

Opening & Plenary Sessions (Main Convention Hall)

Opening Session

Chair: M. Masahara, AIST

9:15

Welcome Address
T. Kanayama, AIST

9:20

Welcome Address
N. Yokoyama, JSAP

9:25

SSDM Award/
SSDM Paper Award Ceremony

Non-Technical Plenary Session

Chair: M. Masahara, AIST

9:45 PL-1-01

Future of Television: 8K Super Hi-Vision
T. Saito, NHK Science & Technology Research Laboratories, Japan

Technical Plenary Session

Chair: T. Hiramoto, Univ. of Tokyo

10:30 PL-2-01

Crossbar arrays for Storage Class Memory and non-Von Neumann computing
G.W. Burr, IBM Almaden Research Center, USA

11:15 PL-2-02

Step Back for Going Beyond
A. Toriumi, Univ. of Tokyo, Japan

Lunch

101	200	201A	201B	202A	202B	304
A-1:Novel 3D Structures and 2D Materials (13:30-15:10) Chairs: N. Planes (STMicroelectronics), N. Sugii (Hitachi, Ltd.)	B-1:ReRAM-1 (13:30-15:20) Chairs: K. Kinoshita (Tottori Univ.), Z. Wei (Panasonic Corp.)	C-1:Silicon Photonics I (13:30-15:15) Chairs: T. Shimizu (PETRA), T. Tanizawa (AIST)	D-1:Physics and Technologies in 2D Materials (13:30-15:15) Chairs: K. Matsuda (Kyoto Univ.), K. Takase (NTT Basic Res. Labs.)	E-1:SiC Devices & Characterization (13:30-15:00) Chairs: S. Matsumoto (Kyushu Inst. of Tech.), H. Umezawa (AIST)	F-1:Organic Transistors (13:30-15:15) Chairs: K. Fujita (Kyushu Univ.), T. Hayashi (NTT Basic Res. Labs.)	G-1:Spin Dynamics (13:30-15:15) Chairs: M. Mizuguchi (Tohoku Univ.), S. Ohya (Univ. of Tokyo)
13:30 A-1-01(Invited) Monolithic 3D (M3D) Complementary Metal-Oxide-Semiconductor (CMOS)-Nano-Electromechanical (NEM) Hybrid Circuits for Low-Power and High-Speed Reconfigurable Logic (RL) Applications *W.Y. Choi ¹ , ¹ Sogang Univ. (Korea)	13:30 B-1-01(Invited) Operation Mechanism and Novel Functions of Oxide-Based Atomic Switches *T. Tsuruoka ¹ , T. Hasegawa ² , K. Terabe ¹ , M. Aono ¹ , ¹ NIMS (Japan), ² Waseda Univ. (Japan)	13:30 C-1-01(Invited) Refractive Index Engineering of High Performance Coupler for Compact Photonic Integrated Circuits *Z. Zhou ¹ , L. Liu ¹ , ¹ Peking Univ. (China)	13:30 D-1-01(Invited) Quantum Transport in van der Waals Junctions of Graphene and 2D Materials *T. Machida ¹ , S. Morikawa ¹ , S. Masubuchi ¹ , Q. Wilmart ² , B. Plaçais ² , R. Moriya ¹ , N. Yabuki ¹ , K. Watanabe ³ , T. Taniguchi ³ , ¹ Univ. of Tokyo (Japan), ² Univ. P. et M. Curie (France), ³ NIMS (Japan)	13:30 E-1-01(Invited) Current and Future Technologies of SiC Power Devices *H. Asahara ¹ , T. Nakamura ¹ , M. Aketa ¹ , Y. Nakano ¹ , S. Mori ¹ , ¹ ROHM Co., Ltd. (Japan)	13:30 F-1-01(Invited) SmE Liquid Crystals for High Performance Solution-processed Polycrystalline Organic Field Effect Transistors *J. Hanna ¹ , H. Iino ¹ , M. Kunii ¹ , ¹ Tokyo Tech (Japan)	13:30 G-1-01(Invited) Antiferromagnetic Domain Wall Motion Driven by Spin-orbit Torques *K.J. Lee ¹ , T. Shiino ² , S.H. Oh ¹ , P.M. Haney ³ , S.W. Lee ¹ , G. Go ¹ , B.G. Park ² , ¹ Korea Univ. (Korea), ² KAIST (Korea), ³ NIST (USA)
14:00 A-1-02(Invited) Stackable MoS₂ FinFETs Using Solid CVD Developed Through Fully CMOS-Compatible Process Technology *M. Chen ¹ , K. Li ¹ , L. Li ² , M. Li ^{2,3} , Y. Chang ⁴ , C. Lin ¹ , Y. Chen ¹ , C. Chen ¹ , B. Wu ¹ , C. Wu ¹ , Y. Lee ¹ , J. Shieh ¹ , W. Yeh ¹ , P. Siu ² , T. Wang ² , F. Yang ³ , C. Hu ⁵ , ¹ National Nano Device Labs. (Taiwan), ² King Abdullah Univ. of Sci. and Technology (Saudi Arabia), ³ Academia Sinica (Taiwan), ⁴ NCTU (Taiwan), ⁵ Dept. of Electronics Eng., NCTU (Taiwan), ⁶ Univ. of California, Berkeley (USA)	14:00 B-1-02 Gate Contact RRAM in Nano-scaled FinFET Logic Technologies *M.Y. Hsu ¹ , Y.D. Chih ² , C.J. Lin ¹ , Y.C. King ¹ , ¹ National Tsing Hua Univ. (Taiwan), ² TSMC (Taiwan)	14:00 C-1-02 Double Taper Interlayer Transition Coupler for 3D Optical Interconnection with Heterogeneous Material Stacking *K. Itoh ¹ , Y. Hayashi ¹ , J. Suzuki ¹ , T. Amemiya ¹ , N. Nishiyama ¹ , S. Arai ¹ , ¹ Tokyo Tech (Japan)	14:00 D-1-02 Formation and Utilization of Composition Engineered Transition Regions Across 2D Metal-semiconductor Atomic Layer Junctions *B. Cho ¹ , Y. Kim ¹ , M.G. Hahm ² , P.M. Ajayan ³ , ¹ Korea Institute of Materials Science (Korea), ² Inha Univ. (Korea), ³ Rice Univ. (USA)	14:00 E-1-02 Study on the Guideline to Control Dry and Wet Oxidation Conditions to Improve 4H-SiC (000-1) C-face MOS Interface Characteristics *H. Kajifusa ¹ , K. Kita ¹ , ¹ Univ. of Tokyo (Japan)	14:00 F-1-02 Ultra-low Contact Resistance in Two-Monolayer Organic Single-Crystal Transistors *A. Yamamura ¹ , C. Mitsui ¹ , T. Okamoto ^{2,3} , J. Takeya ^{2,3} , ¹ Univ. of Tokyo (Japan), ² JST-PRESTO (Japan), ³ PI-CRYSTAL Inc. (Japan)	14:00 G-1-02(Invited) Spin Transfer Torque in Antiferromagnet and toward the Applications *T. Moriyama ¹ , ¹ Kyoto Univ. (Japan)

