 2nd Floor)	Room E (401, 4th Floor)	Room F (402, 4th Floor)
01: Advanced CMOS: Material Science / Process Engineering / Device Technology A-7:Advanced CMOS: CFET	02: Advanced and Emerging Memories / New Applications B-7:ReRAM, PCRAM, and FeRAM		04: Power / High-speed Devices and Materials D-7:GaN Power Devices	05: Photonics: Devices / Integration / Related Technology E-7:Metamaterials and Metasurfaces	
<b>14:15 A-7-03</b> <b>Monolithic 3D Hetero-Integrated Circuits with 2D Electronics</b> <i>°Jhe-Ting Hong<sup>1</sup>, Ta Fan<sup>1</sup>, Cheng-Yang Syu<sup>1</sup>, Li-Syuan Hao<sup>1</sup>, Yu-Chen Liu<sup>1</sup>, Nei-Chih Lin<sup>2</sup>, Chih-Chao Yang<sup>2</sup>, Chao-Hui Yeh<sup>1,3</sup>, <sup>1</sup>The Inst. of Electronics Engineering, National Tsing Hua Univ. (Taiwan), <sup>2</sup>Taiwan Semiconductor Res. Inst. (Taiwan), <sup>3</sup>Department of Electrical Engineering, National Tsing Hua Univ. (Taiwan)</i>	<b>14:15 B-7-04</b> <b>Evaluation of Low-Voltage 2T-nC FeRAM considering Write Disturb</b> <i>°Yi-Chuan Chen<sup>1</sup>, Po-Yi Lee<sup>1</sup>, Kuo-Yu Hsiang<sup>1,2</sup>, Ming-Hung Lee<sup>2</sup>, Pin Su<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung Univ. (Taiwan), <sup>2</sup>National Taiwan Univ. (Taiwan)</i>		<b>14:15 D-7-03</b> <b>Effect of Substrate Carrier Concentration on Conductivity Modulation in GaN</b> <i>°Shigeyoshi Usami<sup>1</sup>, Hiroshi Ohta<sup>2</sup>, Hirotaka Watanabe<sup>2</sup>, Junichi Takino<sup>4</sup>, Masayuki Imanishi<sup>1</sup>, Tomoaki Sumi<sup>4</sup>, Shugo Nitta<sup>3</sup>, Yoshio Okayama<sup>4</sup>, Yoshio Honda<sup>3</sup>, Tomoyoshi Mishima<sup>2</sup>, Hiroshi Amano<sup>3</sup>, Yusuke Mori<sup>1</sup>, <sup>1</sup>Osaka Univ. (Japan), <sup>2</sup>Hosei Univ. (Japan), <sup>3</sup>IMaSS, Nagoya Univ. (Japan), <sup>4</sup>Panasonic Holdings Corp. (Japan)</i>	<b>14:15 E-7-03</b> <b>A Solid-State Depth Perception System Enabled by Metasurface and Photonic Crystal Surface Emitting Laser Integration</b> <i>°Yu-Heng Hong<sup>1</sup>, Wen-Cheng Hsu<sup>1,2</sup>, Wei-Ta Huang<sup>1,2</sup>, Kuo-Bing Hong<sup>1</sup>, Chia-Hsun Chang<sup>1,2</sup>, Wen-Chien Miao<sup>1,2</sup>, Fu-He Hsiao<sup>1,2</sup>, Chun-Liang Lin<sup>2</sup>, Yao-Wei Huang<sup>2</sup>, Hao-Chung Kuo<sup>1,2</sup>, <sup>1</sup>Hon Hai Precision Indus. Corp., Ltd. (Foxconn) (Taiwan), <sup>2</sup>National Yang Ming Chiao Tung Univ. (Taiwan)</i>	
<b>14:30 A-7-04</b> <b>Monolithic Stacked Ge Nanowires of Single-Gate CFET</b> <i>Yi-Wen Lin<sup>1</sup>, Bo-An Chen<sup>1</sup>, Kai-Wei Huang<sup>1</sup>, °Yung-Chun Wu<sup>1</sup>, Fu-Ju Hou<sup>2</sup>, <sup>1</sup>National Tsing Hua Univ. (Taiwan), <sup>2</sup>Taiwan Semiconductor Research Inst. (Taiwan)</i>	<b>14:30 B-7-05</b> <b>Recovery Strategies and Related Mechanisms to Overcome Fatigue-Limited Endurance on HZO-based FeCAP and FeRAM Arrays</b> <i>°Julie Laguerre<sup>1,2</sup>, Simon Martin<sup>1</sup>, Liam Hosier<sup>1</sup>, Jean Coignus<sup>1</sup>, Catherine Carabasse<sup>1</sup>, Marc Bocquet<sup>1</sup>, François Andrieu<sup>1</sup>, Laurent Grenouille<sup>1</sup>, <sup>1</sup>CEA-Leti (France), <sup>2</sup>Aix-Marseille Univ. (France)</i>				

