

Opening Ceremony & Plenary Sessions (Toyoda Auditorium)

Session Chair: J. Suda, Chair, Steering Committee
H. Fujioka, Chair, Program Committee

9:00 Welcome Address

H. Amano, General Chair, Organizing Committee

9:05 Welcome Address

S. Zaima, President, The Japan Society of Applied Physics

9:10 SSDM Award/SSDM Young Researcher Award Ceremony

9:35 PL-01 (Plenary)

Data is the new currency: Memory Technology Enabling and Accelerating a New Era of Economic Opportunity

N. Chandrasekaran, Micron Technology, Inc. (USA)

10:20 Break

10:30 PL-02 (Plenary)

SiC Devices for highly efficient Power Conversion

D. Peters, Infineon Technologies AG (Germany)

11:15 PL-03 (Plenary)

AI, Human and Happiness

K. Yano, Hitachi, Ltd. (Japan)

12:00 PL-04 (Plenary)

Photonic Crystals for Society 5.0 — Photonic-Crystal Lasers —

S. Noda, Kyoto Univ. (Japan)

Lunch

ES Meeting Room	ES021	ES022	ES024	ES025	ES033
Area 7:Organic & Bio A-1:Organic and Hybrid Electronics (14:00-15:30) Session Chair: T. Matsushima (Kyushu Univ.), A. Fujii (Osaka Univ.)	Area 5:Photonics B-1:Hybrid Photonic Devices (14:15-15:15) Session Chair: M. Watanabe (Sumitomo Electric Industries, Ltd.), K. Hassan (Leti)	Area 6:Energy C-1:Thermoelectric Devices (14:00-15:30) Session Chair: M. Ikegami (Toin Univ. of Yokohama), H. Shinohara (CEREBE)	Area 8:Low D D-1:Synthesis & Characterization of 2D Materials (14:00-15:30) Session Chair: K. Nagashio (Univ. of Tokyo), T. Takenobu (Nagoya Univ.)	Area 9:Novel Function & Spintronics E-1:Quantum Information Engineering I (14:00-15:30) Session Chair: A. Oiwa (Osaka Univ.), K. Nemoto (NII)	Area 11:Growth & Characterization F-1:Advanced Characterization Techniques (14:00-15:30) Session Chair: J. Yamaguchi (Fujitsu Labs. Ltd.), Y. Tominaga (Hiroshima Univ.)
14:00 A-1-01 (Invited) Development of New π-Conjugated Polymers for Efficient Organic Photovoltaics <i>^oL. Osaka¹, ¹Hiroshima Univ. (Japan)</i>	14:15 B-1-01 (Invited) Hybrid integration of quantum/classical light sources on Si using transfer printing <i>^oY. Ota¹, R. Katsumi², A. Osada¹, M. Kakuda¹, S. Iwamoto^{1,2}, Y. Arakawa¹, ¹Nanoquine, Univ. of Tokyo (Japan), ²IIS, Univ. of Tokyo (Japan)</i>	14:00 C-1-01 Evaluation of Multi-stage, Unileg, Si-nanowire Thermoelectric Generator with A Cavity-free and Planar Device Architecture <i>^oM. Tomita¹, H. Takezawa¹, K. Mesaki¹, T. Matsukawa², T. Matsuki^{1,2}, T. Watanabe¹, ¹Waseda Univ. (Japan), ²AIST (Japan)</i> 14:15 C-1-02 Backend Engineering of Cavity-free Planar Si-nanowire Thermoelectric Generator <i>^oK. Oda¹, M. Tomita¹, T. Matsukawa², T. Matsuki^{1,2}, T. Watanabe¹, ¹Waseda Univ. (Japan), ²AIST (Japan)</i>	14:00 D-1-01 (Invited) Continue the transistor scaling with 2D materials: Challenges and Perspective <i>^oL.-J. Li¹, ¹TSMC (Taiwan)</i>	14:00 E-1-01 (Invited) Engineering superconducting quantum circuits <i>^oY. Nakamura^{1,2}, ¹Univ. of Tokyo (Japan), ²RIKEN (Japan)</i>	14:00 F-1-01 (Invited) Nanoscale 3-dimensional characterization of wide bandgap power and microdevices <i>^oL.J. Brillson¹, H. Gao¹, C.H. Lin², G. Foster³, J. Cox⁴, ¹The Ohio State Univ. (USA), ²Intel Corporation (USA), ³U.S. Naval Research Laboratory (USA), ⁴Univ. of California, Los Angeles (USA)</i>

Lunch

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
Area 10:Thin Film G-1:Oxide Device and Integration	Area 2:Memory H-1:ReRAM	Area 3:Interconnect J-1:Advanced Interconnects	Area 4:Power & High-speed K-1:GaN Power Devices	Special Area:Circuits/Systems M-1:Information Sensing Platform for IoT	Area 1:Advanced CMOS N-1:Advanced CMOS Technology
(14:00-15:30) Session Chair: S. Higashi (Hiroshima Univ.), K. Hayashi (Kobe Steel, Ltd.)	(14:00-15:30) Session Chair: K. Kinoshita (Tokyo Univ. of Science), A. Himeno (Panasonic Corp.)	(14:00-15:45) Session Chair: M. Ueki (Sony Semiconductor Manufacturing Corp.), M.B. Takeyama (Kitami Inst. of Tech.)	(14:00-15:30) Session Chair: K. Tsuda (Toshiba Infrastructure Systems & Solutions Corp.), M. Yanagihara (Panasonic Corp.)	(14:00-15:15) Session Chair: R. Kuroda (Tohoku Univ.), D. Kanemoto (Osaka Univ.)	(14:00-15:30) Session Chair: H. Morioka (Socionext Inc.), O. Weber (CEA-Leti)
14:00 G-1-01 (Invited) Characteristics of Scaled CAAC-IGZO FET and Its Application to LSI °K. Kato ¹ , H. Kunitake ¹ , T. Onuki ¹ , K. Tsuda ¹ , S. Ohshita ¹ , D. Shimada ¹ , Y. Yanagisawa ¹ , T. Murakawa ¹ , T. Atsumi ¹ , S. Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co., Ltd. (Japan)	14:00 H-1-01 (Invited) Nanofilaments in Ta-O ReRAM Bit Array Fabricated Using 40 nm CMOS Process °M. Arita ¹ , A. T.-Fukuchi ¹ , Y. Takahashi ¹ , S. Muraoka ² , S. Ito ² , S. Yoneda ² , ¹ Hokkaido Univ. (Japan), ² Panasonic Semiconductor Solutions Co., Ltd. (Japan)	14:00 J-1-01 (Invited) Electromigration scaling limits of copper interconnects °O.V. Pedreira ¹ , H. Zahedmanesh ¹ , I. Ciofi ¹ , Z. TÓkei ¹ , K. Croes ¹ , ¹ imec (Belgium)	14:00 K-1-01 (Invited) Development of GaN Power Integrated Circuits °J. Wei ¹ , K.J. Chen ¹ , ¹ Hong Kong Univ. of Sci. and Tech. (Hong Kong)	14:00 M-1-01 (Invited) Trillion-Node Engine: Open-Innovation IoT/CPS Platform - Pioneering Future of IoT for Everyone, by Everyone - °T. Sakurai ¹ , ¹ Univ. of Tokyo (Japan)	14:00 N-1-01 (Invited) Enabling Ultra Low-Vmin and Low-Leakage Operation in FDSOI High-density SRAMs °R. Ranica ¹ , ¹ STMicroelectronics (France)

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Area 7:Organic & Bio A-1:Organic and Hybrid Electronics	Area 5:Photonics B-1:Hybrid Photonic Devices	Area 6:Energy C-1:Thermoelectric Devices	Area 8:Low D D-1:Synthesis & Characterization of 2D Materials	Area 9:Novel Function & Spintronics E-1:Quantum Information Engineering I	Area 11:Growth & Characterization F-1:Advanced Characterization Techniques
14:30 A-1-02 Enhanced Electroluminescence from Organic Light-Emitting Diodes with an Organic-Inorganic Perovskite Host Layer °T. Matsushima ^{1,2,3} , C. Qin ^{1,2} , K. Goushi ^{1,2} , F. Bencheikh ^{1,2} , T. Komino ^{1,2} , M. Leyden ^{1,2} , A.S.D. Sandanayaka ^{1,2} , C. Adachi ^{1,2,3} , ¹ OPERA, Kyushu Univ. (Japan), ² JST-ERATO (Japan), ³ WPI-I2CNER, Kyushu Univ. (Japan)		14:30 C-1-03 Power Enhancement of Silicon Nanowire Thermoelectric Generator by Using Metal/dielectric Thermally Conductive Layer °T. Zhan ¹ , M. Xu ¹ , S. Ma ¹ , R. Yamato ¹ , Y. Himeda ¹ , H. Takezawa ¹ , K. Mesaki ¹ , S. Hirao ¹ , M. Tomita ¹ , Y.-J. Wi ² , Y. Xu ² , T. Matsukawa ³ , T. Matsuki ^{3,1} , T. Watanabe ¹ , ¹ Waseda Univ. (Japan), ² NIMS (Japan), ³ AIST (Japan)	14:30 D-1-02 High On/Off Ratio Tunnel Transistor Formed by CVD-grown Bilayer WSe₂/MoSe₂ van der Waals Heterostructures °T. Irisawa ¹ , N. Okada ¹ , W.H. Chang ¹ , M. Okada ¹ , T. Mori ¹ , T. Endo ² , Y. Miyata ² , ¹ AIST (Japan), ² Tokyo Metropolitan Univ. (Japan)	14:30 E-1-02 Spin-charge separation of fractionally charged excitations studied with current noise measurement °T. Hata ¹ , T. Endo ¹ , M. Hashisaka ^{2,3} , T. Akiho ² , K. Muraki ² , T. Fujisawa ¹ , ¹ Tokyo Tech (Japan), ² NTT Basic Res. Labs. (Japan), ³ JST, PRESTO (Japan)	14:30 F-1-02 (Invited) Valence-selective photoelectron holography and cutting-edge two-dimensional angular-distribution analyzer °H. Daimon ^{1,2} , H. Matsuda ² , H. Momono ² , L. Toth ³ , ¹ Toyota Physical and Chemical Res. Inst. (Japan), ² NAIST (Japan), ³ Univ. of Debrecen (Hungary)
14:45 A-1-03 Observation of Photoexcited Carrier Recombination in Metal Halide Perovskite Materials with Single and Poly crystalline structures °T. Kawane ¹ , G.J. Matt ² , S. Shrestha ² , L. Jevgen ² , C.J. Brabec ² , A. Kanak ³ , P. Fochuk ³ , M. Kato ¹ , ¹ NIITech (Japan), ² i-MEET (Germany), ³ Chernivtsi National Univ. (Ukraine)	14:45 B-1-02 SWIR InGaAs PhotoFETs on Half-inch Si Wafer Using Layer Transfer Technology °T. Maeda ^{1,2} , H. Ishii ¹ , W.H. Chang ¹ , T. Shimizu ¹ , H. Ishii ^{1,2} , K. Ohishi ^{1,2} , A. Endoh ² , H. Fujishiro ² , ¹ AIST (Japan), ² Tokyo Univ. of Sci. (Japan)	14:45 C-1-04 Thermoelectric p-type Ge Film Formed by Zn-induced Layer Exchange at 80 °C °M. Tsuji ¹ , K. Kusano ¹ , T. Suemasu ¹ , K. Toko ^{1,2} , ¹ Univ. of Tsukuba (Japan), ² PRESTO (Japan)	14:45 D-1-03 MOCVD growth of 2D WS₂ on SiO₂: nucleation mechanism and kinetics °M. Caymax ¹ , S.E. Kazzi ¹ , C. Huyghebaert ¹ , ¹ Imec (Belgium)	14:45 E-1-03 Bipolar Pauli spin blockade in a silicon linearly coupled triple quantum dot °S. Ota ¹ , S. Hiraoka ¹ , R. Matsuoka ¹ , R. Mizokuchi ¹ , T. Koderai ¹ , ¹ Tokyo Tech (Japan)	
15:00 A-1-04 Temperature dependence of CH₃NH₂ molecular defect in CH₃NH₃PbI₃ thin film formed by sequential vacuum evaporation °M.-C. Jung ¹ , I. Maeng ² , A. Matsuyama ¹ , R. Abe ¹ , J.-H. Yun ³ , M. Nakamura ¹ , ¹ Nara Institute of Science and Technology (Japan), ² Gwangju Institute of Science and Technology (Korea), ³ Univ. of Queensland (Australia)	15:00 B-1-03 Horizontal Slot Waveguides based on Epitaxial Rare-Earth Oxide on Si °X. Xu ¹ , V. Fili ¹ , T. Inaba ¹ , T. Tawara ^{1,2} , H. Omi ^{1,2} , H. Gotoh ¹ , ¹ NTT Basic Res. Labs. (Japan), ² NTT Nanophotonics Center (Japan)	15:00 C-1-05 (Late News) Thermionic Emission Properties of n-type AlGa_N Cathodes °S. Kimura ¹ , H. Yoshida ¹ , S. Uchida ² , A. Ogino ² , ¹ Toshiba Corp. (Japan), ² Shizuoka Univ. (Japan)	15:00 D-1-04 On Electronic Structure of Monolayer Tungsten Disulfide Doped by 3d Transition Metals °C.-Y. Chen ¹ , Y. Li ¹ , ¹ National Chiao Tung Univ. (Taiwan)	15:00 E-1-04 Selective quantum teleportation transfer of a photon polarization state into a carbon nuclear spin state in an NV center in diamond °K. Kurashita ¹ , K. Tsurumoto ¹ , Y. Sekiguchi ¹ , H. Kosaka ¹ , ¹ Yokohama Natl. Univ. (Japan)	15:00 F-1-03 Round-Robin Test of Photoluminescence Method after Electron Irradiation for Quantifying Low-Level Carbon in Silicon °M. Tajima ¹ , S. Samata ¹ , S. Nakagawa ¹ , J. Oriyama ¹ , N. Ishihara ¹ , ¹ Japan Soc. Newer Metals (Japan)
15:15 A-1-05 Highly controllable molecular rectifier realized by interfacial design in molecular heterojunction with two-dimensional materials °J. Shin ¹ , S. Yang ¹ , T. Lee ² , C.-H. Lee ³ , G. Wang ³ , ¹ Korea Univ. (Korea), ² Seoul National Univ. (Korea)		15:15 C-1-06 (Late News) Fabrication of Group IV Semiconductor Alloys on Si substrate by Screen-Printing °M. Nakahara ^{1,2} , M. Matsubara ¹ , S. Suzuki ¹ , M. Dhamrin ¹ , S. Miyamoto ² , M.F. Hainey Jr. ² , N. Usami ² , ¹ TOYO ALUMINIUM K. K. (Japan), ² Nagoya Univ. (Japan)	15:15 D-1-05 Large linear magnetoresistance effect in high-quality InSb nanosheets °S. Tong ^{1,2} , D. Pan ^{1,2} , X. Wang ^{1,2} , D. Wei ^{1,2} , J. Zhao ^{1,2} , ¹ Inst. of Semiconductors, CAS (China), ² Univ. of CAS (China)	15:15 E-1-05 (Late News) Quantum annealing with spin lock technique °Y. Matsuzaki ¹ , Y. Seki ¹ , S. Kawabata ¹ , ¹ AIST (Japan)	15:15 F-1-04 Theoretical Analysis of Photo-Recycling Effect on External Quantum Efficiency Considering Spatial Carrier Dynamics °H. Asai ¹ , K. Kojima ² , S.F. Chichibu ² , K. Fukuda ¹ , ¹ AIST (Japan), ² Tohoku Univ. (Japan)