401	402	403	404	405	406
H-1: Biosensors & Materials (13:30-15:15) Chairs: T. Sakata (Univ. of Tokyo), M. Sasaki (Toyota Technological Inst.)	J-1: Advanced CMOS Image Sensors and Systems (13:30-15:20) Chairs: R. Kuroda (Tohoku Univ.), H. Lin (National Chung Hsing Univ.)	K-1: 3D-TSV (13:30-14:55) Chairs: M. Mariappan (Tohoku Univ.), N. Sugiyama (Toray Research Center, Inc.)		N-1: Narrow-gap III-V Materials and Devices (13:30-15:15) Chairs: K. Tsuda (Toshiba Corp.), T. Suzuki (JAIST)	O-1: Gate Stack and Interface Technology (13:30-15:20) Chairs: S. Migita (AIST), H. Nohira (Tokyo City Univ.)
13:30 H-1-01 (Invited) Hydrogel-Based Cytocompatible Electrode Systems <i>°M. Nishizawa¹, ¹Tohoku Univ. (Japan)</i>	13:30 J-1-01 (Invited) Integration of High Speed and Low Power CMOS Front-end Circuits with Silicon Photonic Devices <i>°S. Hsu¹, Y. Li¹, C. Liao¹, P. Wang¹, Y. Liu¹, P. Chiu¹, S. Chen¹, K. Li², D. Thomson², G. Reed², ¹National Tsing Hua Univ. (Taiwan), ²Univ. of Southampton (UK)</i>	13:30 K-1-01 (Invited) Electrostatic Perturbations from TSV Processing during 3D Integration of Advanced CMOS Technologies <i>°C. Kothandaraman¹, K. Sakama¹, S.A. Cohen¹, ¹T.J. Watson Research Center, IBM Research (USA)</i>		13:30 N-1-01 (Invited) Compositionally Graded-Base InP/InGaAsSb Double Heterojunction Bipolar Transistors with 500-GHz f_T and $BV_{CEO} > 5V$ <i>°N. Kashio¹, T. Hoshi¹, K. Kurishima¹, M. Ida¹, H. Matsuzaki¹, ¹NTT Corp. (Japan)</i>	13:30 O-1-01 (Invited) Si-passivated Ge nFET towards a reliable Ge CMOS <i>°H. Arimura¹, S. Sioncke¹, D. Cott¹, J. Mitard¹, W. Vanherle¹, R. Loo¹, J. Franco¹, T. Conard¹, P. Favia¹, H. Bender¹, L. Witters¹, H. Mertens¹, L.-Å. Ragnarsson¹, G. Pourtois¹, M. Heyns¹, A. Mocuta¹, A.V.-Y. Thean¹, D. Mocuta¹, N. Collaert¹, ¹imec (Belgium)</i>
14:00 H-1-02 High Sensitivity and High Quality-Factor Silicon Photonic Crystal Resonator with Double Nanocavities for Label Free Biosensing <i>°A.K. Sana¹, Y. Amemiya¹, S. Yokoyama¹, ¹Hiroshima Univ. (Japan)</i>	14:00 J-1-02 (Invited) Highly Time-Resolved CMOS Image Sensors Using High-Speed Charge Modulation Techniques <i>°S. Kawahito¹, ¹Shizuoka Univ. (Japan)</i>	14:00 K-1-02 Evaluation of Depth-dependent TSV-liner Interface States Using Multi-well Structured TSV and Charge Pumping Technique <i>°Y. Sugawara¹, H. Kino¹, T. Fukushima¹, K. Lee¹, M. Koyanagi¹, T. Tanaka¹, ¹Tohoku Univ. (Japan)</i>		14:00 N-1-02 Contact resistivity to C-doped (In)GaAsSb with Ti/Pt/Au and Pt/Ti/Pt/Au <i>°T. Hoshi¹, N. Kashio², Y. Shiratori¹, H. Sugiyama¹, K. Kurishima¹, M. Ida¹, H. Matsuzaki¹, ¹NTT Device Tech. Labs. (Japan), ²NTT Device Innovation Center (Japan)</i>	14:00 O-1-02 Impact of Ozone Post Oxidation to the Electrical Properties of HfO₂/Al₂O₃/GeO₂/Ge pMOSFETs <i>°R. Zhang¹, X. Tang¹, X. Yu¹, J. Li¹, Y. Zhao¹, ¹Zhejiang Univ. (China)</i>