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Room G (403, 4th Floor)	Room H (Small Hall, 2nd Floor)	Room J (Main Studio, 1st Floor)	Room K (404, 4th Floor)	Room M (Special Conference Room, 4th Floor)	Room N (Studio 1, 1st Floor)
07: Organic / Molecular / Bio-electronics <b>G-7:Organic Electronics I</b>	08: Low Dimensional Devices and Materials <b>H-7:Device-IV</b>		10: Thin Film Electronics: Oxide / Non-single Crystalline / Novel Process <b>K-7:Ferroelectric Materials and Late News</b>	11: Advanced Materials: Synthesis / Crystal Growth / Characterization <b>M-7:Group IV Materials</b>	12: Advanced Circuits / Systems Interacting with Innovative Devices and Materials <b>N-7:Advanced Circuits and Devices</b>
	<p><b>14:15 H-7-04 (Late News)</b>  <b>Nearly Ideal Subthreshold Swing in Carbon Nanotube Top-Gate p-FETs with EOT = 0.9 nm</b>  <i>Man-Ling Sun<sup>1</sup>, Hsin-Yuan Chiu<sup>1</sup>, Chen-Han Chou<sup>1</sup>, Guan-Zhen Wu<sup>1</sup>, Han-Yi Huang<sup>1</sup>, Kuan-Hsiang Chiu<sup>1</sup>, Chao-Hsin Chien<sup>1</sup>, <sup>1</sup>National Yang Ming Chiao Tung University (Taiwan)</i></p>		<p><b>14:15 K-7-04 (Late News)</b>  <b>Heterogeneous and monolithic complementary TFT consisting of an underlying n-ch top-gate poly-Si TFT and a upper p-ch double-gate poly-Ge TFT on a glass substrate</b>  <i>Yuto Ito<sup>1</sup>, Daiki Goshima<sup>1</sup>, Akito Kurihara<sup>1</sup>, Akito Hara<sup>1</sup>, <sup>1</sup>Tohoku Gakuin University (Japan)</i></p>	<p><b>14:15 M-7-03</b>  <b>Fabrication and Characterization of Si-Quantum-Dots with Ge-Core Embedded in Microdisk</b>  <i>Koki Hosoi<sup>1</sup>, Katsunori Makihara<sup>1,2</sup>, Yuji Yamamoto<sup>2</sup>, Wen Wei-chen<sup>2</sup>, Bernd Tillack<sup>2,3</sup>, Seiichi Miyazaki<sup>1</sup>, <sup>1</sup>Nagoya Univ. (Japan), <sup>2</sup>Innovations for High Performance Microelectronics (Germany), <sup>3</sup>Technical Univ. of Berlin (Germany)</i></p>	<p><b>14:15 N-7-04</b>  <b>Reconfigurable Optoelectronic Logic Gates Based on Complementary FDSOI-Based Phototransistor</b>  <i>Haotang Zhu<sup>1,2</sup>, Guihai Yu<sup>1,2</sup>, Zheng Zhou<sup>1,2</sup>, Xiaoxin Xie<sup>1,2</sup>, Haozhang Yang<sup>1,2</sup>, Peng Huang<sup>1,2</sup>, Xiaoyan Liu<sup>1,2</sup>, Jinfeng Kang<sup>1,2</sup>, <sup>1</sup>Peking Univ. (China), <sup>2</sup>Beijing Advanced Innovation Center for Integrated Circuits (China)</i></p>