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14:30 G-1-02 IGZO Integration Scheme For Enabling IGZO nFETs °L. Kljucar ¹ , J. Mitard ¹ , N. Rassoul ¹ , H. Dekkers ¹ , S. Steudel ¹ , J.I. del Agua Bornique ² , B. De Wachter ⁴ , L. Teugels ¹ , D. Tsvetanova ¹ , K. Devriendt ⁴ , I. Grisin, G. Boccardi ¹ , H. Hody ¹ , M. Nag ¹ , L. Di Piazza ¹ , C.J. Wilson ¹ , G.S. Kar ¹ , Z. Tokei ¹ , J. Ramalingam ³ , Y. Cao ³ , D.L. Diehl ³ , ¹ imec (Belgium), ² AMAT Belgium (Belgium), ³ AMAT USA (USA)	14:30 H-1-02 3x Improved Set-voltage Variability of Cu Atom Switch with Split-electrode for Very Large Scale Integration °N. Banno ¹ , K. Okamoto ¹ , H. Numata ¹ , N. Iguchi ¹ , M. Miyamura ¹ , R. Nebashi ¹ , X. Bai ¹ , H. Hada ¹ , T. Sugibayashi ¹ , T. Sakamoto ¹ , M. Tada ¹ , ¹ NEC Corp. (Japan)	14:30 J-1-02 (Invited) Opportunities and Challenges of Atom Switch for Next AI Hardware °M. Tada ¹ , T. Sakamoto ¹ , M. Miyamura ¹ , ¹ NEC Corp. (Japan)	14:30 K-1-02 Demonstration of 1200 V / 1.4 mΩ cm² Vertical GaN Planar MOSFET Fabricated by All Ion Implantation Process °R. Tanaka ¹ , S. Takashima ¹ , K. Ueno ¹ , H. Matsuyama ¹ , Y. Fukushima ¹ , M. Edo ¹ , K. Nakagawa ² , ¹ Fuji Electric Co., Ltd. (Japan), ² Univ. of Yamanashi (Japan)	14:30 M-1-02 (Invited) Energy-Efficient Body Area Network Transceiver Using Body-Coupled Communication °J. Yoo ^{1,2} , ¹ National Univ. of Singapore (Singapore), ² N.I Inst. for Health (Singapore)	14:30 N-1-02 Self-Heating-Aware Cell Design for Multi-Stacked Circuits with p/n-Vertically-Integrated Nanowires on FinFET °T. Yamagishi ¹ , A. Hori ¹ , H. Wakabayashi ¹ , I. Muneta ¹ , K. Tsutsui ¹ , K. Kakushima ¹ , ¹ Tokyo Tech (Japan)
14:45 G-1-03 Inverter Using CAAC-IGZO FET with 60-nm Gate Endurance and Synaptic Behavior with Highly Stable Potentiation/ Depression Operation °H. Kunitake ¹ , T. Koshida ¹ , K. Ohshima ¹ , K. Tsuda ¹ , N. Matsumoto ¹ , S. Ohshita ¹ , Y. Okazaki ¹ , T. Murakawa ¹ , T. Atsumi ¹ , T. Nakura ² , K. Kato ¹ , S. Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co., Ltd. (Japan), ² Fukuoka Univ. (Japan)	14:45 H-1-03 HfO₂/Al₂O₃ Bilayer RRAM with Enhanced Endurance and Synaptic Behavior with Highly Stable Potentiation/ Depression Operation °E.Y.-J. Lee ¹ , K.-C. Chuang ¹ , H.-C. Cheng ¹ , ¹ National Chiao Tung Univ. (Taiwan)		14:45 K-1-03 Suppression of Short-Channel Effects in Normally-off GaN MOSFETs with Deep Recessed-Gate Structure °D. Kato ¹ , Y. Kajiwara ¹ , A. Mukai ¹ , H. Ono ¹ , A. Shindome ¹ , J. Tajima ¹ , T. Hikosaka ¹ , M. Kuraguchi ¹ , S. Nunoue ¹ , ¹ Toshiba Corp. (Japan)		14:45 N-1-03 Scaled, Novel Effective Workfunction Metal Gate Stacks for Advanced Low-V_t, Gate-All-Around Vertically Stacked Nanosheet FETs with Reduced Vertical Distance between Sheets °A. Veloso ¹ , E. Simoen ¹ , A. Oliveira ² , A. Chasin ¹ , S.-C. Chen ³ , Y. Lin ³ , T. Miyashita ³ , M. Kim ³ , D. Jang ¹ , R. Ritzenthaler ¹ , X. Zhou ¹ , H. Mertens ¹ , V. Pena ⁴ , G. Santoro ⁴ , K. Kenis ¹ , F. Sebaai ¹ , G. Mannaert ¹ , K. Devriendt ¹ , T. Hopf ¹ , J.J. Versluijs ¹ , O. Richard ¹ , J. Machillor ¹ , N. Yoshida ¹ , N. Horiguchi ¹ , ¹ Imec (Belgium), ² Federal Univ. of Tech. Parana (Brazil), ³ Applied Materials (USA), ⁴ Applied Materials Belgium (Belgium)
15:00 G-1-04 Cost-Effective and BEOL-Compatible Double-Gate IGZO Recess-Channel TFT Technology Enables IoT ICs in More-than-Moore Era °Y.-A. Huang ¹ , K.-P. Peng ¹ , Y.-C. Meng ¹ , P.-W. Li ¹ , H.-C. Lin ¹ , ¹ National Chiao Tung Univ. (Taiwan)	15:00 H-1-04 Improvement of HRS Variability in OxRRAM by Tailored Metallic Liner °N. Guillaume ¹ , M. Azzaz ¹ , S. Blonkowski ^{1,3} , E. Jalaguier ¹ , P. Gonon ² , C. Vallée ² , T. Blomberg ⁴ , M. Tuominen ¹ , H. Sprey ⁵ , S. Bernasconi ¹ , C. Charpin-Nicolle ¹ , E. Nowak ¹ , ¹ CEA LETI (France), ² LTM (France), ³ STMicroelectronics (France), ⁴ ASM Microchemistry (Netherlands), ⁵ ASM Belgium (Belgium)	15:00 J-1-03 Characterization of Electroplated Cu Films by Combination of PALS, HIM, and EBSD °Y. Hara ¹ , M. Kodera ¹ , E. Webb ¹ , J. Sukanto ¹ , T. Ohdaira ² , S. Ogawa ² , ¹ Moses Lake Indus. (USA), ² AIST (Japan)	15:00 K-1-04 Vertical PN Junction-based GaN Power Diode °J. Wang ^{1,2} , S. Jiang ³ , H. Zong ³ , Y. Liao ² , T. Liu ² , J. Shen ² , Y. Ando ² , Y. Honda ² , X. Hu ² , H. Amano ² , Y.-H. Xie ¹ , ¹ Univ. of California, Los Angeles (USA), ² Nagoya Univ. (Japan), ³ Peking Univ. (China)	15:00 M-1-03 An Information Leakage Sensor Based on Measurement of Laser-Induced Opto-Electric Bulk Current Density °K. Matsuda ¹ , S. Tada ¹ , M. Nagata ¹ , Y. Li ² , T. Sugawara ² , M. Iwamoto ² , K. Ohta ² , K. Sakiyama ² , N. Miura ¹ , ¹ Kobe Univ. (Japan), ² The Univ. of Electro-Communications (Japan)	15:00 N-1-04 Statistical Analysis of Temperature Dependence of Worst Case SRAM Data Retention Voltage Using Extreme Value Theory °T. Mizutani ¹ , K. Takeuchi ¹ , T. Saraya ¹ , M. Kobayashi ¹ , T. Hiramoto ¹ , ¹ Univ. of Tokyo (Japan)
15:15 G-1-05 (Late News) Mobility of Hydrogen in Oxygen Vacancies in IGZO models with Different Crystallinities °T. Kanagawa ¹ , M. Takahashi ¹ , T. Nakayama ¹ , S. Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co., Ltd. (Japan)	15:15 H-1-05 85% Endurance Error Reduction by Changing Reset Voltage in 40nm TaO_x-based ReRAM °H. Kinoshita ¹ , S. Fukuyama ¹ , T. Yonai ¹ , R. Yasuhara ² , K. Takeuchi ¹ , ¹ Chuo Univ. (Japan), ² Panasonic Semiconductor Solutions Co., Ltd. (Japan)	15:15 J-1-04 Barometric Pressure Sensor with Air Pockets fabricated by CMOS Process Technology °D. Jang ¹ , Y. Hong ¹ , S. Hong ¹ , Y. Jeong ¹ , G. Jung ¹ , J.-H. Lee ¹ , ¹ Seoul National Univ. (Korea)	15:15 K-1-05 High Avalanche Capability in GaN p-n Junction Diodes Realized by Shallow Beveled-Mesa Structure Combined with Lightly Mg-Doped p-Layers °T. Maeda ¹ , T. Narita ² , H. Ueda ² , M. Kanechika ² , T. Uesugi ² , T. Kachi ³ , M. Horita ^{1,3} , T. Kimoto ¹ , J. Suda ^{1,3} , ¹ Kyoto Univ. (Japan), ² Toyota Central R&D Labs., Inc. (Japan), ³ Nagoya Univ. (Japan)		15:15 N-1-05 (Late News) Evaluation of 2D Negative-Capacitance FET Based Subsystem-Level Logic Circuits Considering Ferroelectric Nonuniformity °Y.J. Wu ¹ , W.X. You ¹ , P. Su ¹ , ¹ NCTU (Taiwan)
		15:30 J-1-05 (Late News) Copper-Ruthenium System Study for Advanced Hybrid BEOL-Interconnects Applications °N. Jourdan ¹ , M. Korytov ¹ , S. Van Elshocht ¹ , Z. TÖkei ¹ , ¹ imec (Belgium)			

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Area 7:Organic & Bio A-2:Fabrication for Organic Devices	Area 5:Photonics B-2:Photonic Integrated Circuits	Area 6:Energy C-2:Perovskite/Organic Solar Cell	Area 8:Low D D-2:Nanowires	Area 9:Novel Function & Spintronics E-2:Quantum Information Engineering II	Area 11:Growth & Characterization F-2:GaN-Related Technologies
(15:45-17:30) Session Chair: T. Shimada (Hokkaido Univ.), H. Endoh (NEC Corp.)	(15:45-17:30) Session Chair: G. Cong (AIST), F. Boeuf (STMicroelectronics)	(15:45-17:30) Session Chair: C.W. Chu (Academia Sinica), M. Chikamatsu (AIST)	(15:45-17:15) Session Chair: K. Kawaguchi (Fujitsu Labs. Ltd.), F. Ishikawa (Ehime Univ.)	(15:45-17:30) Session Chair: S. Kawabata (AIST), T. Koderá (Tokyo Tech)	(15:45-17:30) Session Chair: A. Kikuchi (Sophia Univ.), T. Hoshi (NTT Device Tech. Labs.)
15:45 A-2-01 (Invited) Processing rules and materials in high-resolution printing for electronic devices °Y. Kusaka ¹ , ¹ AIST (Japan)	15:45 B-2-01 (Invited) Ultra-high bandwidth and low-drive voltage InP Mach-Zehnder modulators °Y. Ogiso ¹ , ¹ NTT Corp. (Japan)	15:45 C-2-01 (Invited) Low cost carbon-based printed perovskite solar cell technology An opportunity for entire world °S.G. Hashmi ¹ , ¹ Aalto Univ. (Finland)	15:45 D-2-01 (Invited) Scalable Nanomanufacturing Processes for High Performance Transistor Inks M. Mujica ¹ , A.T. Mohabir ¹ , G. Tutuncuoglu ¹ , V. Breedveld ¹ , S.H. Behrens ¹ , E.M. Vogel ¹ , °M.A. Filler ¹ , ¹ Georgia Inst. of Tech. (USA)	15:45 E-2-01 (Invited) 300 mm silicon quantum computing:A Silicon-Based Platform for Quantum Computing Device Technologies °S. Kubicek ¹ , B. Govoreanu ¹ , J. Jussot ¹ , B.T. Chan ¹ , N. Dumoulin-Shuyck ^{1,2} , F.A. Mohiyaddin ¹ , R. Li ¹ , G. Simion ¹ , T. Ivanov ¹ , J. Lee ¹ , I.P. Radu ¹ , ¹ imec (Belgium), ² KU Leuven (Belgium)	15:45 F-2-01 (Invited) Investigation of doping in III-nitrides by combining atom probe tomography and EDX spectroscopy °C. Bougerol ¹ , L. Amich ² , A. Dussaigne ³ , A. Grenier ³ , P.H. Jouneau ² , E. Monroy ² , E. Robin ² , ¹ CNRS Inst. Neel (France), ² CEA INAC (France), ³ CEA LETI (France)
16:15 A-2-02 Ordered Crystalline Film Growth of Tips-Pentacene and Perovskite by Ultra-sonic Printing and their Application in Photodetectors °C. Liu ¹ , C. Liu ¹ , H. Zhou ² , ¹ Sun Yat-Sen Univ. (China), ² Peking Univ. (China)	16:15 B-2-02 Si Optical Modulator with Strained SiGe Layer and Ge Photodetector with Lateral PIN Junction for 56 Gbaud Optical Transceiver °J. Fujikata ¹ , J. Han ² , S. Takahashi ¹ , K. Kawashita ² , H. Ono ¹ , S.-H. Jeong ¹ , Y. Ishikawa ² , M. Takenaka ² , T. Nakamura ¹ , ¹ PETRA (Japan), ² Univ. of Tokyo (Japan), ³ Toyohashi Univ. Tech. (Japan)	16:15 C-2-02 Low Temperature Aqueous Solution-Processed ZnO/TiO₂ bilayer Electron-Transport Layer for Highly Efficient Planar Perovskite Solar Cells °J. Ma ¹ , J. Chang ¹ , Z. Lin ¹ , ¹ Xidian Univ. (China)	16:15 D-2-02 (Invited) Semiconductor InSb Nanolayers: A New Platform for Developments of Quantum and Topological Devices °H. Xu ^{1,2} , ¹ Peking Univ. (China), ² Beijing Academy of Quantum Information Sciences (China)	16:15 E-2-02 Pauli spin blockade in a silicon triangular triple quantum dot °M. Tadokoro ¹ , R. Mizokuchi ¹ , T. Koderá ¹ , ¹ Tokyo Tech (Japan)	16:15 F-2-02 (Invited) Nonlinear Optical Application of Nitride Semiconductors: Polarity-Inverted Waveguides and Microcavities °R. Katayama ¹ , M. Uemukai ¹ , T. Tanikawa ¹ , ¹ Osaka Univ. (Japan)
16:30 A-2-03 Generation of one-dimensional metal-atom nano-rods in insulating SAM films: first-principles study °S. Watanabe ¹ , T. Nakayama ¹ , ¹ Chiba Univ. (Japan)	16:30 B-2-03 Double heterojunction Si-Ge-Si pin waveguide photodiodes for high-speed communications at 1550nm wavelength °L. Viroi ¹ , D. Benedikovic ² , G. Aubin ² , J.-M. Hartmann ¹ , B. Szelag ¹ , F. Amar ² , X. Le Roux ² , C. Alonso-Ramos ² , P. Crozat ² , D. Marris-Morini ² , E. Cassan ² , C. Baudot ³ , F. Boeuf ⁴ , J.M. Fédéli ¹ , C. Kopp ¹ , L. Vivien ² , ¹ Univ. Grenoble Alpes and CEA, LETI (France), ² Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Univ. Paris-Saclay (France), ³ STMicroelectronics, Silicon Technology Development (France)	16:30 C-2-03 Influence of p-type Doping to Dithiophene-Benzene Copolymer as Hole Transporting Layers in Perovskite Solar Cells °Y. Nishihara ^{1,2} , N. Onozawa-Komatsuzaki ¹ , H. Tachibana ¹ , M. Chikamatsu ¹ , Y. Yoshida ^{1,2} , ¹ AIST (Japan), ² Univ. of Tsukuba (Japan)		16:30 E-2-03 Gating function of p-channel silicon quantum dots by offset bias °S. Nishiyama ¹ , S. Mizoguchi ¹ , M. Kobayashi ¹ , K. Amano ¹ , Y. Yamaoka ¹ , R. Mizokuchi ¹ , T. Koderá ¹ , ¹ Tokyo Tech (Japan)	
16:45 A-2-04 Thermal stability of the p/n doped organic diodes prepared by evaporative spray deposition using ultradilute solution °K. Fujita ¹ , T. Harada ¹ , ¹ Kyushu Univ. (Japan)	16:45 B-2-04 Crossbar array of Si microring resonators for deep learning accelerator °S. Ohno ¹ , K. Toprasertpong ¹ , S. Takagi ¹ , M. Takenaka ¹ , ¹ Univ. of Tokyo (Japan)	16:45 C-2-04 Critical Thickness of Epitaxial CH₃NH₃Pb(I Br)Thin Films Formed on CH₃NH₃PbBr₃ Single Crystal Substrates K. Kimura ¹ , °T. Matsushita ¹ , Z. Liu ¹ , T. Kondo ¹ , ¹ Univ. of Tokyo (Japan)	16:45 D-2-03 Growth and properties of InGaN based nanorods for LEDs : comparison between core/shell and axial MQWs structures °G. Avit ¹ , Y. Robin ¹ , Y. Liao ¹ , L. Mostéfa ² , B. Michalska ² , A. Trassoudaine ² , S. Nitta ¹ , H. Amano ¹ , ¹ Nagoya Univ. (Japan), ² IUT Mesures Physique, Univ. Clermont Auvergne, (France), ³ Univ. Clermont Auvergne, CNRS, SIGMA Clermont, Institut Pascal (France)	16:45 E-2-04 Fabrication and Optical Characterization of Photonic Crystal Nanocavities with Electrodes for Gate-Defined Quantum Dots °T. Tajiri ¹ , K. Kuruma ¹ , Y. Sakai ² , H. Kiyama ² , A. Oiwa ² , J. Ritzmann ³ , A. Ludwig ³ , A.D. Wieck ³ , Y. Ota ⁴ , Y. Arakawa ⁴ , S. Iwamoto ^{4,1} , ¹ IIS, Univ. of Tokyo (Japan), ² ISIR, Osaka Univ. (Japan), ³ Ruhr Univ. Bochum (Germany), ⁴ NanoQuine, Univ. of Tokyo. (Japan)	16:45 F-2-03 Fabrication of GaN high-aspect fine nano-hole array structures by hydrogen atmosphere anisotropic thermal etching with ammonia gas °Y. Moriya ¹ , Y. Ooe ¹ , Y. Kawasaki ¹ , D. Ito ¹ , A. Kikuchi ^{1,2} , ¹ Sophia Univ. (Japan), ² Sophia Photonics Res. Center (Japan)