Tuesday, September 27

101	200	201A	201B	202A	202B	304
A-1:Novel 3D Structures and 2D Materials	B-1:ReRAM-1	C-1:Silicon Photonics I	D-1:Physics and Technologies in 2D Materials	E-1:SiC Devices & Characterization	F-1:Organic Transistors	G-1:Spin Dynamics
14:30 A-1-03 A New Scale-Length Model for Short-Channel Monolayer and Bilayer Transition Metal Dichalcogenide (TMD) Field-Effect Transistors °W. You ¹ , P. Su ¹ , ¹ NCTU (Taiwan)	14:20 B-1-03 A Sidewall Electrode TiOx/TiOxNy ReRAM with Excellent Memory Window Control and Reliability Using Plasma Oxidation and a Novel Degradation-detecting Writing Algorithm °D. Lee ¹ , J. Wu ¹ , M. Lee ¹ , E. Lai ¹ , W. Khwa ¹ , Y. Lin ¹ , W. Chen ¹ , K. Chiang ¹ , T. Wang ¹ , S. Horng ² , J. Gong ² , H. Lung ¹ , K. Hsieh ¹ , C. Lu ¹ , ¹ Macronix International Co., Ltd. (Taiwan), ² National Tsing Hua Univ. (Taiwan)	14:15 C-1-03 Fabrication Tolerant Flattened Wavelength Division Multiplexers for 100GbE on 200mm Silicon-On-Insulator platform °K. Hassan ¹ , B. Szelag ¹ , V. Hugues ¹ , O. Lemonnier ¹ , S. Bernabé ¹ , C. Kopp ¹ , ¹ CEA-LETI (France)	14:15 D-1-03 Measurement of Anisotropic Dielectric Strength of Hexagonal Boron Nitride °Y. Hattori ¹ , T. Taniguchi ² , K. Watanabe ² , K. Nagashio ^{1,3} , ¹ Univ. of Tokyo (Japan), ² NIMS (Japan), ³ JST-PRESTO (Japan)	14:15 E-1-03 Impacts on 4H-SiC MOSFET Mobility of High Temperature Annealing in Oxidizing or Inert Ambient before Gate Oxide Growth °H. Hirai ¹ , K. Kita ¹ , ¹ Univ. of Tokyo (Japan)	14:15 F-1-03 300-nm High Gain Multi-Stage Organic CMOS Inverters °R. Nawrocki ¹ , S. Lee ¹ , N. Matsuhisa ¹ , T. Yokota ¹ , T. Someya ¹ , ¹ Univ. of Tokyo (Japan)	14:30 G-1-03 Coherent Microwave Emission from a Nanomagnet Using Magnetic Feedback D. Kumar ¹ , K. Konishi ² , N. Kumar ³ , S. Miwa ² , A. Fukushima ⁴ , K. Yakushiji ¹ , S. Yuasa ⁴ , H. Kubota ⁴ , C. Tomy ⁴ , A. Prabhakar ³ , Y. Suzuki ² , °A. Tulapurkar ¹ , ¹ Indian Inst. of Tech. Bombay (India), ² Osaka Univ. (Japan), ³ Indian Inst. of Tech. Madras (India), ⁴ AIST (Japan)
14:50 A-1-04 Impacts of Device Design and Variability on 6T/8T SRAM Cells with MoS₂-n/WS₂-p MOSFETs for 5.9nm node °C. Yu ¹ , P. Su ¹ , C. Chuang ¹ , ¹ NCTU (Taiwan)	14:40 B-1-04 Switching Mechanism in Resistive Random Access Memory by First-Principles Calculation Using Practical Model Based on Experimental Results °T. Moriyama ¹ , T. Yamasaki ² , S. Hida ¹ , T. Ohno ^{2,3} , S. Kishida ^{1,4} , K. Kinoshita ^{1,4} , ¹ Tottori Univ. (Japan), ² NIMS (Japan), ³ Univ. of Tokyo (Japan), ⁴ Tottori Integrated Frontier Res. Center (Japan)	14:30 C-1-04 Mirror Based Surface Optical I/O Technology with Precise and Arbitrary Coupling Angle for Silicon Photonics Application °A. Noriki ^{1,2} , T. Amano ^{1,2} , M. Mori ^{1,2} , Y. Sakakibara ^{1,2} , ¹ AIST (Japan), ² PETRA (Japan)	14:30 D-1-04(Invited) Valley Hall