<p><b>14:30 G-7-03</b>  <b>Liquid Crystalline Organic Semiconductor Materials Suitable for High-Speed Blade-Coating</b>  <i>Issei Suzuki<sup>1</sup>, Jun-ichi Hanna<sup>1</sup>, Hiroaki Iino<sup>1</sup>, <sup>1</sup>Tokyo Tech. (Japan)</i></p>			<p><b>14:30 K-7-05 (Late News)</b>  <b>Effect of Channel Shape on the Electrical Performance of n-channel TFT on Solid-Phase Crystallized Polycrystalline Ge</b>  <i>Linyu Huang<sup>1</sup>, Atsuki Morimoto<sup>1</sup>, Kota Igura<sup>2</sup>, Takamitsu Ishiyama<sup>2</sup>, Kaoru Toko<sup>2</sup>, Dong Wang<sup>1</sup>, Keisuke Yamamoto<sup>1</sup>, <sup>1</sup>Kyushu Univ. (Japan), <sup>2</sup>Univ. of Tsukuba (Japan)</i></p>	<p><b>14:30 M-7-04</b>  <b>Influence of Strain and Initial Surface on Heteroepitaxial SiGe Growth by CVD</b>  <i>Yuji Yamamoto<sup>1</sup>, Wei-Chen Wen<sup>1</sup>, Cedric Corley-Wiciak<sup>2</sup>, Agnieszka Anna Corley-Wiciak<sup>1,3</sup>, Ioan Costina<sup>1</sup>, Florian Bärwolf<sup>1</sup>, Fursenko Oksana<sup>1</sup>, Junichi Murota<sup>1</sup>, Bernd Tillack<sup>1,3</sup>, <sup>1</sup>IHP - Leibniz-Inst. für innovative Mikroelektronik (Germany), <sup>2</sup>ESRF – European Synchrotron Radiation Facility (France), <sup>3</sup>RWTH Aachen Univ. (Germany), <sup>4</sup>Micro System Integration Center, Tohoku Univ. (Japan), <sup>5</sup>Tech. Univ. Berlin (Germany)</i></p>	
			<p><b>14:45 K-7-06 (Late News)</b>  <b>Optimization of deposition conditions and Improvement of H<sub>2</sub> gas sensor characteristics of porous a-IGZO by applying machine learning</b>  <i>Atsushi Shimizu<sup>1</sup>, Keisuke Ide<sup>1</sup>, Takayoshi Katase<sup>1</sup>, Hidenori Hiramatsu<sup>1</sup>, Hideo Hosono<sup>1</sup>, Toshio Kamiya<sup>1</sup>, <sup>1</sup>Tokyo Inst. of Tech. (Japan)</i></p>		

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	<p>02: Advanced and Emerging Memories / New Applications <b>B-8:Ferroelectric FET</b></p> <p>(15:15-16:30) Session Chair: E Ray Hsieh (National Central Univ.), Laurent Grenouillet (CEA-Leti)</p>		<p>04: Power / High-speed Devices and Materials <b>D-8:Processes and Characterization</b></p> <p>(15:15-16:15) Session Chair: Taro Nishiguchi (Sumitomo Electric Industries, Ltd.), Joel Asubar (Fukui Univ.)</p>	<p>05: Photonics: Devices / Integration / Related Technology <b>E-8:Sensors and Detectors</b></p> <p>(15:15-16:15) Session Chair: Atsushi Ono (Shizuoka Univ.), Kouichi Akahane (NICT)</p>	
	<p><b>15:15 B-8-01</b> <b>A Novel Measurement Method to Extract Relationship between Threshold Voltage and Polarization for Understanding FeFET Memory Operation</b> °Seong-Kun Cho<sup>1</sup>, Kasidit Toprasertpong<sup>1</sup>, Mitsuru Takenaka<sup>1</sup>, Shinichi Takagi<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan)</p> <p><b>15:30 B-8-02</b> <b>Investigation of Endurance Characteristics of AFeFET: Electrical and Thermal Fatigue Phenomenon</b> °Min Liao<sup>1</sup>, Xianzhou Shao<sup>1</sup>, Hao Xu<sup>1</sup>, Junshuai Chai<sup>1</sup>, Xiaoqing Sun<sup>1</sup>, Xiaoyu Ke<sup>1</sup>, Jinjuan