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
Area 10:Thin Film G-2:Crystal Growth of Group 4	Joint Session(Area1&2) H-2:Novel Approach to Polarization-Based Devices	Area 3:Interconnect J-2:3D Integration I		Joint Session(Area4&SP) M-2:Power Electronics for Smart Society	Area 1:Advanced CMOS N-2:Emerging Semiconductor Materials: SiGe, Ge, and GaN
(15:45-17:30) Session Chair: W. Yeh (Shimane Univ.), S. Higashi (Hiroshima Univ.)	(15:45-17:30) Session Chair: L. Grenouillet (CEA-Leti), P. Su (NCTU)	(15:45-16:45) Session Chair: J. De Messemacker (imec), T. Nogami (IBM Research)		(15:45-17:45) Session Chair: K. Johguchi (Shinshu Univ.), D. Hisamoto (Hitachi, Ltd.)	(15:45-17:30) Session Chair: K. Yamamoto (Kyushu Univ.), O. Nakatsuka (Nagoya Univ.)
15:45 G-2-01 (Invited) Selective Laser Annealing Technology for LTPS Thin Film Transistors Fabrications °T. Goto¹, K. Imokawa², T. Yamada², K. Saito³, J. Gotoh³, H. Ikenoue², S. Sugawa¹, ¹Tohoku Univ. (Japan), ²Kyushu Univ. (Japan), ³V Technology Co., Ltd. (Japan)	15:45 H-2-01 Endurance Improvement in Ferroelectric Y-doped HfO₂ Thin Films on NiSi₂ with Low-Thermal Budget Processing °J. Molina Reyes¹·², T. Hoshii¹, S.-I. Ohmi¹, H. Funakubo¹, A. Hori¹, I. Fujiwara², H. Wakabayashi¹, K. Tsutsui¹, K. Kakushima¹, ¹Tokyo Tech (Japan), ²Nat. Inst. of Astro. Opt. and Elect. (Mexico) 16:00 H-2-02 Interface dipole modulation in ALD HfO₂/SiO₂ multi-stack MOS structures °S. Asanuma¹, K. Sumita¹, Y. Miyaguchi², K. Horita², T. Jimbo², K. Saito², N. Miyata¹, ¹AIST (Japan), ²ULVAC Incorporated (Japan)	15:45 J-2-01 (Invited) Size-Reduction of HBW System using WOW Bumpless TSV Interconnects °T. Ohba¹, ¹Tokyo Tech (Japan)		15:45 M-2-01 (Invited) Imbalanced Voltage Analysis of Series-connected Active Power Semiconductor Devices Method in Power Electronics Systems for Automotive Applications °M. Yamamoto¹, ¹Nagoya Univ. (Japan)	15:45 N-2-01 Physics-based Modeling of Hot-Carrier Degradation in Ge NWFETs °S.E. Tyaginov¹·²·³, A.V. Chasin¹, A. Makarov², A.-M. El-Sayed², M. Jech², A. De Keersgieter¹, G. Eneman¹, M. Vandemaele¹, J. Franco³, D. Linten¹, B. Kaczer¹, ¹Imec (Belgium), ²Tech. Univ. Vienna (Austria), ³A.F. Ioffe Phys.-Tech. Inst. (Russia)
16:15 G-2-02 Grain Growth Control with a Dot Mask in Selective Laser Annealing for Stable LTPS Thin Films Transistors Fabrication °K. Imokawa¹·², T. Yamada¹, K. Saito³, J. Gotoh³, T. Goto⁴, D. Nakamura¹, H. Ikenoue¹·², ¹Graduate School of Information Science and Electrical Engineering, Kyushu Univ. (Japan), ²Department of Gigaphoton Next GLP, Kyushu Univ. (Japan), ³V-Technology Co., Ltd. (Japan), ⁴New Industry Creation Hatchery Center, Tohoku Univ. (Japan)	16:15 H-2-03 Nanocrystal-Embedded-Insulator (NEI) Ferroelectric FET Based synapse for neuromorphic network °Y. Peng¹, W. Xiao², G. Han¹, Y. Liu¹, J. Zhang¹, Y. Hao¹, ¹Xidian Univ. (China), ²Xiangtan Univ. (China)	16:15 J-2-02 (Late News) Impact of Seed Layers on TSV Filling by Electrochemical Deposition °Y. Hara¹, E. Webb¹, J. Sukanto¹, M. Mariappan², T. Fukushima², M. Kodera³, ¹Moses Lake Indus.-Advanced Res. Center (USA), ²GINTI, NICHe, Tohoku Univ. (Japan), ³Moses Lake Indus. Inc. (USA)		16:15 M-2-02 (Invited) Overcoming Barriers to the Adoption of WBG Semiconductors for Power Electronics and a more Electric Future °I.C. Kizilyalli¹, E.P. Carlson², Z. Rahman², D.W. Cunningham¹, ¹U.S. Department of Energy (USA), ²Booz Allen Hamilton (USA)	16:15 N-2-03 Impact of Channel Flattening Process on Device Performance of Ge nMOSFETs with Different Surface Orientations °W. Chang¹, T. Irisawa¹, W. Mizubayashi¹, H. Ishii¹, N. Uchida¹, T. Maeda¹, ¹AIST (Japan)
16:30 G-2-03 Effects of Grain Boundary and Counter Doping on P-Channel Polycrystalline Germanium Thin-Film Transistors via Continuous-Wave Laser Crystallization °Y.-S. Li¹, C.-T. Chen¹, J.-D. Luo¹, K.-C. Chuang¹, W.-S. Li¹, H.-C. Cheng¹, ¹National Chiao Tung Univ. (Taiwan)	16:30 H-2-04 Thickness- and orientation-dependence of Curie temperature of ferroelectric epitaxial HfO₂ based films °T. Mimura¹, T. Shimizu¹, Y. Katsuya², O. Sakata³, H. Funakubo¹, ¹Tokyo Institute of Technology (Japan), ²Synchrotron X-ray Station at SPring-8, Research Network and Facility Services Division (Japan), ³Synchrotron X-ray Group, Research Center for Advanced Measurement and Characterization, NIMS and Synchrotron X-ray Station at SPring-8, Research Network and Facility Services Division (Japan)	16:30 J-2-03 (Late News) High Aspect Ratio TSV Formation by Using Low-Cost, Electroless-Ni as Barrier and Seed Layers for 3D-LSI Integration and Packaging Applications °M. Mariappan¹, K. Mori¹, A. Nakamura¹, H. Hashimoto¹, J.C. Bea¹, T. Fukushima¹, M. Koyanagi¹, ¹Tohoku Univ. (Japan)			16:30 N-2-04 3D-stacked Highly Strained SiGe/Ge Gate-All-Around (GAA) pFETs Fabricated by 3D Ge Condensation °J. Suh¹, A.C. Meng¹, T.R. Kim¹, A.F. Marshall¹, A. Pakzad², P.C. McIntyre¹, K.C. Saraswat¹, ¹Stanford Univ. (USA), ²Gatan Inc. (USA)
16:45 G-2-04 Two-dimensional Visualization of Temperature Distribution in Molten Region of a-Si Film during Atmospheric Pressure Thermal Plasma Jet Annealing °Y. Mizukawa¹, A. Kameda¹, H. Hanafusa¹, S. Higashi¹, ¹Hiroshima Univ. (Japan)	16:45 H-2-05 Memory Window and Endurance Improvement of HfZrO Based FeFETs with ZrO₂ Seed Layers °W. Xiao¹, C. Liu¹, Y. Peng², S. Zheng¹, C. Zhang², J. Zhang², Y. Hao², M. Liao¹, Y. Zhou¹, ¹Xiangtan Univ. (China), ²Xidian Univ. (China)			16:45 M-2-03 (Invited) Development of α-Ga₂O₃ Power Devices by MIST EPITAXY® °T. Shinohe¹, ¹FLOSFIA Inc. (Japan)	16:45 N-2-05 Electrical Properties of p-Channel Thin-Film Transistors Fabricated on High-Mobility Polycrystalline Ge on Glass °K. Moto¹·², K. Yamamoto³, T. Suemasu¹, H. Nakashima¹, K. Toko¹, ¹Univ. of Tsukuba (Japan), ²JSPS Res. Fellow (Japan), ³IGSES, Kyushu Univ. (Japan), ⁴GIC, Kyushu Univ. (Japan)

Tuesday, September 3

ES Meeting Room	ES021	ES022	ES024	ES025	ES033
Area 7:Organic & Bio A-2:Fabrication for Organic Devices	Area 5:Photonics B-2:Photonic Integrated Circuits	Area 6:Energy C-2:Perovskite/Organic Solar Cell	Area 8:Low D D-2:Nanowires	Area 9:Novel Function & Spintronics E-2:Quantum Information Engineering II	Area 11:Growth & Characterization F-2:GaN-Related Technologies
17:00 A-2-05 Preparation of Surface-Tethered Polymer Thin Films by Vapor Deposition Assisted by Thiol-ene Reaction <i>T. Saito¹, T. Izumi¹, K. Tanaka¹, R.C. Advincula², ^oH. Usui¹, ¹Tokyo Univ. Agricu. & Technol. (Japan), ²Case Western Reserve Univ. (USA)</i>	17:00 B-2-05 Computational design of high-efficiency grating coupler based on deep learning <i>^oY. Miyatake¹, N. Sekine¹, K. Toprasertpong¹, S. Takagi¹, M. Takenaka¹, ¹Univ. of Tokyo (Japan)</i>	17:00 C-2-05 Withdrawn	17:00 D-2-04 GaAs/AlGaAs Core-Multishell Structure Covered by Native oxide AlGaOx <i>^oR. Tsutsumi¹, N. Tsuda¹, F. Ishikawa¹, ¹Ehime Univ. (Japan)</i>	17:00 E-2-05 New Delta Doping of Nitrogen for 2 Dimensionally Condensed NV Centers Using Nitrogen Terminated Diamond Followed by High Purity Diamond Growth <i>^oT. Tatsuiishi¹, T. Sonoda¹, J.J. Buendia¹, T. Kageura^{1,3}, K. Kawakatsu¹, Y. Hata¹, K. Nagaoka¹, Y. Ishii¹, T. Tanii¹, M. Haruyama^{2,3}, K. Yamada², S. Onoda², W. Kada³, O. Hanaizumi³, A. Stacey⁴, T. Teraji⁵, J. Isoya⁶, S. Kono⁷, H. Kawarada^{1,7}, ¹Waseda Univ. (Japan), ²National Inst. of Quantum and Radiological Sci. and Tech. (Japan), ³Gunma Univ. (Japan), ⁴Univ. of Melbourne (Australia), ⁵National Inst. for Materials Sci. (Japan), ⁶Univ. of Tsukuba (Japan), ⁷Kagami Memorial Res. Inst. for Materials Sci. and Tech. (Japan)</i>	17:00 F-2-04 MBE Self-Assembled Growth of InGaN Nanorods on Patterned Sapphire Substrate with Enhanced Photoluminescence Performance <i>^oJ. Shen^{1,2,3}, Y.F. Yu², Y. Gan¹, G. Li², H. Amano³, ¹Harbin Inst. of Tech. (China), ²South China Univ. of Tech. (China), ³Nagoya Univ. (Japan)</i>
17:15 A-2-06 Epitaxial growth of mesogenic tetrabenzotriazaporphyrin in freezing process from supercooled liquid crystal state <i>^oA. Fujii¹, T. Kitagawa¹, M. Fujisaki¹, S. Nagano², N. Tohnai¹, M. Ozaki¹, ¹Osaka Univ. (Japan), ²Nagoya Univ. (Japan)</i>	17:15 B-2-06 Shape optimized nanophotonic devices in 200mm Silicon-On-Insulator platform <i>^oK. Hassan¹, N. Lebbe¹, L. Baud¹, S. Garcia¹, C. Dapogny², E. Ouder², A. Gliere¹, ¹CEA-LETI (France), ²Univ. Grenoble Alpes, LJK (France)</i>	17:15 C-2-06 Transfer Printing of Active Layers from controlled Swelling/De-Swelling of PDMS for realizing Bilayer Polymer Solar Cells <i>^oC.W. Chu¹, A. Mohapatra¹, ¹Academia Sinica (Taiwan)</i>	17:15 D-2-06 (Late News) Quantum Technology with Spin Centers in Semiconductors <i>^oM. Trupke¹, ¹Univ. of Vienna (Austria)</i>	17:15 E-2-06 (Late News) Quantum Technology with Spin Centers in Semiconductors <i>^oM. Trupke¹, ¹Univ. of Vienna (Austria)</i>	17:15 F-2-05 Experimental Studies and Model Analysis on Potential Fluctuation in InGaN Quantum-Well Layers <i>^oT. Fujita¹, S. Sakai¹, Y. Ikeda¹, A.A. Yamaguchi¹, Y. Kanitani², S. Tomiya², ¹Kanazawa Inst. Tech. (Japan), ²Sony (Japan)</i>

Tuesday, September 3

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
Area 10:Thin Film G-2:Crystal Growth of Group 4	Joint Session(Area1&2) H-2:Novel Approach to Polarization-Based Devices	Area 3:Interconnect J-2:3D Integration I		Joint Session(Area4&SP) M-2:Power Electronics for Smart Society	Area 1:Advanced CMOS N-2:Emerging Semiconductor Materials: SiGe, Ge, and GaN
17:00 G-2-05 Impact of As Doping in Amorphous Ge on Solid-Phase Crystallization ◦M. Saito ¹ , K. Moto ¹ , T. Nishida ¹ , T. Suemasu ¹ , K. Toko ¹ , ¹ Univ. of Tsukuba (Japan)	17:00 H-2-06 Polarization Dependency of Time-Dependent Dielectric Breakdown (TDDB) Characteristics in Ferroelectric HfZrO _x ◦T.-H. Yang ¹ , C.-J. Su ² , Y.-S. Wang ³ , K.-H. Kao ³ , Y.-J. Lee ² , T.-L. Wu ¹ , ¹ National Chiao Tung Univ. (Taiwan), ² Taiwan Semiconductor Res. Inst. (Taiwan), ³ National Cheng Kung Univ. (Taiwan)				17:00 N-2-06 Experimental demonstration of n- and p-channel GaN MOSFETs operation for power IC ◦N.H. Trung ¹ , N. Taoka ² , H. Yamada ¹ , T. Takahashi ¹ , T. Yamada ¹ , M. Shimizu ¹ , ¹ AIST-NU GaN-OIL (Japan), ² Nagoya Univ. (Japan)
17:15 G-2-06 (Late News) High mobility Si TFTs on crystalline Si stripe formed by micro chevron laser beam scanning ◦W.Y. Yeh ¹ , M. Hirasue ¹ , T. Tsuchiya ¹ , ¹ Shimane Univ. (Japan)	17:15 H-2-07 Hybrid 6T SRAM Cell Using Hysteretic Negative-Capacitance FETs as Pass-Gate Devices for Low-Voltage Applications ◦K.-Y. Tseng ¹ , W.-X. You ¹ , P. Su ¹ , ¹ National Chiao Tung Univ. (Taiwan)			17:15 M-2-04 Low V _F 4H-SiC NiP Diodes Using Newly Developed Low Resistivity p-type Substrates ◦A. Koyama ^{1,2} , M. Sometani ¹ , K. Takenaka ^{1,3} , K. Nakayama ¹ , A. Miyasaka ^{4,1} , K. Kojima ¹ , K. Eto ¹ , T. Kato ¹ , J. Senzaki ¹ , Y. Yonezawa ¹ , H. Okumura ¹ , ¹ AIST (Japan), ² Mitsubishi Electric Corp. (Japan), ³ Fuji Electric Co., Ltd. (Japan), ⁴ SHOWA DENKO K. K. (Japan) 17:30 M-2-05 (Late News) Direct Observation of Spontaneous Polarization in Freestanding GaN Substrate Through Nuclear Magnetic Resonance ◦S. Sasaki ^{1,4} , R. Kusanagi ¹ , K. Suzuki ¹ , Y. Mori ² , M. Kushimoto ³ , H. Amano ³ , K. Shiraishi ² , ¹ Niigata Univ. (Japan), ² Osaka Univ. (Japan), ³ Nagoya Univ. (Japan), ⁴ AMED SENTAN (Japan)	17:15 N-2-07 (Late News) Implementation of FeFET Memory Device Utilizing Highly Reliable Ferroelectric Hf _{0.5} Zr _{0.5} O ₂ Film with Embedded Al Nanoclusters ◦T. Ohara ¹ , T. Yamaguchi ¹ , T. Hayashi ¹ , K. Maekawa ¹ , M. Inoue ¹ , H. Yanagita ¹ , M. Matsuura ¹ , T. Yamashita ¹ , ¹ Renesas Electronics Corp., Ltd. (Japan)