Effect in Bilayer Graphene with Electrically Broken Inversion Symmetry °Y. Shimazaki ¹ , M. Yamamoto ^{1,2} , I.V. Borzenets ¹ , K. Watanabe ³ , T. Taniguchi ³ , S. Tarucha ^{1,4} , ¹ Univ. of Tokyo (Japan), ² JST-PRESTO (Japan), ³ NIMS (Japan), ⁴ RIKEN (Japan)	14:30 E-1-04 Reliability Study on Positive Bias Temperature Instability in SiC MOSFETs by Fast I_b Measurement °T. Okunishi ¹ , K. Hisada ² , H. Toyoda ³ , Y. Yamamoto ² , K. Ara ² , Y. Yamashita ² , K. Yamazaki ¹ , S. Nara ¹ , ¹ Renesas Electronics Corp. (Japan), ² Renesas Semiconductor Manufac. Co., Ltd. (Japan), ³ Renesas System Design Co., Ltd. (Japan)	14:30 F-1-04 Threshold Voltage Control of Organic Thin Film Transistors (OTFTs) by Using Floated Double Gate Structure °S. Lee ¹ , T. Yokota ¹ , T. Someya ¹ , ¹ Univ. of Tokyo (Japan)	14:45 G-1-04 The Chiral Splitting of Spin Wave Eigen Modes in the 120-nm-radius FeB Disk Shaped Nano-magnet °J. Cho ¹ , S. Miwa ¹ , K. Yakushiji ² , S. Tamaru ² , H. Kubota ² , A. Fukushima ² , C.Y. You ² , S. Yuasa ² , Y. Suzuki ¹ , ¹ Osaka Univ. (Japan), ² AIST (Japan), ³ DGIST (Korea)
	15:00 B-1-05 Statistical Analysis of the Correlations between Cell Performance and its Initial States in CRRAM Cells °Y. Kao ¹ , W. Hsieh ¹ , C. Chen ² , Y. King ¹ , C. Lin ¹ , ¹ National Tsing Hua Univ. (Taiwan), ² TSMC (Taiwan)	14:45 C-1-05 Autocorrelation Operation using Enhanced Two-photon Absorption Induced Photocurrent in Sub-Silicon PIN Waveguide °G.W. Cong ¹ , M. Ohno ¹ , Y. Maegami ¹ , M. Okano ¹ , K. Yamada ¹ , ¹ AIST (Japan)	15:00 D-1-05(Late News) Insulator-to-Metal Transition in Polycrystalline MoS₂ Films Induced by Electric Double Layer Gating °Y. Edagawa ¹ , J. Pu ¹ , T. Osakabe ¹ , L.J. Li ² , H. Ito ³ , T. Takenobu ^{1,3} , ¹ Waseda Univ. (Japan), ² KAUST (Saudi Arabia), ³ Nagoya Univ. (Japan)	14:45 E-1-05 Positive Bias Temperature Instability of SiC-MOSFETs Induced by Switching Operation (AC-PBTI) °E. Murakami ¹ , T. Furuichi ¹ , T. Takeshita ¹ , K. Oda ¹ , ¹ Kyushu Sangyo Univ. (Japan)	14:45 F-1-05 Low Voltage Operation of Organic n-type Thin Film Transistor with Solution Process. °K. Kuribara ¹ , S. Aoki ² , K. Kakita ² , Y. Tanaka ² , T. Kozasa ¹ , S. Uemura ¹ , T. Nobeshima ¹ , T. Kawai ² , M. Yoshida ¹ , ¹ AIST (Japan), ² Tokyo Univ. of Science (Japan), ³ Ube Industries (Japan)	15:00 G-1-05 Wrangling Spin-Orbit-Torque Voltage-Controlled-Oscillator °Z. Zhu ¹ , G. Gupta ¹ , H. Lin ¹ , G. Liang ¹ , ¹ National Univ. of Singapore (Singapore)
		15:00 C-1-06 Highly-Sensitive Optical Biosensor Based on Si Microring Resonator-Loaded Mach-Zehnder Interferometer °S. Yoshida ¹ , S. Ishihara ¹ , T. Arakawa ¹ , Y. Kokubun ¹ , ¹ Yokohama National Univ. (Japan)			15:00 F-1-06(Late News) Steep Subthreshold Swing of Pentacene-based OFET with Nitrogen-doped LaB₆ Interfacial Layer °Y. Maeda ¹ , S. Ohmi ¹ , ¹ Tokyo Tech (Japan)	