Xiang<sup>2</sup>, Xiaolei Wang<sup>1</sup>, Wenwu Wang<sup>1</sup>, <sup>1</sup>Inst. of Microelectronics Chinese Academy of Sciences (China), <sup>2</sup>Beijing Superstring Academy of Memory Tech. (China)</p> <p><b>15:45 B-8-03</b> <b>Ge n-Channel Hybrid Memory Based on Ferroelectric Charge Trapping Layer with Low Operating Voltage, Large Memory Window and Negligible Read Latency</b> °Ming-Chieh Chiang<sup>1</sup>, Yi-Fan Chen<sup>1</sup>, Kai-Yang Huang<sup>1</sup>, Chun-Yi Kuo<sup>1</sup>, Yung-Hsien Wu<sup>1</sup>, <sup>1</sup>National Tsing Hua Univ. (Taiwan)</p> <p><b>16:00 B-8-04</b> <b>Integration of Phase Change (Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub>) Liner Stressor on Ferroelectric Capacitors and FeFETs: Simulation and Electrical Characterization</b> °Xaxuan Yuan<sup>1</sup>, Xueyang Li<sup>1</sup>, Xinze Li<sup>1</sup>, Bing Chen<sup>2</sup>, Dawei Gao<sup>3</sup>, Genquan Han<sup>2</sup>, Ran Cheng<sup>1</sup>, <sup>1</sup>The Univ. of Zhejiang (China), <sup>2</sup>The Univ. of Xidian (China), <sup>3</sup>The Corp. of Zhejiang ICsprout Semiconductor (China)</p> <p><b>16:15 B-8-05 (Late News)</b> <b>Implementation of Ge N-channel FeFET Memory with Al<sub>2</sub>O<sub>3</sub>/AlN Interfacial Layer by Microwave Annealing</b> °Yu-Hsing Chen<sup>1</sup>, Sheng-Yen Zheng<sup>1</sup>, Yung-Hsien Wu<sup>1</sup>, <sup>1</sup>National Tsing Hua University (Taiwan)</p>	<p><b>15:15 D-8-01</b> <b>Low-damage gate-recess wet etching for AlGaIn/GaN heterostructure via removal of altered layer obtained by Ti-AlGaIn reaction</b> °Jiensi Gelan<sup>1</sup>, Yuchen Deng<sup>1</sup>, Junewoo Choi<sup>1</sup>, Kazuya Uryu<sup>1,2</sup>, Toshi-kazu Suzuki<sup>1</sup>, <sup>1</sup>Japan Advanced Institute of Science and Technology (Japan), <sup>2</sup>Advantest Laboratories Ltd. (Japan)</p> <p><b>15:30 D-8-02</b> <b>Measurement of Temperature-Dependent Interfacial Thermal Resistance at polymer/SiC Interface Based on Optical-Interference Contactless Thermometry</b> °Jiawen Yu<sup>1</sup>, Hiroaki Hanafusa<sup>1</sup>, Seiichiro Higashi<sup>1</sup>, <sup>1</sup>Hiroshima Univ. (Japan)</p> <p><b>15:45 D-8-03</b> <b>Comparison of Single Shockley-Type Stacking Fault Expansion Rates in 4H-SiC under Ultraviolet Illumination after Hydrogen or Fluorine Ion Implantation</b> °Johji Nishio<sup>1</sup>, Chiharu Ota<sup>1</sup>, Ryosuke Iijima<sup>1</sup>, <sup>1</sup>Toshiba Corp. (Japan)</p> <p><b>16:00 D-8-04</b> <b>Dynamics of Hopping of Surface Trapped Electrons on GaN High Electron Mobility Transistors Observed by Operando X-ray Photoelectron Nanospectroscopy</b> Keiichi Omika<sup>1</sup>, Yasunori Tateno<sup>2</sup>, Tsuyoshi Kouchi<sup>2</sup>, Naoka Nagamura<sup>3</sup>, Koji Horiba<sup>4</sup>, Masaharu Oshima<sup>5</sup>, Maki Suemitsu<sup>1</sup>, <sup>1</sup>Hirokazu Fukidome<sup>1</sup>, <sup>1</sup>Research