Wednesday, September 4

ES Meeting Room	ES021	ES022	ES024	ES025	ES033
Area 7:Organic & Bio A-3:Biochemical Sensors (9:00-10:30) Session Chair: H. Tanaka (Panasonic Corp.), R. Tero (Toyohashi Tech)	Area 5:Photonics B-3:LiDAR (9:30-10:30) Session Chair: M. Shirao (Mitsubishi Electric Corp.), H. Isshiki (UEC)	Area 6:Energy C-3:Battery/Fuel Cell/ Capacitor (9:00-10:30) Session Chair: S. Shiraki (Nippon Inst. of Tech.), M. Motoyama (Nagoya Univ.)	Area 8:Low D D-3:Physics & Application of Graphene Devices (9:00-10:30) Session Chair: T. Arie (Osaka Prefecture Univ.), T. Irisawa (AIST)		
9:00 A-3-01 (Invited) DNA detection by Electrochemical Impedance Spectroscopy <i>H. Han¹, N.B. Sabani¹, F. Takei^{1,2}, K. Nobusawa¹, ^oI. Yamashita¹, ¹Osaka Univ. (Japan), ²National Defense Medical College (Japan)</i>		9:00 C-3-01 (Invited) Atomic Layer Deposited Thin Film for Low-Temperature Solid Oxide Fuel Cell Electrolyte <i>^oJ. An¹, ¹Seoul National Univ. of Sci. and Tech. (Korea)</i>	9:00 D-3-01 (Invited) Dynamical Studies of Hot Carriers in 2D Semiconductors: Intrinsic vs. Extrinsic Processes <i>J. Nathawat¹, H. Ramamoorthy², R. Somphonsane², K. Sakanashi³, N. Aoki³, ^oJ.P. Bird¹, ¹Univ. at Buffalo (USA), ²King Mongkut's Institute of Technology Ladkrabang (Thailand), ³Chiba Univ. (Japan)</i>		
9:30 A-3-02 Organic Material-based Artificial Synaptic Device for Neuromorphic Applications <i>^oS. Ham¹, M. Kang², S. Jang¹, J. Jang¹, T.-W. Kim², G. Wang¹, ¹Univ.of Korea (Korea), ²Korea Inst. of Sci. and Tech. (Korea)</i>	9:30 B-3-01 (Invited) On-chip coherent LiDAR for imaging: progress and current limitations <i>^oA. Martin¹, P. Feneyrou¹, J. Bourderionnet¹, ¹Thales Research and Technology (France)</i>	9:30 C-3-02 Highly-durable carbon nanowalls electrodes for fuel cell synthesized employing a C₂F₄/H₂ mixture gas plasma <i>^oH. Kondo¹, S. Imai², T. Tsutsumi¹, K. Ishikawa¹, M. Sekine¹, M. Hiramatsu², M. Hori¹, ¹Nagoya Univ. (Japan), ²Meijo Univ. (Japan)</i>	9:30 D-3-02 State-Space Modeling for Graphene FET Biosensor Dynamic Response <i>^oS. Ushiba¹, T. Okino¹, T. Ono², N. Miyakawa¹, A. Shinagawa¹, K. Yamamoto², Y. Kanai², K. Inoue², K. Takahashi¹, M. Kimura¹, K. Matsumoto², ¹Murata Manufac. Co., Ltd. (Japan), ²Osaka Univ. (Japan)</i>		
9:45 A-3-03 High sensitive biosensor with extended-gate ISFETs based on in-plane-gate structure a-IGZO TFTs with engineered gate oxide <i>^oJ.H. Jeon¹, W.J. Cho¹, ¹Univ. of Kwangwoon (Korea)</i>		9:45 C-3-03 Synthesis of CNTs/RGO/ Co(OH)₂ Hybrid Nanostructure for High Performance Supercapacitor Electrode <i>^oM.L. Chang¹, W.S. Li¹, H.C. Cheng¹, ¹National Chiao Tung Univ. (Taiwan)</i>	9:45 D-3-03 Heavy-Metal-Ion Sensor Using Graphene Field-Effect Transistor Decorated with Thiacalix[4]arene <i>^oY. Takagiri¹, T. Ikuta¹, K. Maehashi¹, ¹Tokyo Univ. of Agri. and Tech. (Japan)</i>		
10:00 A-3-04 Electric Signal Transmission in Seawater using Diamond Solution Gate FET as Receiver <i>^oK. Tadenuma¹, Y. Iyama¹, Y.H. Chang¹, Y. Shintani¹, H. Kawarada^{1,2}, ¹Waseda Univ. (Japan), ²The Kagami Memorial Lab. for Materials Sci. and Tech. (Japan)</i>	10:00 B-3-02 Image acquired by FMCW- LiDAR using Slow-light Photonic Crystal Modulator based on Si-Photonics Technology <i>^oN.J. Jitcharoenchai¹, N. Nishiyama¹, H. Abe², Y. Hinakura², T. Baba², ¹Tokyo Inst. of Tech. (Japan), ²Yokohama National Univ. (Japan)</i>	10:00 C-3-04 Fabrication of MnS@Ni(OH)₂ Composite for improved supercapacitor applications <i>^oP.K. Guruviah¹, ¹Alagappa Univ. (India)</i>	10:00 D-3-04 Quantum Hall Effect and Band Dispersion in Artificially Stacked CVD Graphene <i>^oH. Murano¹, K. Ikushima¹, T. Ikuta¹, K. Maehashi¹, ¹Tokyo Univ. of A & T (Japan)</i>		
10:15 A-3-05 The Investigation of IGZO Sensing Membrane Applied in Electrolyte-Insulator- Semiconductor (EIS) Biosensors <i>C.S. Liu¹, C.H. Kao^{1,2,3}, C.Y. Lin², Y.W. Liu¹, C.F. Lin¹, C.H. Wang¹, M. Das¹, ^oY.H. Lin¹, K.L. Chen¹, ¹Chang Gung Univ. (Taiwan), ²Chang Gung Memorial Hospital (Taiwan), ³Ming Chi Univ. of Tech. (Taiwan)</i>	10:15 B-3-03 Silicon Photonics Co-integrated with Silicon Nitride for Optical Phased Arrays <i>^oA. Marinins¹, S.P. Dwivedi¹, J. Ø. Kjellman¹, S. Kerman, T. David¹, B. Figeys¹, R. Jansen¹, D.S. Tezcan¹, X. Rottenberg¹, P. Soussan¹, ¹imec (Belgium)</i>	10:15 C-3-05 Achieving Fast Charging and Long-life Li-S Battery via Li passivated MoO₃ NR decorated Celgard Separator <i>^oN. Kaisar^{1,2}, S. Joui², C.W. Chu¹, ¹Academia Sinica (Taiwan), ²National Taiwan Univ. of Science and Technology (Taiwan)</i>	10:15 D-3-05 FABRICATION OF TENSILE STRAIN APPLYING STRUCTURE TO SUSPENDED GRAPHENE FOR NANOMECHANICAL RESONATOR WITH HIGH FQ PRODUCT <i>^oJ. Uesaka¹, K. Go¹, S. Kidane¹, K. Sawada¹, K. Takahashi¹, ¹Toyohashi Univ. of Tech. (Japan)</i>		
Short Oral Presentation					
(10:45-11:25) Area7 (PS-7): Organic / Molecular / Bio-electronics Session Chair: H. Okada (Univ. of Toyama), T. Tanaka (Tohoku Univ.)	(10:45-11:07) Area5 (PS-5): Photonics: Devices, Integration and Related Technology Session Chair: N. Nishiyama (Tokyo Tech), T. Tawara (NTT Basic Res. Labs.)	(10:45-11:35) Area6 (PS-6): Photovoltaic / Energy Harvesting / Battery- related Technology Session Chair: M. Ikegami (Toin Univ. of Yokohama)	(10:45-11:31) Area8 (PS-8): Low Dimensional Devices and Materials Session Chair: K. Nagashio (Univ. of Tokyo), S. Hara (Hokkaido Univ.)	(10:45-11:21) Area9 (PS-9): Novel Functional / Quantum / Spintronic Devices and Materials Session Chair: A. Oiwa (Osaka Univ.), K. Terabe (NIMS)	(10:45-11:23) Area11 (PS-11): Advanced Materials Synthesis, Crystal Growth and Characterization Session Chair: A. Kikuchi (Sophia Univ.), K. Watanabe (Tohoku Univ.)

Wednesday, September 4

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
	Area 2:Memory H-3:Ferroelectric FET for Non-Volatile Device Applications (9:00-10:30) Session Chair: S. Jeon (KAIST), Y. Hikosaka (Fujitsu Semiconductor Ltd.)		Area 4:Power & High-speed K-3:Si Power Technologies (9:00-10:30) Session Chair: T. Terashima (Mitsubishi Electric Corp.), T. Matsudai (Toshiba Electronic Devices & Storage Corp.)	Joint Session(Area1&3+SP) M-3:Advanced Integration Technologies (9:00-10:30) Session Chair: H. Majima (Toshiba Electronic Devices & Storage Corp.), M. Ueki (Sony Semiconductor Manufacturing Corp.)	Area 1:Advanced CMOS N-3:Steep Slope Transistor (9:00-10:30) Session Chair: M. Kobayashi (Univ. of Tokyo), N. Mise (Hitachi High-Technologies Corp.)
	9:00 H-3-01 (Invited) Ferroelectric HfO₂ for Memory Applications and Unconventional Computing °H. Mulaosmanovic ¹ , E.T. Breyer ¹ , U. Schröder ¹ , T. Mikolajick ^{1,2} , S. Slesazeck ¹ , ¹ NaMLab gGmbH (Germany), ² Chair of Nanoelectronic Materials (Germany)		9:00 K-3-01 (Invited) State-of-the Art IGBT and Development towards Higher Operation Temperature and Power Ratings °J. Vobecky ¹ , C. Corvasce ¹ , E. Buitrago ¹ , M. Andenna ¹ , B. Boksteen ¹ , G. Pagues ¹ , ¹ ABB Semiconductors (Switzerland)	9:00 M-3-01 (Invited) Integrated Hybrid MEMS Hydrogen Sensor with high sensitivity and wide dynamic range °H. Yamazaki ¹ , Y. Hayashi ¹ , K. Masunishi ¹ , T. Saito ¹ , D. Ono ¹ , N. Nakamura ¹ , A. Kojima ¹ , ¹ Toshiba Corp. (Japan)	9:00 N-3-01 (Invited) Studies of Ferroelectric HfO₂ Materials before Memory and Logic Applications °S. Migita ¹ , ¹ AIST (Japan)
	9:30 H-3-02 A Simulation Study on Hf-based Ferroelectric FET Memory Performance °K. Takeuchi ¹ , M. Kobayashi ¹ , T. Hiramoto ¹ , ¹ Univ. of Tokyo (Japan)		9:30 K-3-02 Impact of Structural Parameter Scaling on On-state Voltage in 1200V Scaled IGBTs °T. Saraya ¹ , K. Ito ¹ , T. Takakura ¹ , M. Fukui ¹ , S. Suzuki ¹ , K. Takeuchi ¹ , K. Kakushima ² , T. Hoshii ² , K. Tsutsui ² , H. Iwai ² , S. Nishizawa ³ , I. Omura ⁴ , T. Hiramoto ¹ , ¹ Univ. of Tokyo (Japan), ² Tokyo Tech (Japan), ³ Kyushu Univ. (Japan), ⁴ Kyushu Inst. of Tech. (Japan)	9:30 M-3-02 3D SoC Design with TSV-less Power Supply Employing Highly Doped Silicon Via °K. Shiba ¹ , M. Hamada ¹ , T. Kuroda ¹ , ¹ Keio Univ. (Japan)	9:30 N-3-02 Impact of Non-Linear Subthreshold I-V on the Scalability of Ultra-Thin-Body Negative-Capacitance FETs and Its Mitigation °S.E. Huang ¹ , P. Su ¹ , ¹ National Chiao Tung Univ. (Taiwan)
	9:45 H-3-03 Variability Analysis for FeFET NVMs Considering Ferroelectric-Dielectric Phase Distribution °Y.S. Liu ¹ , P. Su ¹ , ¹ National Chiao Tung Univ. (Taiwan)		9:45 K-3-03 Impact of 3-D Simulation on the Analysis of Unclamped Inductive Switching °M. Tanaka ¹ , N. Abe ¹ , A. Nakagawa ² , ¹ Nihon Synopsys G.K. (Japan), ² Nakagawa Consulting Office, LLC. (Japan)	9:45 M-3-03 2.5D Integration Using Inductive-Coupling TSV-less Miniature Interposer Achieving 317Gb/s/mm², 1.2pJ/b Data Transfer °C. Cheng ¹ , K. Shiba ¹ , M. Hamada ¹ , T. Kuroda ¹ , ¹ Keio Univ. (Japan)	9:45 N-3-03 Performance improvement in ZnSnO/Si bilayer TFET by W/ Al₂O₃ gate stack °K. Kato ^{1,2} , H. Matsui ² , H. Tabata ² , T. Mori ¹ , Y. Morita ¹ , T. Matsukawa ¹ , M. Takenaka ² , S. Takagi ² , ¹ AIST (Japan), ² Univ. of Tokyo (Japan)
	10:00 H-3-04 ZrO₂ Anti-Ferroelectric Field Effect Transistor for Non-volatile Memory and Analog Synapse Applications °H. Liu ¹ , S. Zheng ¹ , G. Han ¹ , Y. Xu ¹ , Y. Liu ¹ , C. Wang ² , X. Wang ² , N. Yang ³ , N. Zhong ³ , Y. Hao ¹ , ¹ Xidian Univ. (China), ² Huazhong Univ. of Science and Technology (China), ³ East China Normal Univ. (China)		10:00 K-3-04 Analysis of Oscillatory Phenomena in Cathode Designs for 1200 V Diodes Using an LCR Circuit Model in Reverse Recovery °K. Fuse ¹ , K. Kawamura ¹ , T. Matsudai ¹ , W. Saito ¹ , ¹ Toshiba Electronic Devices & Storage Corp. (Japan)	10:00 M-3-04 (Late News) An Energy Efficient Normally-Off CPU with 2.4 pW Negative Voltage Generator Featuring 60-nm Crystalline Indium-Gallium-Zinc Oxide FETs in BEOL F. Akasawa ¹ , K. Furutani ¹ , T. Ishizu ¹ , °K. Sasaki ¹ , Y. Yakubo ¹ , A. Isobe ¹ , T. Ando ¹ , T. Murakawa ¹ , T. Ikeda ¹ , K. Kato ¹ , S. Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co., Ltd. (Japan)	10:00 N-3-04 Demonstration of n- and p-TFET operations in a single ZnSnO/SiGe bilayer structure °K. Kato ^{1,2} , K. Jo ² , H. Matsui ² , H. Tabata ² , T. Mori ¹ , Y. Morita ¹ , T. Matsukawa ¹ , M. Takenaka ² , S. Takagi ² , ¹ AIST (Japan), ² Univ. of Tokyo (Japan)
	10:15 H-3-05 Design Space Exploration of 1T Non-Volatile Ferroelectric FET Memory for Logic-In-Memory Applications °T.-Y. Ho ¹ , V.P.-H. Hu ¹ , ¹ National Central Univ. (Taiwan)		10:15 K-3-05 A Novel 120V Level Shifter with Enhanced Isolation Structure by Using 0.35um LV CMOS Process for Motor Driver Applications °V. Ningaraju ¹ , H.C. Lin ¹ , P.A. Chen ² , K.L. Lin ² , ¹ National Chiao Tung Univ. (Taiwan), ² Nuvoton Technology Corporation (Taiwan)	10:15 M-3-05 Differential Signal Balancer Embedded in Metal Wiring Layers of Silicon LSI °M. Kameya ¹ , C. Yang-Min ¹ , K. Nakamura ¹ , ¹ Kyushu Inst. of Tech. (Japan)	10:15 N-3-05 New types of resonant tunneling currents at Si-p/n junctions; Theoretical design °S. Cho ¹ , T. Nakayama ¹ , ¹ Chiba Univ. (Japan)
Short Oral Presentation					
(10:45-11:19) Area10 (PS-10): Thin Film Electronics: Oxide, Non-single Crystalline and Novel Process Session Chair: H.Kakiuchi (Osaka Univ.), H. Odaka (Asahi Glass Co., Ltd.)	(10:45-11:25) Area2 (PS-2): Advanced / Emerging Memories and New Applications Session Chair: K. Yamamoto (Toshiba Memory Corp.), W. T. Sun (eMemory Technology Inc.)	(10:45-10:55) Area3 (PS-3): Interconnect / 3D Integrations / MEMS Session Chair: H. Kitada (Fujitsu Labs. Ltd.), A. Isobayashi (Toshiba Corp.)	(10:45-11:45) Area4 (PS-4): Power Devices / High-speed Devices, and Materials Session Chair: D. Hisamoto (Hitachi, Ltd.), N. Iwamuro (Univ. of Tsukuba)	(10:45-10:59) Special Area (PS-SP): Advanced Circuits/Systems Interacting with Innovative Devices & Materials Session Chair: Y. Ogasahara (AIST), D. Kanemoto (Osaka Univ.)	(10:45-11:33) Area1 (PS-1): Advanced CMOS: Material Fundamentals, Process Science and Device Physics Session Chair: G. Nakamura (Tokyo Electron Ltd.) H. Morioka (Socionext Inc.)