401	402	403	404	405	406
H-1: Biosensors & Materials	J-1: Advanced CMOS Image Sensors and Systems	K-1: 3D-TSV		N-1: Narrow-gap III-V Materials and Devices	O-1: Gate Stack and Interface Technology
<p>14:15 H-1-03 High Sensitive Detection of A549 Cancer Cell by Bilayer Oval Nanodisk Localized Surface Plasmon Resonance Biosensor °C.Y. Chang¹, S.W. Huang¹, H.T. Lin^{1,2}, H.Y. Chou¹, Y.C. Yang¹, C.C. Peng¹, M.H. Shih^{1,2,3}, Y.C. Tung¹, Y.C. Chang^{1,2}, ¹Academia Sinica (Taiwan), ²NCTU (Taiwan), ³Sun Yat-sen Univ. (Taiwan)</p>	<p>14:30 J-1-03 A Wide Dynamic Range CMOS Image Sensor with Two Different Sensitivity Storage Diodes °M. Lee¹, M. Seo¹, D. Ueno¹, T. Takasawa¹, J. Shin², K. Yasutomi¹, K. Kagawa¹, S. Kawahito¹, ¹Shizuoka Univ. (Japan), ²Kyungpook National Univ. (Korea)</p>	<p>14:20 K-1-03 Superiority of In-Stack Decoupling Capacitor for 3D-LSI with Wide I/O Data Bus °Y. Araga¹, M. Nagata², N. Miura², H. Ikeda², K. Kikuchi¹, ¹AIST (Japan), ²Kobe Univ. (Japan)</p>		<p>14:15 N-1-03 Demonstration of p-Channel HfO₂/GaSb MOSFETs by Using In-Situ Hydrogen Plasma Treatment °C. Ko¹, M. Tsai¹, C. Chien¹, ¹NCTU (Taiwan)</p>	<p>14:20 O-1-03 Design of Al₂O₃/SiO₂ Laminated Stacks with Multiple Interface Dipole Layers to Induce Large Flatband Voltage Shifts of MOS Capacitors °H. Kamata¹, K. Kita¹, ¹Univ. of Tokyo (Japan)</p>
<p>14:30 H-1-04 Tethered-type Supported Lipid Bilayer Membrane for Measurement of Membrane Potential °Y. Niyama¹, N. Misawa^{1,2}, R. Tero¹, ¹Toyoashi Univ. of Tech. (Japan), ²Kanagawa Academy of Sci. and Tech. (Japan)</p>	<p>14:50 J-1-04(Late News) Physically Unclonable Function using Initial Waveform of Ring Oscillators on 65nm CMOS Technology °T. Tanamoto¹, S. Takaya¹, N. Sakamoto¹, H. Kasho¹, S. Yasuda¹, T. Marukame¹, S. Fujita¹, Y. Mitani¹, ¹Toshiba Corp. (Japan)</p>	<p>14:40 K-1-04(Late News) Interlayer Coupling of Stacked MOSFETs in Monolithic 3D Inverters °J. Hattori¹, K. Fukuda¹, T. Irisawa¹, H. Ota¹, T. Maeda¹, ¹AIST (Japan)</p>		<p>14:30 N-1-04 Fabrication and Characterization of InAs/High-k/Low-k Structures °T. Ui¹, R. Mori¹, S.P. Le¹, Y. Oshima¹, T. Suzuki¹, ¹JAIST (Japan)</p>	<p>14:40 O-1-04 Effect of Metal-oxide Addition on GeO₂ and Ge/GeO₂ Interfaces: DFT Calculations H. Li¹, °J. Robertson¹, ¹Cambridge Univ. (UK)</p>
<p>14:45 H-1-05 Effective Membrane-based SERS Substrate Fabrication °C.H. Hsu¹, L.T. Chiu¹, C.H. Chen¹, C.S. Lai^{1,2,3}, ¹Chang Gung Univ. (Taiwan), ²Ming Chi Univ. of Tech. (Taiwan), ³Chang Gung Memorial Hospital (Taiwan)</p>	<p>15:05 J-1-05(Late News) High Frequency VCO and Divider for Fifth-Generation Mobile Communications Technology °C. Yeh¹, M. Yen¹, H. Chen¹, ¹National Taiwan Univ. of Sci. and Tech. (Taiwan)</p>			<p>14:45 N-1-05 Effective Interface Passivation by In-Situ Remote-Plasma Gas Treatments for In_{0.53}Ga_{0.47}As MOSFET and FinFET Applications °Q.H. Luc¹, C.C. Chang¹, P.C. Chang¹, H.B. Do¹, J.W. Lin¹, K.S. Yang¹, C.C.F. Chang¹, M.T.H. Ha¹, S.H. Huynh¹, Y.C. Lin¹, E.Y. Chang¹, ¹NCTU (Taiwan)</p>	<p>15:00 O-1-05 Study on Dipole Layer Formation and its Origin at Al₂O₃/AlF₃O₂ and Al₂O₃/AlN₃O₂ Multi-anion Dielectric Interfaces by considering Anion Areal Density and Valence Differences °J. Fei¹, R. Kunugi², T. Watanabe², K. Kita¹, ¹Univ. of Tokyo (Japan), ²Waseda Univ. (Japan)</p>
<p>15:00 H-1-06(Late News) Improvement of Ammonia Sensing Performance by Fluorinated Bilayer Graphene T.C. Chen¹, °Y.C. Yang¹, M.C. Hsiao¹, C.M. Yang¹, C.S. Lai¹, ¹Chang Gung Univ. (Taiwan)</p>				<p>15:00 N-1-06 Demonstration of a Common Gate-Stack Process for p-Ge and n-InGaAs CMOS Integration P. Lee¹, C. Chen¹, S. Chang², G. Luo², °J. Chyi^{1,3}, ¹National Central Univ. (Taiwan), ²National Nano Device Labs. (Taiwan), ³Academia Sinica (Taiwan)</p>	