Institute of Electrical Communication, Tohoku University (Japan), <sup>2</sup>Sumitomo Electric Industries, Ltd. (Japan), <sup>3</sup>National Institute for Materials Science (Japan), <sup>4</sup>Photon Factory, High Energy Accelerator Research Organization (Japan), <sup>5</sup>Institute for Solid State Physics, The University of Tokyo (Japan)</p>	<p><b>15:15 E-8-01</b> <b>Identification of the Wavelength and Size of Fluorescent Beads using a Filter-Free Wavelength Sensor</b> °Masayuki Shinomiya<sup>1</sup>, Yong-Joon Choi<sup>1</sup>, Tomoya Ide<sup>1</sup>, Yasuyuki Kimura<sup>1</sup>, Kazuhiro Takahashi<sup>1</sup>, Toshihiko Noda<sup>1</sup>, Kazuaki Sawada<sup>1</sup>, <sup>1</sup>Toyohashi Univ. of Tech. (Japan)</p> <p><b>15:30 E-8-02</b> <b>Structural Design of High-Temperature Operable Ge-on-Si Single-Photon Avalanche Photodiode at Wavelengths 1310 nm</b> °Chi-En Chen<sup>1</sup>, Jau-Yang Wu<sup>2</sup>, Chao-Hsin Wu<sup>1</sup>, <sup>1</sup>National Taiwan Univ. (Taiwan), <sup>2</sup>Yuan Ze Univ. (Taiwan)</p> <p><b>15:45 E-8-03</b> <b>Junction field effect transistor based on multilayer graphene/Si heterojunction for near-infrared light photodetection</b> yang Xu<sup>1</sup>, <sup>1</sup>Qianqian Zhang<sup>1</sup>, Zongwen Li<sup>1</sup>, Yunfei Xie<sup>1</sup>, Shaoxiong Wu<sup>1</sup>, Zhi-Xiang Zhang<sup>1</sup>, Xiaoxue Cao<sup>1</sup>, Tianjiao Zhang<sup>1</sup>, Jian Chai<sup>1</sup>, Muhammad Abid Anwar<sup>1</sup>, Muhammad Malik<sup>1</sup>, Chao Gao<sup>1</sup>, Bin Yu<sup>1</sup>, Yuda Zhao<sup>1</sup>, <sup>1</sup>Zhejiang Univ. (China)</p> <p><b>16:00 E-8-04 (Late News)</b> <b>Machine Learning-Based Filter-Free Wavelength Detection System</b> °Ikhyun Kwon<sup>1</sup>, Yong-Joon Choi<sup>1</sup>, Tomoya Ide<sup>1</sup>, Kazuhiro Takahashi<sup>1</sup>, Toshihiko Noda<sup>1</sup>, Kazuaki Sawada<sup>1</sup>, <sup>1</sup>Toyohashi Univ. of Tech. (Japan)</p>		

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<p>07: Organic / Molecular / Bio-electronics <b>G-8:Organic Electronics II</b></p> <p>(15:15-16:30) Session Chair: Toshinori Matsushima (Kyushu Univ.), Seiya Yokokura (Hokkaido Univ.)</p>					
<p><b>15:15 G-8-01 (Invited)</b> <b>Highly deformable semiconductor devices using stretchable conjugated polymer materials</b> <i><sup>2</sup>Naoji Matsuhisa<sup>1</sup>, <sup>1</sup>The Univ. of Tokyo (Japan)</i></p>					
<p><b>15:45 G-8-02 (Invited)</b> <b>Emissions from persistent charge carriers in organic semiconductors</b> <i><sup>2</sup>Ryota Kabe<sup>1</sup>, <sup>1</sup>OIST (Japan)</i></p>					
<p><b>16:15 G-8-03</b> <b>Control of dopant distribution in organic semiconductor thin films using fluidity of liquid crystallinity</b> <i><sup>2</sup>Hiroki Nakano<sup>1</sup>, Shun Takamaru<sup>1</sup>, Jun-ichi Hanna<sup>1</sup>, Hiroaki Iino<sup>1</sup>, <sup>1</sup>Tokyo tech. (Japan)</i></p>					