Wednesday, September 4

Poster Session (13:00-15:00) Toyoda Auditorium

01: Advanced CMOS: Material Fundamentals, Process Science and Device Physics

(24 papers)

PS-1-01

Defect Decoupling for Polycrystalline Silicon MOSFETs using a Single Pulse Charge Pumping Method

[◦]M.-C. Nguyen¹, A.H.-T. Nguyen¹, H.-W. Kim¹, J. Yoon¹, Y.-C. Seok¹, N.-H. Kim¹, S.-W. Kim¹, R. Choi¹, ¹Inha Univ. (Korea)

PS-1-02

X-ray Photoelectron Spectroscopy Study of the Physical Chemistry of the TiN/Hf_{0.5}Zr_{0.5}O₂ Interface

[◦]N. Barrett^{1,2,3}, W. Hamouda^{1,2,3}, A. Pancotti^{1,2,3}, C. Lubin^{1,2,3}, L. Tortech^{1,2,3}, C. Richter⁴, U. Schroeder⁴, ¹CEA Saclay (France), ²CNRS (France), ³Univ. Paris Saclay (France), ⁴NaMLab (Germany)

PS-1-03

Study on Random Telegraph Noise of High-κ/Metal-Gate Gate-All-Around Poly-Si Nanowire Transistors

[◦]Y.-T. Chang¹, Y.-L. Tsai¹, K.-P. Peng¹, P.-W. Li¹, H.-C. Lin¹, ¹National Chiao Tung Univ. (Taiwan)

PS-1-04

Systematic analysis of electron traps of HfSiON/SiO₂ nMOSFETs using TSCIS

[◦]G. Roh¹, H. Kim¹, Y. Kwon², B. Kang¹, ¹Pohang Univ. of Sci. and Tech. (Korea), ²Univ. of Uiduk (Korea)

PS-1-05

Characteristic Variability and Random Telegraph Noise of Gate-All-Around Silicon Nanowire MOSFETs with Asymmetric Dual Spacer Induced by Single Charge Trap

[◦]S.R. Kola¹, Y. Li¹, N. Thoti¹, C.-Y. Chen¹, W.-L. Sung¹, ¹National Chiao Tung Univ. (Taiwan)

PS-1-06

Characteristics of Ni-silicided Schottky barrier MOSFET using Microwave annealing of low thermal budget

[◦]H.-S. Choi¹, E.-K. Hong¹, W.-J. Cho¹, ¹Univ. of Kwangwoon (Korea)

PS-1-07

The Evaluation of PtHfSi/n-Si(100) Schottky Barrier Height by Boron Dopant Segregation with Short Annealing Duration

[◦]R.M.D. Mailig¹, M.G. Kim¹, S. Ohmi¹, ¹Tokyo Tech (Japan)

PS-1-08

Low Temperature (<300°C) Fabrication of Ge MOS Structure for Advanced Electronic Devices

[◦]K. Iseri¹, W.-C. Wen¹, K. Yamamoto¹, D. Wang¹, H. Nakashima¹, ¹Kyushu Univ. (Japan)

PS-1-09

Ge nMOSFETs with GeOx Passivation Formed by 450°C Oxygen RTA Postoxidation

[◦]Y. Xu¹, H. Wang¹, G. Han¹, Y. Liu¹, J. Zhang¹, Y. Hao¹, ¹Xidian Univ. (China)

PS-1-10

Effects of Plasma Nitrided Trilayer High-k Gate Dielectric on Electrical Characteristics of FinFET

[◦]K.-Y. Lai¹, K.-S. Chang-Liao¹, Y.-L. Li¹, D.-B. Ruan¹, S.-H. Hsu¹, Y.-Z. Chien¹, B.-X. Lu¹, ¹National Tsing Hua Univ. (Taiwan)

PS-1-11

Enhanced Electrical Characteristics of FinFETs with Strained SiGe Super-Lattice Channel

[◦]B.-X. Lu¹, K.-S. Chang-Liao¹, Y.-L. Li¹, D.-B. Ruan¹, S.-H. Hsu¹, Y.-Z. Chien¹, K.-Y. Lai¹, ¹National Tsing Hua Univ. (Taiwan)

PS-1-12

A Junctionless SOI FET with Channel Thinning by Ion Implantation (CTIFET) and its application to 6T-SRAM Cell

[◦]P.K. Huang¹, H.Y. Chen¹, S.J. Wang^{1,2}, R.M. Ko², Y.C. Huang¹, M.H. Chiang¹, ¹Dept. of Electrical Eng., National Cheng Kung Univ. (Taiwan), ²College of Electrical Eng. and Computer Sci., National Cheng Kung Univ. (Taiwan)

PS-1-13

Theoretical Investigation of Performance Improvement in GeSn/SiGeSn TFET with Double Type-II Staggered Heterojunction

[◦]Y. Xu¹, H. Wang¹, G. Han¹, Y. Liu¹, Y. Hao¹, ¹Xidian Univ. (China)

PS-1-14

Novel Multi-Flux Device Simulation Method Applied to 2DEG Analyses - Drift Diffusion with subbands -

[◦]K. Fukuda¹, J. Hattori¹, H. Asai¹, T. Ikegami¹, ¹AIST (Japan)

PS-1-15

Scalability and *V_{th}* Sensitivity Assessment of Core-Shell Junctionless MOSFET

[◦]N. Jaiswal¹, A. Kranti¹, ¹Indian Institute of Technology Indore (India)

PS-1-16

Impact of Hafnium Oxide-Based Ferroelectric Material on Monolayer Black Phosphorus Transistor for Negative Capacitance and Memory Application

[◦]K.-T. Chen¹, Y.-F. Chung¹, Y.-T. Tang², M.-H. Lee², S.-T. Chang¹, ¹National Chung Hsing Univ. (Taiwan), ²National Taiwan Normal Univ. (Taiwan), ³Taiwan Semiconductor Research Institute (TSRI) (Taiwan)

PS-1-17

Calculation of interfacial energy for design of phase change materials

[◦]Y. Kim¹, M. Choi², H. Choi², J. Ahn², ¹KIST (Korea), ²Univ. of Hanyang (Korea), ³Univ. of Cologne (Korea)

PS-1-18

Memory window and retention time of double back gate Z²-FET

[◦]Y. Kim¹, S. Kwon², F. Gamiz³, P. Galy³, S. Cristolovenau⁴, ¹KIST (Korea), ²Univ. of Hanyang (Korea), ³Univ. of Granada (Spain), ⁴INPG (France), ⁵STMicro (France)

PS-1-19 (Late News)

Extremely low temperature selective epitaxial processes for advanced CMOS applications

A. Hikavyiy¹, [◦]C. Porret¹, E. Rosseel¹, P. Favia¹, R. Loo¹, ¹imec (Belgium)

PS-1-20 (Late News)

Experiment and Modeling of Dynamical Hysteresis in thin film Ferroelectrics

[◦]P. Chang¹, Y. Zhang¹, G. Du¹, X. Liu¹, ¹Peking Univ. (China)

PS-1-21 (Late News)

Circuit speed oriented device design scheme for double gate hetero tunnel FETs

K. Fukuda^{1,2}, N. Nogami², S. Kunisada², [◦]Y. Miyamoto², ¹AIST (Japan), ²Tokyo Tech (Japan)

PS-1-22 (Late News)

Comparison of Voronoi and Cuboid Methods for Work Function Fluctuation and Suppression by Using Stacked-metal Gate on Gate-All-Around Nanowire n-MOSFETs

[◦]Y.-S. Yang¹, W.-L. Sung¹, M.-H. Chuang¹, Y. Li¹, ¹National Chiao Tung Univ. (Taiwan)

PS-1-23 (Late News)

Improved Electro-Thermal Performance in FinFETs using SOD Technology for 7nm node High Performance Logic Devices

[◦]V. Sankatali¹, A. Sudarsanan¹, K. Nayak¹, ¹Indian Inst. of Tech. Hyderabad (India)

PS-1-24 (Late News)

High Performance Negative Capacitance Field-Effect Transistor Featuring Low Off-State Current, High On/Off Current Ratio, and Steep Sub-60 mV/dec Swing

[◦]C. Liu¹, H.-H. Chen¹, Y.-C. Tung¹, W.-C. Wang¹, B.-Y. Shih¹, S.-Y. Hsiung¹, S.-A. Wang², Y.-C. Fan², T.-M. Lee³, C.-L. Lin³, W.-C. Chou¹, C.-H. Cheng², H.-H. Hsu¹, ¹National Chiao Tung Univ. (Taiwan), ²National Taiwan Normal Univ. (Taiwan), ³National Taipei Univ. of Tech. (Taiwan)

02: Advanced / Emerging Memories and New Applications

(20 papers)

PS-2-01

Spike Timing Dependent Plasticity Characteristics of Tunnel FET based MONOS Memory for Low Power Neural Network Circuits

[◦]H. Kino¹, T. Fukushima¹, T. Tanaka¹, ¹Tohoku Univ. (Japan)

PS-2-02

Investigation of Adaptive Weight Quantization in Application for Convolutional Neuromorphic System Using Gated Schottky Diode

[◦]D. Kwon¹, S. Lim¹, J.-H. Bae¹, S.-T. Lee¹, H. Kim¹, Y.-T. Seo¹, G. Yeom¹, B.-G. Park¹, J.-H. Lee¹, ¹Seoul National Univ. (Korea)

PS-2-03

Synapse Device for Low Voltage Operation and High Conductance Linearity Using Positive Feedback Field Effect Transistor

[◦]S. Kim^{1,2}, M.-W. Kwon¹, K. Park¹, M.-H. Baek¹, S. Hwang¹, T. Jang¹, J. Lee¹, B.-G. Park¹, ¹Univ. of Seoul (Korea), ²Samsung Electronics Ltd. (Korea)

PS-2-04

Weight Update / Inhibition Method for NOR Flash Based Polysilicon Synapse Array

[◦]M.-H. Baek¹, T. Jang¹, S. Hwang¹, S. Kim¹, B.-G. Park¹, ¹Seoul National Univ. (Korea)

PS-2-05

Impact of Low Temperature Formed GeO₂/Al₂O₃ Tunneling Layer on Reliability of Junctionless Poly-Ge Charge-Trapping Flash Memory Device

[◦]T.-Y. Chiang¹, K.-S. Chang-Liao¹, H.-K. Fang¹, P.-Y. Lin¹, W.-H. Huang², C.-H. Shen², J.-M. Shieh², ¹National Tsing Hua Univ. (Taiwan), ²Taiwan Semiconductor Research Institute (Taiwan)

PS-2-06

Optimal Bias Condition of Dummy WL for Sub-Block Erase Operation in 3D NAND Flash Memory

[◦]Y. Jeong¹, I. Ham¹, M. Kang¹, ¹Korea National Univ. of Transportation (Korea)

PS-2-07

Hot Carrier Injection Phenomenon due to Excessive Natural Local Self-Boosting Effect in 3D NAND Flash Memory

Y. Jeong¹, [◦]I. Ham¹, S.J. Baik², M. Kang¹, ¹Korea National Univ. of Transportation (Korea), ²Hankyong National Univ. (Korea)

PS-2-08

Improvement of Hf-based MONOS Nonvolatile Memory Characteristics by Si Surface Atomically Flattening

[◦]S. Ohmi¹, Y. Horiuchi¹, S. Kudoh¹, ¹Tokyo Tech (Japan)

PS-2-09

"Development of PCM and OTS combined Macro-models for HSPICE Compatible Simulation"

[◦]B. K An¹, ¹Hanyang Univ. (Korea)

PS-2-10

Polycrystalline Silicon MOSFET-based Multi-Layer Capacitorless DRAM (1T-DRAM) for the Embedded System

[◦]W.D. Jang¹, Y.J. Yoon², M.S. Cho¹, J.H. Jung¹, S.H. Lee¹, J. Jang¹, J.-H. Bae¹, I.M. Kang¹, ¹Kyungpook National Univ. (Korea), ²Korea Inst. of Sci. and Tech. (Korea)

PS-2-11
Novel Dot-Product Engine for Low-Voltage Analog Oxide ReRAM Array
°H. Veluri¹, Y. Li¹, M. Sivan¹, J.X. Niu¹, U. Chand¹, J.F. Leong¹, E. Zamburg¹, S. Samanta¹, X. Gong¹, K.X. Fong¹, A.V.-Y. Thean¹, ¹National Univ. of Singapore (Singapore)

PS-2-12
Operando observation of resistive switching in ReRAM by laser-excited photoemission electron microscope
°Y. Okuda^{1,2,3}, J. kawakita^{1,2}, T. Taniuchi^{1,2}, H. Shima^{1,4}, A. Shimizu^{3,4}, Y. Naitoh^{1,4}, K. Kinoshita³, H. Akinaga^{1,4}, S. Shin^{1,3}, ¹AIST-UTokyo OIL (Japan), ²ISSP Univ. Tokyo (Japan), ³Tokyo Univ. of Sci. (Japan), ⁴NeRI-AIST (Japan)

PS-2-13
In-situ Observation of Resistive Switching Mechanism in SrCoO₃ Based RRAM Device
°H.-Y. Lo¹, G.-M. Huang¹, P.-H. Yeh², W.-W. Wu¹, ¹National Chiao Tung Univ. (Taiwan), ²Tamkung Univ. (Taiwan)

PS-2-14
Low Power Characteristic of HfO₂ Based RRAM Device with Insertion of Si Film
°X. Ding¹, Y. Feng¹, W. Shen¹, L. Liu¹, ¹Peking Univ. (China)

PS-2-15
Physics in HRS-LRS Switching in Vacancy Modulated Conductive Oxide (VMCO) Memories
°T. Nakanishi¹, K. Chokawa², M. Araidai^{2,1}, T. Nakayama³, K. Shiraishi^{2,1}, ¹Nagoya Univ. (Japan), ²Inst. of Materials and System for Sustainability, Nagoya Univ. (Japan), ³Chiba Univ. (Japan)

PS-2-16
Failure and Recovery of Double-Layer CBRAM Studied by *In-Situ* TEM
°M. Arita¹, R. Ishikawa¹, K. Arima¹, A. Tsurumaki-Fukuchi¹, Y. Takahashi¹, M. Kudo², S. Matsumura², ¹Hokkaido Univ. (Japan), ²Kyushu Univ. (Japan)

PS-2-17 (Late News)
Two Phase Change Memory (2-PCM) Neuron for Implementation of Backpropagation Algorithm
°C. Li¹, J. An¹, Y.-H. Song¹, ¹Hanyang Univ. (Korea)

PS-2-18 (Late News)
Current Monitor Circuit with Cascode Amplifier Using Crystalline IGZO FETs Compatible with Low-Voltage Input to Detect Micro Short-Circuit in Lithium Ion Battery
°S. Fukai¹, M. Ito¹, K. Takahashi¹, F. Akasawa¹, T. Saito¹, M. Kozuma¹, T. Ikeda¹, T. Takeuchi¹, T. Murakawa¹, S. Yamazaki¹, ¹Semiconductor Energy Laboratory Co., Ltd. (Japan)

PS-2-19 (Late News)
Selectable Amplification of Sensor Using Coplanar Gate IGZO TFT with Variable Resistance Layer
°M.-S. Kang¹, E.-K. Hong¹, W.-J. Cho¹, ¹Kwangwoon Univ. (Korea)