101	200	201A	201B	202A	202B	304
<p>A-2:Ferroelectric-gate TFEs and Vertical TFEs (15:40-17:30) Chairs: M. Kobayashi (Univ. of Tokyo), H. Morioka (Socionext Inc.)</p>	<p>B-2:MRAM and its Applications (15:25-17:35) Chairs: K. Ito (Tohoku Univ.), J.C. Guo (NCTU)</p>	<p>C-2:Optical Sensor and its Application (15:40-17:25) Chairs: H. Isshiki (Univ. of Electro-Communications), T. Tawara (NTT Basic Res. Labs.)</p>	<p>D-2:Nanostructure Synthesis and Devices (15:40-17:25) Chairs: H. Tatsuoka (Shizuoka Univ.), A. Kikuchi (Sophia Univ.)</p>		<p>F-2:Organic Photovoltaic Cells (15:40-17:25) Chairs: M. Ikegami (Toin Univ. of Yokohama), T. Kaji (Tokyo Univ. of Agri. & Tech.)</p>	
<p>15:40 A-2-01(Invited) Experimental Demonstration of Negative Capacitance epi-Ge/Si FETs with Ferroelectric HF-based Oxide Gate Stack for Swing Sub-60mV/dec and Hysteresis-Free °M.H. Lee¹, P.G. Chen^{1,2}, C. Liu³, K.T. Chen⁴, M.J. Xie¹, S.N. Liu¹, H.H. Chen¹, C.H. Tang¹, J.W. Lee¹, W.H. Tu², K.S. Li⁵, M.C. Chen², M.H. Liao², C.Y. Chang^{3,6}, C.H. Cheng¹, S.T. Chang⁴, C.W. Liu², ¹National Taiwan Normal Univ. (Taiwan), ²National Taiwan Univ. (Taiwan), ³NCTU (Taiwan), ⁴National Chung Hsing Univ. (Taiwan), ⁵National Nano Device Lab. (Taiwan), ⁶Academia Sinica (Taiwan)</p>	<p>15:25 B-2-01(Invited) Perpendicular STT-MRAM Macro Embedded into 40nm CMOS Logic Platform °Y. Lu¹, ¹Hikstor Technology Co., Ltd. (China)</p>	<p>15:40 C-2-01(Invited) Retinal Imaging Laser Eyewear with Focus-Free and Augmented Reality °M. Sugawara¹, M. Suzuki¹, N. Miyauchi¹, ¹QD Laser, Inc. (Japan)</p>	<p>15:40 D-2-01(Invited) Interface Engineering for High-Performance MoS₂ Field Effect Transistors °L. Liao¹, ¹Wuhan Univ. (China)</p>		<p>15:40 F-2-01(Invited) Efficient and Stable Large-area Perovskite Solar Cells °L. Han¹, ¹NIMS (Japan)</p>	
<p>16:10 A-2-02 Advantages of Silicon-on-Insulator FETs over FinFETs in Steep Subthreshold Swing Operation in Ferroelectric Gate FETs °H. Ota¹, S. Migita¹, J. Hattori¹, K. Fukuda¹, A. Toriumi², ¹AIST (Japan), ²Univ. of Tokyo (Japan)</p>	<p>15:55 B-2-02 Study about the Ion Beam Etching (IBE) Process for the High Density Spintronic Devices and its Damage Recovery by the Oxygen Showering Post-treatment (OSP) °J. Jeong^{1,2}, T. Endoh^{1,3,4}, ¹Tohoku Univ. (Japan), ²Samsung Electronics Co. Ltd (Korea), ³CIES, Tohoku Univ. (Japan), ⁴JST-ACCEL (Japan)</p>	<p>16:10 C-2-02 A Novel Wearable type Optical Biometric Devices using Multi-wavelength LED-Photodiodes Array °Y.C. Jo¹, H.N. Kim², H.K. Hong¹, Y.S. Choi¹, S.W. Jung¹, ¹KETI (Korea), ²Yonsei Univ. (Korea)</p>	<p>16:10 D-2-02 Suspended Ge Gate-All-Around Nanowire FETs with Selective Etching Technique °C.-C. Wan^{1,2}, C.-J. Su², S.-H. Hsu², G.-L. Luo², T.-H. Hou¹, W.-F. Wu¹, W.-K. Yeh², ¹NCTU (Taiwan), ²National Nano Device Labs. (Taiwan)</p>		<p>16:10 F-2-02(Invited) CoSe₂/Carbon Thin Films as the Counter Electrode for Dye-Sensitized Solar Cells °K.-C. Ho¹, I.-T. Chiu¹, ¹National Taiwan Univ. (Taiwan)</p>	
<p>16:30 A-2-03 New Findings on the Gate-Length Dependence of Subthreshold Swing for Ultra-Thin-Body Negative Capacitance FETs °C.P. Tsai¹, P. Su¹, ¹NCTU (Taiwan)</p>	<p>16:15 B-2-03 Highly Reliable MTJ-Based Nonvolatile Logic-in-Memory LSI with Content-Aware Write Error Masking Scheme °M. Natsui¹, A. Tamakoshi¹, T. Endoh¹, H. Ohno¹, T. Hanyu¹, ¹Tohoku Univ. (Japan)</p>	<p>16:25 C-2-03 Wafer Transfer of Hydrothermally Grown ZnO Film and Its Application on Vertical Structure Ultraviolet Photodetectors with Metal Substrate °C.H. Hung¹, S.J. Wang¹, N.S. Wu¹, C.H. Wu¹, P.Y. Liu¹, H.P. Yan¹, T.H. Lin¹, C.H. Wu², ¹National Cheng Kung Univ. (Taiwan), ²Chung Hua Univ. (Taiwan)</p>	<p>16:25 D-2-03 Crystallization and Activation of P⁺ dope a-Ge film by Atmospheric Pressure Micro-Thermal-Plasma-Jet °H. Harada¹, R. Shin¹, H. Hanafusa¹, S. Higashi¹, ¹Hiroshima Univ. (Japan)</p>		<p>16:40 F-2-03 Investigation of Photo-carrier Generation Processes of Organic Solar Cells Using Time Resolved X-ray Photoelectron Spectroscopy °T. Sakurai¹, K. Ozawa², R. Yukawa³, K. Akimbo³, K. Takeuchi³, S. Yamamoto³, I. Matsuda³, ¹Univ. of Tsukuba (Japan), ²Tokyo Tech (Japan), ³Univ. of Tokyo (Japan)</p>	
<p>16:50 A-2-04 Effects of Impurity and Composition Profile Steepness on Electrical Characteristics of GaAsSb/InGaAs Hetero-junction Vertical TFEs °T. Gotow^{1,3}, M. Mitsuhashi^{2,3}, T. Hoshi^{2,3}, H. Sugiyama^{2,3}, M. Takenaka^{1,3}, S. Takagi^{1,3}, ¹Univ. of Tokyo (Japan), ²NTT Device Tech. Labs. (Japan), ³JST-CREST (Japan)</p>	<p>16:35 B-2-04 A Soft/Write-Error Resilient CMOS/MTJ Nonvolatile Flip-Flop Based on Majority-Decision Shared Writing °N. Onizawa¹, T. Hanyu¹, ¹Tohoku Univ. (Japan)</p>	<p>16:40 C-2-04 Sensitivity Properties of a Direct Conversion Silicon X-ray Sensor with Trench-Structured Photodiodes °T. Ariyoshi¹, S. Funaki¹, K. Sakamoto¹, A. Baba¹, Y. Arima¹, ¹Kyushu Inst. of Tech. (Japan)</p>	<p>16:40 D-2-04 Self-organization of Ge Layers on Si Surfaces at High Temperatures °A. Shklyarev^{1,2}, ¹Inst. of Semiconductor Physics of SB RAS (Russia), ²Novosibirsk State Univ. (Russia)</p>		<p>16:55 F-2-04 Analysis of Band Structure Near Metal/Organic Semiconductor Junctions Using Impedance Spectroscopy °M. Morita¹, C. Lerchawarakul¹, I. Matsumura¹, H. Kojima¹, M. Nakamura¹, ¹NAIST (Japan)</p>	