PS-2-20 (Late News)
Enhanced Electroresistance in HfZrO based Metal/ferroelectric/Semiconductor Tunnel Junction
°Y. Goh¹, J.H. Hwang¹, G.U. Kim¹, H. Cho¹, S. Jeon¹, ¹Korea Advanced Institute of Science and Technology (KAIST) (Korea)

03: Interconnect / 3D Integrations / MEMS
(5 papers)

PS-3-01
Properties of barrierless Cu/ZrN₂/Si structure deposited at room temperature
°M. Sato¹, M.B. Takeyama¹, ¹Kitami Inst. of Tech. (Japan)

PS-3-02
Integrated Simulation Methodology for EM-induced Circuit Degradation
°Y. Xiao¹, H. Jiang¹, Z. Ahmed¹, Z. Ma¹, C. Prawoto¹, C.J. Estrada¹, L. Zhang², M. Chan¹, ¹The Hong Kong Univ. of Sci. and Tech. (Hong Kong), ²Shenzhen Univ. (China)

PS-3-03
Amorphous-Carbon Barrier against Moisture for Copper Metallization and Effects of CF₄ Plasma Treatment
°P. Gomasang¹, K. Ueno^{1,2}, ¹Shibaura Inst. of Tech. (Japan), ²SIT Res. Center for Green Innov. (Japan)

PS-3-04
Design and simulation of a novel piezoresistive pressure sensor for guidewires
°H.H.Q. Nguyen¹, ¹Seoul National Univ. of Sci. and Tech. (Korea)

PS-3-05 (Late News)
Chip-to-Wafer Gang Bonding for High Throughput 3D-Integration
°M. Mariappan¹, T. Fukushima¹, A. Nakamura¹, J.C. Bea¹, M. Koyanagi¹, ¹Tohoku Univ. (Japan)

04: Power Devices / High-speed Devices, and Materials
(30 papers)

PS-4-01
Turn-Off Loss Improvement by IGBT Scaling
°M. Fukui¹, T. Saraya¹, K. Itou¹, T. Takakura¹, S. Suzuki¹, K. Takeuchi¹, K. Kakushima², T. Hoshii², K. Tsutsui², H. Iwai², S. Nishizawa³, I. Omura⁴, T. Hiramoto¹, ¹Univ. of Tokyo (Japan), ²Tokyo Tech (Japan), ³Kyushu Univ. (Japan), ⁴Kyushu Inst. of Tech. (Japan)

PS-4-02
Active Voltage Balancing for Series Connected IGBT System using Gate Delay Control
°R.N. Tripathi¹, K. Harasaki¹, M. Tsukuda¹, I. Omura¹, ¹Kyushu Institute of Technology (Japan), ²Green Electronics Research Institute Kitakyushu (GRIK) (Japan)

PS-4-03
Evaluation of Carrier Recombination Lifetime in Silicon Epitaxial Layer by Open Circuit Voltage Decay Method
°S. Sasaki¹, N. Mitsugi¹, S. Samata¹, W. Manabe², M. Tsukuda², H. Y.-Kaneta², I. Omura², ¹SUMCO Corp. (Japan), ²Kyushu Institute of Technology (Japan)

PS-4-04
Fabrication of 4H-SiC PiN Diodes on Substrate Grown by HTCVD Method
°Y. Tokuda¹, H. Uehigashi¹, K. Murata², H. Tsuchida², ¹DENSO CORP. (Japan), ²Central Research Institute of Electric Power Industry (CRIEPI) (Japan)

PS-4-05
Numerical Study of 4H-SiC PiN Diode to Enable Forward Bias Degradation Prediction Considering BPD-TED Conversion Position in the SiC Epitaxial Wafer
°S. Torimi^{1,2}, Y. Obiyama¹, M. Tsukuda¹, I. Omura¹, ¹Kyushu Inst. of Tech. (Japan), ²Toyo Tanso, Co., Ltd (Japan)

PS-4-06
Fermi Level Pinning at Metal/4H-SiC Contact Induced by SiC_xO_y Interlayer
°K. Hashimoto¹, T. Doi¹, S. Shibayama¹, O. Nakatsuka^{1,2}, ¹Graduate School of Eng. Nagoya Univ. (Japan), ²Inst. of Materials and Systems for Sustainability, Nagoya Univ. (Japan)

PS-4-07
The effect of biaxial stress on the carrier-transport properties at SiO₂/4H-SiC interfaces
°W. Fu¹, A. Ueda², H. Yano¹, S. Harada², T. Sakurai¹, ¹Univ. of Tsukuba (Japan), ²AIST (Japan)

PS-4-08
A Local Oxidation of SiC (LOCOSiC) Process for 4H-SiC Integrated Circuits
B.-Y. Tsui¹, Y.-R. Jhuang¹, °J.-C. Cheng¹, ¹National Chiao Tung Univ. (Taiwan)

PS-4-09
Study on the Effects of Si Implantation on the Interface of 4H-SiC MOSFET
°J.-Y. Jiang¹, J.-Q. Hung¹, P.-W. Huang¹, T.-L. Wu², C.-F. Huang¹, ¹National Tsing Hua Univ. (Taiwan), ²National Chiao Tung Univ. (Taiwan)

PS-4-10
Synchrotron X-ray Photoelectron Spectroscopy on interface state densities of CVD-Grown SiO₂/4H-SiC Sturcures Treated by Post-Deposition Treatments
°A. Kiyoi¹, T. Suwa², K. Kawase¹, A. Teramoto², ¹Mitsubishi Electric Corp. (Japan), ²Tohoku Univ. (Japan)

PS-4-11
Improved vertical Schottky barrier diodes characteristics by eliminating killer defects in heavily B-doped diamond substrates
°A. Kobayashi¹, S. Ohmagari², D. Takeuchi², H. Umezawa², T. Saito¹, ¹Osaka Prefecture Univ. (Japan), ²AIST (Japan)

PS-4-12
Diamond Schottky barrier diodes on half-inch single-crystal wafers fabricated by Minimal Fab System
°T. Hanada¹, H. Umezawa², S. Ohmagari², D. Takeuchi², J. Higedon Kaneko¹, ¹Hokkaido Univ. (Japan), ²AIST (Japan)

PS-4-13
Characterization of defects in diamond PiN diodes by electron beam induced current
°H. Umezawa^{1,2}, T. Shimaoka³, K. Driche⁴, E. Gheeraert^{2,3}, S. Koizumi³, D. Takeuchi¹, ¹AIST (Japan), ²Univ. Grenoble Alpes, CNRS, Grenoble INP, Inst. Neel (France), ³NIMS (Japan), ⁴DiamFab (France), ⁵Univ. Tsukuba (Japan)

PS-4-14
Theoretical approach to oxygen incorporation mechanism in vicinal m-GaN MOVPE
°F. Shintaku¹, Y. Kangawa^{1,2,3}, J. Iwata⁴, A. Oshiyama², K. Shiraishi², A. Tanaka³, H. Amano³, ¹Dept. Aeronautics and Astronautics, Kyushu Univ. (Japan), ²RIAM, Kyushu Univ. (Japan), ³IMaSS, Nagoya Univ. (Japan), ⁴AdvanceSoft Corp. (Japan)

PS-4-15
Positive Shifting of Threshold Voltage of Nano-Channel (NC) AlGaIn/GaN HEMTs with Post Gate Annealing (PGA) Modulation
°S. Mazumder¹, Y.H. Wang¹, ¹National Cheng Kung Univ. (Taiwan)

PS-4-16
Effects of Deep Level States Generated by Mg-Ion Implantation on Electrical Properties of GaN MOS Diodes before Activation Annealing
°R. Kamoshida¹, S. Murai¹, M. Akazawa¹, ¹Hokkaido Univ. (Japan)

PS-4-17
Impacts of nitrogen plasma surface cleaning on threshold voltages of AlTiO/AlGaIn/GaN MIS devices
°D.D. Nguyen¹, Y. Deng¹, T. Suzuki¹, ¹JAIST (Japan)

PS-4-18
High Frequency AlGaIn/GaN T-gate HEMTs on Extreme Low Resistivity Silicon Substrates
C.-H. Li¹, °Y. Liu¹, W.-C. Hsu², C.-Y. Chuang², J.-Z. Liu², S.S.H. Hsu¹, ¹National Tsing Hua Univ. (Taiwan), ²Global Wafers Corp. (Taiwan)

PS-4-19
A Method for Accurate Extracting the Properties of Border Traps in Lateral GaN Power MOSFET with a Compact Distributed Network Model
°R. Yin¹, Y. Li¹, W. Lin², C.P. Wen¹, Y.L. Hao¹, Y. Fu¹, M. Wang¹, ¹Inst. of Microelectronics, Peking Univ. (China), ²School of Physics, Peking Univ. (China)

PS-4-20
Analysis of Inversion Channel Mobility in a GaN-based MOSFET
°D. Kikuta¹, T. Narita¹, T. Kachi², ¹Toyota Central R&D Labs., Inc. (Japan), ²Nagoya Univ. (Japan)

PS-4-21
Estimation of post-deposition annealing effects on electrical properties of ALD-SiO₂/AlGaN/GaN MIS-HEMTs
°S. Yokoi¹, T. Kubo¹, T. Egawa¹, ¹Nagoya Inst. of Tech. (Japan)

PS-4-22
Observation of Slow Carrier Recombination in p-type GaN Epilayers on GaN Substrates
°S. Zhu¹, K. Ito², K. Tomita², T. Narita², T. Kachi³, M. Kato^{1,3}, ¹Nagoya Inst. of Tech. (Japan), ²Toyota Central R&D Labs. (Japan), ³Nagoya Univ. (Japan)

PS-4-23
Effect of Post-metallization Annealing on Interface Properties of Al₂O₃/GaN Fabricated on c- and m-plane Free-standing GaN Substrates
°Y. Ando¹, T. Nakamura², M. Deki², N. Taoka⁴, A. Tanaka^{2,3}, H. Watanabe², M. Kushimoto¹, S. Nitta², Y. Honda², H. Amano^{2,3,4,5}, ¹Dept. of Electronics, Nagoya Univ. (Japan), ²IMaSS, Nagoya Univ. (Japan), ³NIMS (Japan), ⁴ARC, Nagoya Univ. (Japan), ⁵VBL, Nagoya Univ. (Japan)

PS-4-24
InGaAs/InAlAs HEMT Terahertz Detector Integrated with Patch Antenna
°S. Suzuki¹, T. Otsuka¹, Y. Ueda¹, ¹Tokyo Tech (Japan)

PS-4-25 (Late News)
Demonstration of m-plane GaN metal-oxide-semiconductor field-effect transistors
°H. Okumura¹, T. Takahashi², M. Shimizu², ¹Univ. of Tsukuba (Japan), ²AIST (Japan)

PS-4-26 (Late News)
Modeling of the Leakage Current in GaN mediated through the Dislocation-Impurity Complex
°Y. Harashima¹, T. Nakano², A. Oshiyama¹, K. Shiraiishi^{1,2}, ¹IMaSS, Nagoya Univ. (Japan), ²Department of Eng., Nagoya Univ. (Japan)

PS-4-27 (Late News)
High current turn-off capability testing of a 3.3 kV SiC-MOSFET
°K. Takao¹, T. Sakano¹, Y. Hayashi¹, S. Hongliang¹, ¹Toshiba Corporation (Japan)

PS-4-28 (Late News)
Demonstration of n-MOSFET operation and internal charge analysis of SiO₂/Al₂O₃ gate dielectric on (111) oriented 3C-SiC
°R. Oka¹, K. Yamamoto¹, D. Wang¹, H. Nakashima¹, S. Hishiki², K. Kawamura², ¹Kyushu Univ. (Japan), ²Air Water Inc. (Japan)

PS-4-29 (Late News)
Cumulative Effects of Gamma Irradiation on Oxide Traps and Interface States in SiC MOS Capacitor
°Y.-X. Lin¹, D.-S. Chao², J.-H. Liang^{1,3}, J.-Y. Jiang⁴, C.-F. Huang⁴, ¹Department of Eng. and System Sci., National Tsing Hua Univ. (Taiwan), ²Nuclear Sci. and Tech. Development Center, National Tsing Hua Univ. (Taiwan), ³Inst. of Nuclear Eng. and Sci., National Tsing Hua Univ. (Taiwan), ⁴Inst. of Electronics Eng., National Tsing Hua Univ. (Taiwan)

PS-4-30 (Late News)
Temperature Dependence of Diamond MOSFET Transport Properties
°A. Traore^{1,2}, H. Kato², T. Makino^{1,2}, T. Matsumoto³, N. Tokuda², M. Ogura², Y. Kato², D. Takeuchi², S. Yamasaki², ¹Univ. of Tsukuba (Japan), ²AIST (Japan), ³Kanazawa Univ. (Japan)

05: Photonics: Devices, Integration and Related Technology

(10 papers)

PS-5-01
Numerical analysis of waveguide-integrated graphene thermal emitter
°H. Tang¹, S. Takagi¹, M. Takenaka¹, ¹Univ. of Tokyo (Japan)

PS-5-02
Withdrawn

PS-5-03
Design, fabrication, and evaluation of waveguide structure for Si/CaF₂ quantum-well intersubband transition lasers
°L. Liu¹, S. Ono¹, G. Tei¹, M. Watanabe¹, ¹Tokyo Tech (Japan)

PS-5-04
Comparison on characteristics of InGaN-LEDs on sapphire substrates and (-2 0 1) β-Ga₂O₃ substrate
Y.-C. Chen¹, °S.-M. Hung¹, Y.-Y. Yeh¹, K.-J. Chen¹, Y.-P. Lan¹, ¹National Chiao Tung Univ. (Taiwan)

PS-5-05
Structural characterizations of GaN nanowires and GaInN/GaN multi-quantum shells grown by MOVPE
°N. Goto¹, W. Lu¹, H. Murakami¹, M. Terazawa¹, J. Uzuhashi², T. Sekiguchi², T. Ohkubo², J. Chen², W. Yi², K. Hono², S. Kamiyama¹, T. Takeuchi¹, M. Iwaya¹, I. Akasaki^{1,3}, ¹Meijo Univ. (Japan), ²NIMS (Japan), ³Nagoya Univ. (Japan)

PS-5-06
Effect of Joule Heating on Titanium Microbolometer with Integrated Heater and Thermistor
°D. Elamaram¹, K. Akiba², H. Satoh³, N. Hiromoto², H. Inokawa², ¹GSST, Shizuoka Univ. (Japan), ²GSIST, Shizuoka Univ. (Japan), ³RIE, Shizuoka Univ. (Japan)

PS-5-07
Characteristics of Multi-split Ring Resonator Structure for Application in Biosensor
°Z. Geng^{1,2}, J. Liu¹, L. Chen¹, Z. Wang², H. Chen¹, ¹Institute of Semiconductors, Chinese Academy of Sciences (China), ²School of information engineering, Minzu Univ. of China (China)

PS-5-08
1T Semi-floating Gate Image Sensor with Enhanced Quantum Efficiency and High Response Speed
°Z.-L. Tian¹, C.-X. Yue¹, C. Wang¹, L. Chen¹, H. Zhu¹, Q.-Q. Sun¹, W.D. Zhang¹, ¹Fudan Univ. (China)

PS-5-09
Numerical Evaluation of a new Optical MOS Modulator structure compatible with an arbitrary SOI thickness
°C. Barrera¹, Y. D  si  res², F. Boeuf¹, ¹STMicroelectronics (France), ²CEA LETI (France)

PS-5-10 (Late News)
Characteristics of Perovskite Solar Cell with UV Down-shifting layer and function as an Arc detector
°H. Lee¹, J.Y. Hwang¹, H.W. Choi¹, ¹Gachon Univ. (Korea)

PS-5-11 (Late News)
New Wavelength Generation in the Semiconductor Circular Ring Laser Diode by Four Waves Mixing
C.Y. Houng¹, J.M. Chen¹, °M.C. Shih¹, ¹National Univ. of Kaohsiung (Taiwan)

06: Photovoltaic / Energy Harvesting / Battery-related Technology

(23 papers)

PS-6-01
Boosting organic photovoltaics via third component studied by ultrafast time-resolved spectroscopy
°N.Z. She¹, A. Yabushita¹, H.W. Cheng¹, K.H. Wei¹, ¹Univ of Chiao-Tung (Taiwan)

PS-6-02
Withdrawn

PS-6-03
A Study of perovskite solar cell with Fe²⁺/Ga³⁺ doped TiO₂ layer
°S.G. Shin¹, H. Lee¹, H.W. Choi¹, ¹Univ.of Gachon (Korea)

PS-6-04
Effects of RbI and CuBr₂ addition to CH₃NH₃PbI₃Cl_δ photovoltaic devices
°N. Ueoka¹, ¹The Univ. of Shiga Prefecture (Japan)

PS-6-05
Investigation of A-site substitution of Sn-Perovskite on the solar cells performance
°K. Nishimura¹, D. Hirotan², M.A. Kamarudin¹, Q. Shen¹, T. Toyoda¹, S. Iikubo², T. Minemoto³, K. Yoshino⁴, S. Hayase^{2,1}, ¹The Univ. of Electro-Communications (Japan), ²Kyushu Inst. Tech. (Japan), ³Univ. of Ritsumeikan (Japan), ⁴Univ. of Miyazaki (Japan)

PS-6-06
Charge Separation in SnO₂/MAPbI₃ Interface with Cl-passivation: A First-Principles Study
°S.Y. Zhang¹, J. Su¹, J.J. Chang¹, ¹Xidian Univ. (China)

PS-6-07
Cu₂ZnSn(S,Se)₄ thin-film solar cells prepared by sulfurization using Cu₂ZnSnSe₄,NaF and KF compounds
°T. Yamaguchi¹, H. Ogawa¹, M. Nakashima¹, H. Naoi¹, J. Sasano², M. Izaki², ¹National Institute of Technology, Wakayama College (Japan), ²Toyohashi Univ. of Technology (Japan)

PS-6-08
Effect of Ag/Sn Mole Ratio of Ag-rich Ag₃SnS₈ Thin Film Prepared by Vacuum Evaporation
°T. Uchimura¹, S. Nakamura², H. Araki³, S. Seto⁴, T. Yamaguchi⁵, Y. Akaki¹, ¹National Institute of Technology (KOSEN), Miyakonojo College (Japan), ²National Institute of Technology (KOSEN), Tsuyama College (Japan), ³National Institute of Technology (KOSEN), Nagaoka College (Japan), ⁴National Institute of Technology (KOSEN), Ishikawa College (Japan), ⁵National Institute of Technology (KOSEN), Wakayama College (Japan)

PS-6-09
Evaluations of TOPCon Solar Cell Rear Structure on Numerical Simulations
°T. Sugiura¹, S. Matsumoto¹, N. Nakano¹, ¹Keio Univ. (Japan)

PS-6-10
Preparation and thermoelectric characterization of phosphorus-doped silicon nanocrystals/silicon oxide multilayers
°H. Kobayashi¹, R. Akaishi¹, S. Kato², M. Kurosawa¹, N. Usami¹, Y. Kurokawa¹, ¹Nagoya Univ. (Japan), ²Nagoya Inst. Tech. (Japan)

PS-6-11
Temperature Effects on the Nucleation and Growth of Li at Cu/LiPON Interfaces
°M. Hirota¹, M. Motoyama¹, T. Yamamoto¹, Y. Iriyama¹, ¹Nagoya Univ. (Japan)

PS-6-12
Numerical Simulation of Thin-Film-All-Solid-State-Lithium Battery
°R. Isomura¹, M. Motoyama¹, T. Yamamoto¹, Y. Iriyama¹, ¹Nagoya Univ. (Japan)

PS-6-13
In-liquid plasma synthesis of iron-nitrogen-doped carbon nanosheets with highly electro-catalytic activity for fuel cell application
R. Hamaji¹, T. Amano¹, °H. Kondo¹, T. Tsutsumi¹, K. Ishikawa¹, M. Sekine¹, K. Takeda², M. Hiramatsu², M. Hori¹, ¹Nagoya Univ. (Japan), ²Meijo Univ. (Japan)

PS-6-14
1D structural CNH dependency in needle type Solid-state CMOS compatible glucose Fuel Cell for open-circuit voltage and their biomedical application
°M.Z. Islam¹, S. Arata¹, K. Hayashi¹, A. Kobayashi¹, Y. Momo², K. Niitsu^{1,3}, ¹Nagoya Univ. (Japan), ²Toyo Co., Ltd., (Japan), ³PRESTO, JST, Saitama (Japan)

PS-6-15
Withdrawn

PS-6-16
Impact of Heat Guide Thickness on Output Power of Planar Silicon Thermoelectric Generator
°S. Hirao¹, K. Oda¹, K. Mesaki¹, H. Takezawa¹, M. Tomita¹, T. Matsukawa², T. Matsuki^{1,2}, T. Watanabe¹, ¹Waseda Univ. (Japan), ²AIST (Japan)

PS-6-17
Solar-Powered Overall Water Splitting System combing Metal-Organic Frameworks Derived Bimetallic Nanohybrids Based Electrocatalysts and One Organic Solar Cell
°*H. Lei¹, ¹Jinan Univ. (China)*

PS-6-18 (Late News)
ZIF-67/PEDOT Hybrid Conductive Composite as a Superior Electrode for AllSolid-State Symmetrical Supercapacitor
°*S. Sundriyal^{1,2}, V. Shrivastav^{1,2}, S. Mishra^{1,2}, A. Deep^{1,2}, ¹Academy of Scientific and Innovative Research (India), ²Csir-Central Scientific Instruments Organization (India)*

PS-6-19 (Late News)
MIL-125(Ti) Derived TiO₂ Nanoparticles Confined Carbon Skelton for Supercapacitor Application
°*V. Shrivastav^{1,2}, S. Sundriyal^{1,2}, U.K. Tiwari², A. Deep², ¹Academy of scientific and innovative research (India), ²Central Scientific Instruments Organisation (India)*

PS-6-20 (Late News)
Fabrication and stability characterization of PbI₂/PbCl₂ added CH₃NH₃PbI_{3-x}Cl_x solar cells
°*N. Ueoka¹, T. Oku¹, ¹Univ. of Shiga Prefecture (Japan)*

PS-6-21 (Late News)
Performance and Light Stability of Electron-Selective TiO₂ with an AlO_x Interlayer
°*H. Lee¹, Y. Ohshita¹, ¹Toyota Tech. Inst. (Japan)*

PS-6-22 (Late News)
Study of Transparent Cu₂O Solar Cells for High-efficiency, Low-cost Tandem Photovoltaics
°*N. Nakagawa¹, S. Shibasaki¹, M. Yamazaki¹, Y. Honishi¹, Y. Someya-Hiraoka¹, K. Yamamoto¹, ¹Toshiba Corp. (Japan)*

PS-6-23 (Late News)
Electrospun poly (methyl methacrylate) decorated Titanium dioxide, reduced graphene oxide composite nanofiber for dye and perovskite sensitized solar cell applications
°*T. Stalini¹, ¹Alagappa Univ. (India)*

PS-6-24 (Late News)
Preparing the high efficiency with non-vacuum and non-sulfurized CZTS (Cu₂ZnSnS₄) Solar Cell by improved annealing method
°*S.M. Lin¹, S.-J. Chang¹, T.-J. Hsueh², C.-L. Hsu³, ¹National Cheng Kung Univ. (Taiwan), ²National Kaohsiung Univ. of Applied Sciences (Taiwan), ³National Univ. of Tainan (Taiwan)*

PS-6-25 (Late News)
Influence of Processing Route and Chemical Composition on Capacity/Fading of Layered Oxide Cathodes
°*K.-Z. Fung¹, K. Fung³, S.-Y. Tsai², C.-C. Chang³, ¹National Cheng Kung Univ., Department of Materials Science and Engineering (Taiwan), ²National Cheng Kung Univ., Hierarchical Green-Energy Materials (Hi-GEM) Research Center (Taiwan), ³National Univ. of Tainan, Department of Greenery (Taiwan)*

07: Organic / Molecular / Bio-electronics
(19 papers)

PS-7-01
Metal-insulator Transition Field Effect Transistor Observed by 4-probe Lamination Contact Electrode
°*M. Sakai¹, Y. Okada², T. Ueda¹, T. Sano¹, R. Takeda¹, K. Kudo³, H. Masu³, ¹Dept. of Electrical and Electronic Eng., Chiba Univ. (Japan), ²Center for Frontier Science, Chiba Univ. (Japan), ³Center for Analytical Instrumentation, Chiba Univ. (Japan)*

PS-7-02
Polarity Tuning of Semiconducting Single-walled Carbon Nanotube by Dipole Field of Ferroelectric Polymer for Thermoelectric Conversion
°*R. Yamasaki¹, S. Horike^{1,2}, Y. Koshiba¹, T. Fukushima¹, K. Ishida¹, ¹Kobe Univ. (Japan), ²AIST (Japan)*

PS-7-03
Interface electrical property of ionic liquid on polarization field formed by TGS single crystal
°*T. Kishimoto¹, T. Fukushima¹, Y. Koshiba¹, S. Horike¹, K. Ishida¹, ¹Kobe Univ. (Japan)*

PS-7-04
High Sensitivity Temperature Sensor Based on Fresnel Reflection with Thermosensitive Polymer: Control Morphology and Coating Thicknesses
°*T.T. Salunkhe¹, T.N. Vo¹, J.H. Bae¹, W.S. Kim¹, I.T. Kim¹, ¹Gachon Univ. (Korea)*

PS-7-05
Organic p-type/n-type/piezoelectric tricolor superlattice for photo-responsive actuator
T. Yanase¹, T. Nagahama¹, °T. Shimada¹, ¹Hokkaido Univ. (Japan)

PS-7-06
Hydrogel-based Flexible Hybrid Electronics Technology for Biomedical Application
°*N. Takahashi¹, Y. Susumago¹, T. Tanaka¹, T. Fukushima¹, ¹Tohoku Univ. (Japan)*

PS-7-07
Self-Waveguided Gain Narrowing of Light Emission from Single Crystals of Hexyl-Substituted Thiophene/Phenylene Co-Oligomer
°*H. Mizuno¹, F. Sasaki², H. Yanagi¹, ¹NAIST (Japan), ²AIST (Japan)*

PS-7-08
Kelvin probe study of energy level bending at interface of solution-processed alkyl-substituted phthalocyanine thin film and n-Si substrate
°*R. Ishiura¹, A. Fujii¹, M. Arita², K. Sudoh¹, M. Ozaki¹, ¹Osaka Univ. (Japan), ²Kyushu Univ. (Japan)*

PS-7-09
Accurate and stable equal-pressure measurements of water vapor transmission rate of organic electronics packages reaching the 10⁻⁶ g m⁻² day⁻¹ range
°*T. Shimada¹, ¹Hokkaido Univ. (Japan)*

PS-7-10
Withdrawn

PS-7-11
The Selectivity of Nitric Oxide and Ammonia Gas Sensor based on Surface Modified Poly-Si Nanowires FETs
°*H.-Y. Lin¹, Y.-P. Liu¹, H.-M.P. Chen¹, ¹National Chiao Tung Univ. (Taiwan)*

PS-7-12
Thin film fabrication of organic-inorganic halide perovskite by bar-coating method and its blend effect of ammonium chloride
°*M. Murata¹, M. Gi¹, R. Tsuji², A. Fujii¹, M. Ozaki¹, ¹Osaka Univ. (Japan), ²KANEKA Corp. (Japan)*

PS-7-13
Heat Resistance Improvement of Deposited Vinylidene Fluoride Oligomer Based-Infrared Sensors by Parylene C Coating
°*Y. Sutani¹, T. Fukushima¹, A. Mori¹, Y. Koshiba¹, T. Kodani², T. Kanemura², K. Ishida¹, ¹Kobe Univ. (Japan), ²DAIKIN INDUSTRIES, Ltd (Japan)*

PS-7-14
Efficiency Enhancement of an Organic Light-Emitting Diode by Silicon Quantum Dots Doping
°*Y.C. Liu¹, H.Y. Wei¹, T. Subramani², N. Fukata², Z. Pei¹, ¹Nat. Chung Hsing Univ. (Taiwan), ²NIMS (Japan)*

PS-7-15
Investigation of electret devices using liquid crystal polymer
°*T. Nishimoto¹, T. Fukushima¹, Y. Koshiba¹, S. Horike¹, Y. Tagushi², K. Ishida¹, ¹Kobe Univ. (Japan), ²POLYPLASTICS co., Ltd (Japan)*

PS-7-16
Bottom-Contact Pentacene Thin-Film Transistor with Threshold Voltages Controlled by Oxygen Plasma Treatment
°*H. Fujita¹, Y. Kimura¹, Y. Hattori¹, M. Kitamura¹, ¹Kobe Univ. (Japan)*

PS-7-17
Improved sensitivity of pH sensors based on hydrothermally grown nickel oxide nanosheets on Si surface with pyramidal cones
°*C.Y. Kuo¹, S.Y. Wang¹, S.J. Wang^{1,2}, R.M. Ko², Y.S. Chang¹, P.T. Chen¹, ¹Institute of Microelectronics, Dept. of Electrical Eng., National Cheng Kung Univ. (Taiwan), ²College of Electrical Engineering and Computer Science, National Cheng Kung Univ. (Taiwan)*

PS-7-18 (Late News)
Improving NIR sensor detectivity of BODIPY/C₆₀ bulk heterojunction photodiode
°*N. Oishi¹, T. Fukushima¹, R. Fujioka¹, Y. Koshiba¹, C. Takechi¹, S. Horike¹, K. Ishida¹, ¹Kobe Univ. (Japan)*

PS-7-19 (Late News)
UV enhanced nitric oxide gas sensor based on vertical channel nano-porous organic diodes
°*G. Madhaiyan¹, H.C. Lin¹, H.W. Zan², ¹Department of Materials science and Engineering, National Chiao Tung Univ., Hsinchu (Taiwan), ²Department of Photonics and Institute of Electro-Optical Engineering, National Chiao Tung Univ., Hsinchu (Taiwan)*

PS-7-20 (Late News)
NH₂-MWCNT/ZnO Nanocomposite as Effective Electrode Material for the Electrochemical Detection of Morin
°*W.-C. Yu¹, N. Sebastian¹, ¹National Taipei Univ. of Technology (Taiwan)*

08: Low Dimensional Devices and Materials
(22 papers)

PS-8-01
SiC Quantum Dots in Si-Oxide Layer Fabricated by Double Hot-Si⁺/C⁺-Ion Implantation Technique
T. Mizuno¹, °R. Kanazawa¹, T. Aoki¹, T. Sameshima², ¹Kanagawa Univ. (Japan), ²Tokyo Univ. of Agri. and Tech. (Japan)

PS-8-02
Extended carrier lifetime in faceted PbS quantum dot superlattice fabricated by sedimentation method
°*R. Kimura¹, S. Sugisaki¹, T. Sugimoto¹, M. Fujishima¹, S. Watanabe¹, K. Mukai¹, ¹Yokohama National Univ. (Japan)*

PS-8-03
Solid-state photon generator of silica-coated quantum dot combined with metamaterial fabricated by the scanning probe microscope lithography
°*T. Sugimoto¹, S. Sugisaki¹, S. Watanabe¹, K. Mukai¹, ¹Yokohama National Univ. (Japan)*

PS-8-04
Phonon Lifetimes: A Dependency on Size for Nano Silicon and Nano Germanium
°*S.Y.Y. Chung¹, M. Tomita¹, T. Watanabe¹, ¹Waseda Univ. (Japan)*

PS-8-05
Withdrawn

PS-8-06
High-performance 1-dimensional In-Ga-Zn-O Nanofiber Thin Film Transistors on High-k Gate Dielectrics by Microwave Irradiation and Oxygen Plasma Treatment
°*J.W. Shin¹, W.J. Cho¹, ¹Kwangwoon Univ. (Korea)*

PS-8-07
The Optimization of Ar/O₂ Mixed-plasma Treatment for Improving the Microwave-assisted In-Ga-Zn-O Nanofiber Thin Film Transistors
°S.K. Cho¹, W.J. Cho¹, ¹Kwangwoon Univ. (Korea)

PS-8-08
PVD growth of monolayer SnS under S-rich condition toward piezoelectric application
°H. Kawamoto¹, N. Higashitarumizu¹, M. Nakamura², I. Yonemori³, K. Wakabayashi², K. Nagashio¹, ¹Univ. of Tokyo (Japan), ²NIMS (Japan), ³Kwansei Gakuin Univ. (Japan)

PS-8-09
Graphene/diamond (carbon sp²-sp³) heterojunctions as novel photoelectronic devices
°Y. Imai¹, K. Ueda¹, Y. Mizuno¹, H. Asano¹, ¹Nagoya Univ. (Japan)

PS-8-10
A MoS₂ channel-based Ferro- FET with charge trapping and switching effects
°M. Zhao¹, K. Huang², X. Liu¹, H. Liu¹, ¹Inst. of Microelectronics of Chinese Academy of Sciences (China)

PS-8-11
New Contact-first Two-dimensional Transistor
°Y.W. Kang¹, C.J. Su², T.H. Hou¹, ¹National Chiao Tung Univ. (Taiwan), ²Taiwan Semiconductor Research Inst. (Taiwan)

PS-8-12
Resistance change characteristics of spray-deposited carbon nanotube thin film with bending doformation
°M. Kozono¹, H. Sato¹, ¹Mie Univ. (Japan)