Tuesday, September 27

401	402	403	404	405	406
<p>H-2:Nano Devices for Molecular & Biological Sensing (15:40-17:25) Chairs: T. Tanaka (Tohoku Univ.), H.M. Chen (NCTU)</p>	<p>J-2:2D Materials and Devices (15:40-17:40) Chairs: H. Kageshima (Shimane Univ.), Y. Ono (Nagoya Univ.)</p>	<p>K-2:Cu Interconnect & CMP (15:40-17:05) Chairs: S. Ogawa (AIST), J.M. Song (National Chung Hsing Univ.)</p>	<p>M-2:Quantum and Spin Technologies (15:40-17:25) Chairs: A. Oiwa (Osaka Univ.), T. Kodera (Tokyo Tech)</p>	<p>N-2:GaN & SiC Devices (15:40-17:40) Chairs: A. Wakejima (Nagoya Inst. of Tech.), T. Makino (AIST)</p>	
<p>15:40 H-2-01(Invited) Solid-State Nanopore System for Label-free DNA Sequencing °Y. Yanagawa¹, I. Yanagi¹, R. Akahori¹, T. Iwasaki¹, Y. Goto¹, K. Matsui¹, Y. Nara¹, M. Aoki¹, T. Yokoi¹, K. Takeda¹, ¹Hitachi, Ltd. (Japan)</p>	<p>15:40 J-2-01(Invited) Hurdles and Progress towards Device Applications of Graphene and Layered Materials °D. Jena¹, ¹Cornell Univ. (USA)</p>	<p>15:40 K-2-01(Invited) CMP-Stack Trek °V. Balan¹, ¹CEA-LETI (France)</p>	<p>15:40 M-2-01(Invited) Topological Phenomena in Ultracold Atoms °M. Ueda¹, ¹Univ. of Tokyo (Japan)</p>	<p>15:40 N-2-01(Invited) GaN-based Polarized Semiconductor Devices for Future Power Switching Systems °H. Ishida¹, R. Kajitani¹, Y. Kinoshita¹, H. Umeda¹, S. Ujita¹, M. Ogawa¹, K. Tanaka¹, S. Tamura¹, M. Ishida¹, T. Ueda¹, ¹Panasonic Corp. (Japan)</p>	
<p>16:10 H-2-02 Development of Molecularly Imprinted Polymer-Gate Field Effect Transistor for Sugar Chain Sensing °S. Nishitani¹, T. Kajisa², T. Sakata¹, ¹Univ. of Tokyo (Japan), ²PROVIGATE Inc. (Japan)</p>	<p>16:10 J-2-02 The Physical Origin of Interface Defects and Its Influence on MOSCAP with Magnetron Sputtered MoS₂ and HfO₂ High-<i>k</i> Gate Dielectric °P. Xia¹, S. Wang², D. Chi², C. Li³, Z. He³, X. Liu⁴, K.W. Ang¹, ¹National Univ. of Singapore (Singapore), ²Institute of Materials Research and Engineering (Singapore), ³South Univ. of Sci. and Tech. of China (China), ⁴Shenzhen Univ. (China)</p>	<p>16:10 K-2-02 Impact of Dry Process Damage on Chemical Mechanical Planarization with Cu/low-<i>k</i> Structure °M. Kodera¹, H. Yano¹, N. Miyashita¹, ¹Toshiba Corp. (Japan)</p>	<p>16:10 M-2-02 Quantum Dots for Quantum Information Applications in the Conventional Telecom Wavelength Band. °R.M. Stevenson¹, J. Skiba-Szymanska¹, C. Varnava^{1,2}, M. Felle^{1,2}, J. Huwer¹, T. Muller¹, I. Farrer², A. Krysa², P. Spencer², D.A. Ritchie², J. Heffernan³, A.J. Shields¹, ¹Toshiba Research Europe Ltd. (UK), ²Univ. of Cambridge (UK), ³Univ. of Sheffield (UK)</p>	<p>16:10 N-2-02(Invited) Invited Talk °S. Coffa¹, ¹STMicroelectronics (Italy)</p>	
<p>16:25 H-2-03 Long-term and Real-time Monitoring of Chondrocytes Behavior Synthesizing Extracellular Matrix with Biologically-coupled Field Effect Transistor °H. Satake¹, A. Saito¹, T. Kajisa², S. Mizuno³, T. Sakata¹, ¹Univ. of Tokyo (Japan), ²PROVIGATE Inc. (Japan), ³Harvard Medical School (USA)</p>	<p>16:25 J-2-03 Using Self-Assembled Monolayers for Selective Metal Removing and Ultrathin Gate Dielectrics in MoS₂ Field-Effect Transistors °W. Du¹, T. Kawanago¹, S. Oda¹, ¹Tokyo Tech (Japan)</p>	<p>16:30 K-2-03 The Effect of the HfN_x Barrier Thickness on the Cu Grain Orientation Control °M. Sato¹, E. Aoyagi², M.B. Takeyama¹, ¹Kitami Inst. of Tech. (Japan), ²Tohoku Univ. (Japan)</p>	<p>16:25 M-2-03 Gate-controlled Spin-orbit Interaction in an InAs Nanowire MOSFET °K. Takase¹, Y. Ashikawa^{1,2}, G. Zhang¹, K. Tateno¹, S. Sasaki^{1,2}, ¹NTT BRL (Japan), ²Tohoku Univ. (Japan)</p>	<p>16:40 N-2-03 Temperature Dependence of Current-Voltage of Ni Schottky Diodes on Cleaved <i>m</i>-plane n-GaN Surfaces H. Imadate¹, T. Aoki¹, T. Mishima², °K. Shiojima¹, ¹Univ. of Fukui (Japan), ²Hosei Univ. (Japan)</p>	
<p>16:40 H-2-04 Reconstitution of Human Ion Channels into Solvent-Free Lipid Bilayers in MicroFabricated Silicon Chips: Accelerated Vesicle Fusion via Centrifugation °A. Hirano-Iwata¹, M. Yoshida¹, S. Araki¹, D. Tadaki¹, R. Miyata¹, K. Ishibashi², H. Yamamoto¹, M. Niwano¹, ¹Tohoku Univ. (Japan), ²Hang-Ichi Corp. (Japan)</p>	<p>16:40 J-2-04 Graphene with Different Oxygenated Levels in Transparent Resistive Switching Memory Applications C.C. Lin¹, S.W. Tsai¹, °Z.-L. Zeng¹, ¹National Dong Hwa Univ. (Taiwan)</p>	<p>16:50 K-2-04(Late News) Cost-effective Means to Improve Barrier Performance of Ti in Cu-TSVs for 3D Integration °M. Mariappan¹, J. Bea¹, T. Fukushima¹, M. Koyanagi¹, ¹Tohoku Univ. (Japan)</p>	<p>16:40 M-2-04(Invited) Device and Circuit considerations towards Spin-Based Logic °I.P. Radu¹, O. Zografos¹, C. Wilson¹, A. Vaysser¹, F. Ciubotaru¹, M. Manfrini¹, P. Raghavan¹, S. Sayan¹, C. Adelman¹, A. Thean¹, ¹IMEC (Belgium)</p>	<p>16:55 N-2-04 AlGaN Etching-induced Electron Traps in GaN Channel of Schottky Barrier Diodes °P. Ferrandis¹, M. Charles², Y. Baines², J. Buckley², G. Garnier², C. Gillor², G. Reimbold², ¹CEA-LETI, Univ. of Toulon (France), ²CEA-LETI (France)</p>	

Tuesday, September 27

101	200	201A	201B	202A	202B	304
<p>A-2:Ferroelectric-gate TFEs and Vertical TFEs</p> <p>17:10 A-2-05 InGaAs/Si Heterojunction Tunnel FET with Modulation-doped Channel [°]K. Tomioka^{1,2}, F. Ishizaka¹, J. Motohisa¹, T. Fukui¹, ¹Hokkaido Univ. (Japan), ²JST-PRESTO (Japan)</p>	<p>B-2:MRAM and its Applications</p> <p>16:55 B-2-05 Long-Term Reliable Physically Unclonable Function using Oxide Tunnel Barrier Breakdown on 2T-2MTJ Based Embedded-STT-MRAM [°]S. Takaya¹, T. Tanamoto¹, H. Noguchi¹, K. Ikegami¹, K. Abe¹, S. Fujita¹,¹Toshiba Corp. (Japan)</p> <p>17:15 B-2-06 A Compact and Ultra-Low-Power STT-MRAM-Based Associative Memory for Nearest Neighbor Search with Full Adaptivity of Template Data Format Employing Current-Mode Similarity Evaluation and Time-Domain Minimum Searching [°]Y. Ma¹, S. Miura¹, H. Honjo¹, S. Ikeda¹, T. Hanyu¹, H. Ohno¹, T. Endoh¹,¹Tohoku Univ. (Japan)</p>	<p>C-2:Optical Sensor and its Application</p> <p>16:55 C-2-05(Invited) On-chip Silicon Photonics Technologies for WDM-based Optical Interconnects [°]S. Jeong¹, Y. Tanaka¹, ¹PETRA (Japan)</p>	<p>D-2:Nanostructure Synthesis and Devices</p> <p>16:55 D-2-05 Investigation of Effects of Inner Stress with Sn Incorporation on Energy Band of Si_{1-x}Sn_x Using Density Functional Theory and Photoelectron Spectroscopy Y. Nagae¹,[°]M. Kurosawa^{1,2,3,4}, M. Araidai^{1,2,3}, O. Nakatsuka¹, K. Shiraishi^{1,3}, S. Zaima^{1,3}, ¹Graduate School of Eng., Nagoya Univ. (Japan), ²Inst. for Adv. Res., Nagoya Univ., (Japan), ³IMaSS, Nagoya Univ. (Japan), ⁴JST-PRESTO (Japan)</p> <p>17:10 D-2-06(Late News) Structure and Magnetic Properties of Electrospun La_{1-x}Sr_xMnO₃ Nanofibers R. Yensanor¹, V. Amornkitbamrung¹, S. Phokha¹,[°]S. Maensiri¹, ¹Suranaree Univ. of Tech. (Thailand)</p>		<p>F-2:Organic Photovoltaic Cells</p> <p>17:10 F-2-05(Late News) CsPbI₃ based Planar Heterojunction Perovskite Solar Cells Using Vacuum Deposition Method [°]K. Yonezawa¹, K. Yamamoto¹, M. Shahiduzzaman¹, Y. Furumoto¹, T.S. Ripolles², M. Karakawa¹, T. Kuwabara¹, K. Takahashi¹, S. Hayase², T. Taima¹, ¹Kanazawa Univ. (Japan), ²Kyushu Inst. of Tech. (Japan)</p>	

Tuesday, September 27

401	402	403	404	405	406
H-2:Nano Devices for Molecular & Biological Sensing	J-2:2D Materials and Devices	K-2:Cu Interconnect & CMP	M-2:Quantum and Spin Technologies	N-2:GaN & SiC Devices	
<p>16:55 H-2-05 Development of Paper-based Transistor Toward Direct Detection from Micro Biological Fluids ^oT. Kajisa¹, T. Sakata², ¹PROVIGATE Inc. (Japan), ²Univ. of Tokyo (Japan)</p>	<p>16:55 J-2-05 Band Offset and Band Engineering in Transition Metal Dichalcogenides ^oJ. Robertson¹, Y. Guo¹, ¹Cambridge Univ. (UK)</p>		<p>17:10 M-2-05(Late News) Single Hole Transport and Magnetic Field Dependence of Pauli Spin Blockade in P-channel Silicon Double Quantum Dots ^oY. Yamaoka¹, K. Iwasaki¹, S. Oda¹, T. Kodera¹, ¹Tokyo Tech (Japan)</p>	<p>17:10 N-2-05 Evaluation of Schottky Barrier Height on 4H-SiC m-Face {1-100} for SBD-Wall Integrated Trench MOSFET (SWITCH-MOS) ^oY. Kobayashi^{1,2}, H. Ishimori¹, A. Kinoshita², T. Kojima^{1,2}, M. Takei^{1,2}, H. Kimura^{1,2}, S. Harada¹, ¹AIST (Japan), ²Fuji Electric Co., Ltd. (Japan)</p>	
<p>17:10 H-2-06 Equivalent Circuit Simulation of a Neuron-electrode Interface: Mechanism of Signal Amplification by Resistive Covering ^oR. Matsumura¹, H. Yamamoto¹, A. Hirano-Iwata¹, M. Niwano¹, ¹Tohoku Univ. (Japan)</p>	<p>17:10 J-2-06 Intercalation of Li atom from Solvated State to Interlayer of Graphite with Oxidized Edges as Li-Ion-Battery Anode: First-Principles Calculations ^oT. Kawai^{1,2}, S. Okada², M. Otani³, ¹NEC Corp. (Japan), ²Univ. of Tsukuba (Japan), ³AIST (Japan)</p>			<p>17:25 N-2-06 2-Dimensional Characterization of 3C-SiC Layers Using Scanning Internal Photoemission Microscopy ^oK. Shiojima¹, M. Shingo¹, N. Ichikawa², M. Kato², ¹Univ. of Fukui (Japan), ²Nagoya Inst. of Tech. (Japan)</p>	
	<p>17:25 J-2-07(Late News) Improvement of I_{on}/I_{off} for Bilayer Graphene by Encapsulation with <i>h</i>-BN ^oT. Uwanno¹, T. Taniguchi², K. Watanabe², K. Nagashio^{1,3}, ¹Univ. of Tokyo (Japan), ²NIMS (Japan), ³JST-PRESTO (Japan)</p>				