PS-8-13
The Reduction of Substrate-induced Strain of Monolayer MoS₂ Grown on a Nonplanar Sapphire Substrate
°C.Y. Chang¹, S.Y. Gu^{1,2}, H.T. Lin¹, M.S. Lai^{1,2}, C.L. Yu¹, H.C. Chou¹, S.Y. Lin¹, C. Chen¹, M.H. Shih^{2,1}, ¹Academia Sinica (Taiwan), ²National Chiao-Tung Univ. (Taiwan)

PS-8-14
Effect of thermal annealing at a low temperature on exciton dynamics in semiconducting MoTe₂ crystals
°S. Hayashida¹, K. Watanabe², T. Taniguchi², K. Sawano¹, Y. Hoshi¹, ¹Tokyo City Univ. (Japan), ²NIMS (Japan)

PS-8-15
Sensitivity study on different gate dielectric dependence of DG-CNTFET using atomistic simulation NEGF approach
°C. Pandy¹, R. Narayanan², H. Mimura¹, ¹Shizuoka Univ. (Japan), ²VIT Univ. (India)

PS-8-16
Fabrication of MoS₂ layers on free-standing GaN for heterojunction photoresponsive device applications
°P. Desai¹, A.K. Ranade¹, R.D. Mahyavanshi¹, M. Tanemura¹, G. Kalita^{1,2}, ¹Nagoya Inst. of Tech. (Japan), ²Frontier Res. Inst. for Material Sci. (Japan)

PS-8-17
First-Principles Study on Formation of Freestanding Silicene and Germanene
°M. Araidai^{1,2,3}, M. Kurosawa^{2,3}, A. Ohta^{2,3}, K. Shiraishi^{1,2}, ¹IMaSS, Nagoya Univ. (Japan), ²Grad. Sch. of Eng., Nagoya Univ. (Japan), ³IAR, Nagoya Univ. (Japan)

PS-8-18
Development of Fabrication process for tin sulfide (SnS_x) thin films by solution-based atmospheric-pressure mist CVD
°S. Sato¹, P. Rutthongjan¹, L. Liu^{1,2,3}, G.T. Dang^{1,2,3}, T. Kawaharamura^{1,2,3}, ¹Eng. Course, Graduate School of Engineering, Kochi Univ. of Technol. (Japan), ²School of Systems Engineering, Kochi Univ. of Technol. (Japan), ³Center for Nanotechnology, Res. Inst., Kochi Univ. of Technol. (Japan)

PS-8-19
Chemical Vapor Deposition of NbS₂ from a Chloride Source
T. Yanase¹, S. Watanabe¹, M. Weng¹, T. Nagahama¹, °T. Shimada¹, ¹Hokkaido Univ. (Japan)

PS-8-20 (Late News)
Thickness and Aspect Ratio Dependences of Magnetic Domain Structures in Patterned CoFe Thin Films on GaAs (001) Substrates
°K. Teramoto¹, R. Horiguchi¹, Y. Adachi², M. Akabori², S. Hara¹, ¹Hokkaido Univ. (Japan), ²JAIST (Japan)

PS-8-21 (Late News)
Photoresponse Enhancement in MoS₂ Phototransistors by the Photogating Effect
°R. Nur¹, K. Toprasertpong¹, S. Takagi¹, M. Takenaka¹, ¹Univ. of Tokyo (Japan)

PS-8-22 (Late News)
Highly sensitive electrochemical sensor based on one-step synthesis of nanorod-nanoflake hybrid WS₂ for detection of uric acid and quercetin
°S. Badhulika¹, L. Durai¹, C.Y. Kong², ¹Indian Inst. of Tech. (IIT), Hyderabad (India), ²Shizuoka Univ. (Japan)

PS-8-23 (Late News)
Unidirectional out-of-plane spin textures in two-dimensional group-IV monochalcogenide MX monolayer for persistent spin helix
°M.A.U. Absor¹, F. Ishii², ¹Gadjah Mada Univ. (Indonesia), ²Kanazawa Univ. (Japan)

09: Novel Functional / Quantum / Spintronic Devices and Materials (17 papers)

PS-9-01
Hole spin g-factor in p-type silicon single and double quantum dots
°H. Wei¹, S. Mizoguchi¹, R. Mizokuchi¹, T. Kodera¹, ¹Tokyo Tech (Japan)

PS-9-02
Boron-doped Diamond Superconducting Quantum Interference Devices Operating up to 10 K
°A. Morishita¹, I. Tsuyuzaki¹, T. Kageura^{1,2}, S. Amano¹, Y. Takano², M. Tachiki², S. Ooi², S. Arisawa², H. Kawarada^{1,3}, ¹Waseda Univ. (Japan), ²MANA NIMS (Japan), ³The Kagami Memorial Laboratory for Materials Sci. and Tech. (Japan)

PS-9-03
Low-temperature Ge/Si interstitials-mediated local densification and nanocrystallization of CVD Si₃N₄ for advanced Si photonics and electronics
°K.P. Peng¹, T.L. Huang¹, T. George¹, H.C. Lin¹, P.W. Li¹, ¹National Chiao Tung Univ. (Taiwan)

PS-9-04
Thickness Effect of SiGe Layers on SiGe/Si Quantum Well Based Thermistor Performance
°C.B. Kaynak¹, Y. Yamamoto¹, A. Goeritz¹, F. Teply¹, M. Stocchi¹, M. Wietstruck¹, Y. Gurbuz², M. Kaynak^{1,2}, ¹IHP-Leibniz-Institut fuer innovative Mikroelektronik (Germany), ²Sabancı Univ. (Turkey)

PS-9-05
Characterization of Electron Field Emission from Si Quantum Dots with Ge Core/Si Quantum Dots Hybrid Stacked Structures
°T. Takemoto¹, K. Makihara¹, A. Ohta¹, M. Ikeda¹, S. Miyazaki¹, ¹Nagoya Univ. (Japan)

PS-9-06
Withdrawn

PS-9-07
Crystal orientation dependence of the spin current transmission in single crystalline NiO thin films
°T. Ikebuchi¹, T. Moriyama¹, H. Mizuno¹, K. Oda¹, H. Iwaki¹, T. Ono¹, ¹Kyoto Univ. (Japan)

PS-9-08
Spin Wave Propagation in Ferrimagnetic GdCo
°S. Funada¹, T. Nishimura¹, Y. Shiota¹, S. Kasukawa¹, M. Ishibashi¹, T. Moriyama¹, T. Ono^{1,2}, ¹Kyoto Univ. (Japan), ²Osaka Univ. (Japan)

PS-9-09
A Study of Dynamics of Skyrmioniums by Spin Transfer Torque
°Y. Ishida¹, K. Kondo¹, ¹Hokkaido Univ. (Japan)

PS-9-10
High mobility Ni-doped topological Dirac semimetal Cd₃As₂ films
°H. Wang¹, J. Ma¹, J. Zhao¹, ¹Inst. Semi., Chinese Acad. Sci. (China)

PS-9-11
Indirect-to-Direct Bandgap Transition of GeSn by Phonon-assisted Tunneling Spectra in Esaki Diodes
°C.Y. Liu¹, P.Y. Chiu¹, Y. Chuang¹, J.Y. Li¹, ¹National Taiwan Univ. (Taiwan)

PS-9-12 (Late News)
Inorganic Thin Film-based Ionic Decision-maker for Adaptive Artificial Intelligence Technology
°D. Ettoh^{1,2}, T. Tsuchiya^{1,2}, Y. Kitagawa^{1,2}, M. Takayanagi^{1,2}, T. Tsuruoka¹, T. Higuchi², K. Terabe¹, ¹NIMS (Japan), ²Tokyo Univ. of Sci. (Japan)

PS-9-13 (Late News)
Single Spin Detection With Entangled States
°H. Hakoshima¹, Y. Matsuzaki¹, ¹AIST (Japan)

PS-9-14 (Late News)
Quantum transport in twisted bilayer graphene hydrid junction devices
°D. Rui¹, L. Sun², N. Kang¹, H. Peng², Z. Liu³, H. Xu¹, ¹Beijing Key Lab. of Quantum Devices, Key Lab. for the Physics and Chemistry of Nanodevices and Department of Electronics, Peking Univ. (China), ²Center for Nanochemistry, Beijing Sci. and Eng. Center for Nanocarbons, Beijing National Lab. for Molecular Sciences, College of Chemistry and Molecular Engineering, Peking Univ. (China)

PS-9-15 (Late News)
Sensitive current measurement on a quantum antidot with a Corbino-type electrode
°T. Hata¹, T. Uchino¹, T. Akiho², K. Muraki², T. Fujisawa¹, ¹Tokyo Inst. of Tech. (Japan), ²NTT Basic Res. Labs. (Japan)

PS-9-16 (Late News)
Magnetic tunnel junction with a metastable bcc Co₂Mn alloy electrode
K. Kunimatsu^{1,2}, °T. Tsuchiya^{3,4}, K. Elphick⁵, T. Ichinose², K.Z. Suzuki^{2,4}, A. Hirohata³, S. Mizukami^{2,3,4}, ¹Dept. Appl. Phys., Grad. Sch. of Eng., Tohoku Univ. (Japan), ²WPI-AIMR, Tohoku Univ. (Japan), ³CSIS (CRC), Tohoku Univ. (Japan), ⁴CSRN. Tohoku Univ. (Japan), ⁵The Univ. of York (UK)

PS-9-17 (Late News)
Optical Outlook of the Germanium–Vacancy Center in Diamond
°M. Hanks¹, W. Munro^{2,3,1}, K. Nemoto¹, ¹National Inst. of Informatics (Japan), ²NTT Basic Res. Labs., NTT Corp. (Japan), ³NTT Res. Center for Theoretical Quantum Physics, NTT Corp. (Japan)

PS-9-18 (Late News)
Efficient Heat Transfer by Through Silicon Via in 3D Packaging for Practical-scale Quantum Annealing Machine
°W. Feng¹, K. Kikuchi¹, M. Hidaka¹, H. Yamamori¹, Y. Araga¹, K. Makise¹, S. Kawabata¹, ¹AIST (Japan)

PS-10-01
Enhanced Electrical Performance and Reliability of Ti-IGZO Thin-Film Transistors with $\text{Hf}_x\text{Al}_{1-x}\text{O}$ Gate Dielectrics
°J.H. Wu¹, B.C. You¹, S.J. Wang^{1,2}, R.M. Ko², C.E. Lin¹, ¹Institute of Microelectronics, Dept. of Electrical Engineering, National Cheng Kung Univ, Tainan (Taiwan), ²College of Electrical Engineering and Computer Science, National Cheng Kung Univ., Tainan (Taiwan)

PS-10-02
Nanostructured High-Performance Thin-Film Transistors Fabricated by Near-Field Nanolithography Strategy
°K. Huang¹, Z. Chen¹, S. Hu¹, J. Wu¹, C. Liu¹, ¹Sun Yat-sen Univ. (China)

PS-10-03
Growth of Single Crystalline ZnO Films on 18%-Lattice Mismatched Sapphire Substrates via Inverse Stranski-Krastanov Mode
°N. Itagaki¹, D. Yamashita¹, K. Kamataki¹, K. Koga¹, M. Shiratani¹, ¹Kyushu Univ. (Japan)

PS-10-04
Inducing Thermoelectricity in C-axis Aligned Crystalline InGaZnO Thin Film via Hydrogen Annealing
°J.C.E. Felizco¹, M. Uenuma¹, H. Murakawa¹, Y. Ishikawa¹, Y. Uraoka¹, ¹NAIST (Japan)

PS-10-05
Growth mechanism of Zinc Oxide thin film by mist-CVD via the modulation of $[\text{H}_2\text{O}]/[\text{Zn}]$ ratios
°P. Rutthongjan¹, M. Nishi¹, L. Liu^{1,2}, S. Sato¹, G.T. Dang^{1,2}, T. Kawaharamura^{1,2}, ¹Graduated school of Engineering Kochi Univ. of Tech. (Japan), ²Center for Nanotechnology, Research Inst. Univ. of Tech. (Japan)

PS-10-06
Structure Analysis for Clarification of Spatial Distribution of Crystals and Boundary Region between Crystals in CAAC-IGZO
°H. Baba¹, S. Mizukami¹, N. Sorida¹, H. Nakayama¹, O. Ueda², S. Yamazaki¹, ¹Semiconductor Energy Lab. Co., Ltd. (Japan), ²Meiji Univ. (Japan)

PS-10-07
High Performance Hydrogenated Oxide Field-effect Transistor
°C.D. Chen¹, C. Liu¹, ¹Sun-Yat-Sen Univ.,Guangzhou (China)

PS-10-08
Characterization of $\text{Al}_{1-x}\text{Ti}_x\text{O}_2$ thin films deposited by mist-CVD
°Z. Yatabe¹, K. Nishiyama¹, K. Nishimura¹, Y. Nakamura^{1,2}, ¹Kumamoto Univ. (Japan), ²Kumamoto Phoenix (Japan)

PS-10-09
Twin Formation in One Dimensional crystal growth of Si Thin Film During Micro Chevron Laser Beam Scanning
°W.Y. Yeh¹, A.H. Pham¹, S. Morito¹, ¹Shimane Univ. (Japan)

PS-10-10
Characterization of Asymmetry in Ni-Seed-Induced Laterally Crystallized (SILC) TFTs by Bew Gate-Floating-Drain-Current (GFDC) Method
°C.C. Chung¹, L.C. Liu¹, T.S. Chao¹, ¹National Chiao Tung Univ. (Taiwan)

PS-10-11
Atmospheric-Pressure Plasma-Enhanced Chemical Vapor Deposition of Silicon and Silicon Oxide Layers for Low-Temperature Thin Film Transistors
°H. Kakiuchi¹, H. Ohmi¹, K. Yasutake¹, ¹Osaka Univ. (Japan)

PS-10-12
Novel Pixel Circuit with External Compensation Scheme to Compensate for V_{TH} Variations in LTPS TFTs for High-Resolution AMOLED Displays
°Z.-L. Yang¹, J.-H. Chang¹, M.-H. Cheng², C.-L. Lin¹, ¹National Cheng Kung Univ. (Taiwan), ²AU Optronics (Taiwan)

PS-10-13
Suppressing Electrical Characteristic Variations in LTPS TFTs with External Compensation Method to Generate Uniform Driving Currents for High Resolution AMOLED Displays
°C.-C. Hsu¹, M.-Y. Deng¹, M.-H. Cheng², C.-L. Lin¹, ¹National Cheng Kung Univ. (Taiwan), ²AU Optronics (Taiwan)

PS-10-14
Conduction and valence band offsets of $\text{MoS}_2/(\text{HfO}_2)_x(\text{Al}_2\text{O}_3)_{1-x}$ measured by X-ray photoelectron spectroscopy
°Z. Tian¹, ¹Univ. of Fudan (China)

PS-10-15 (Late News)
Modeling of Embedded Split-Gate Flash Memory for Pattern Classification
°L.R. Gan¹, C. Wang¹, ¹Fudan Univ. (China)

PS-10-16 (Late News)
Role of TiW Barrier Layer on Resistive Switching Characteristic of ZnO-nanorods Electrochemical Metallization Cell
°P. Singh¹, F.M. Simanjuntak², S. Chandrasekaran¹, D. Panda³, T.Y. Tseng¹, ¹National Chiao Tung Univ. (Taiwan), ²Tohoku Univ. (Japan), ³National Inst. of Sci. and Tech. (India)

PS-10-17 (Late News)
The investigation of nitrogen-doped LaB₆ thin film formation on n-Si(100) substrate utilizing RF sputtering
°K.E. Park¹, H. Kamata¹, S. Ohmi¹, ¹Tokyo Tech (Japan)

PS-11-01
Study of defects in diamond Schottky barrier diode by photocurrent and photoluminescence spectroscopy
°J. Guo^{1,2}, A. Traore¹, M.H.B. Abu Bakar^{1,2}, T. Makino^{1,2}, S. Yamasaki^{1,2}, M. Ogura², T. Sakurai¹, ¹Univ. of Tsukuba (Japan), ²AIST (Japan)

PS-11-02
Nanocarbon Fabrication from Pentacene using Tungsten Mesh Supported Nickel
°A. Heya¹, R. Yamasaki², N. Matsuo¹, ¹Univ.of Hyogo (Japan), ²Tocalo Co., Ltd. (Japan)

PS-11-03
Growth of Graphitic Carbon Layers on SiO₂ Surfaces of Silicon Nanowires
°S.M. Wallace^{1,2}, T. Subramani^{2,3}, N. Fukata^{1,2}, ¹Univ. of Tsukuba (Japan), ²NIMS (Japan), ³Int'l Center for Young Scientists (Japan)

PS-11-04
Sub 10nm Localized Thinning of Atomic Layers Tungsten Disulfide via In-situ STEM/TEM
°Y.T. Tseng¹, K.L. Tai¹, W.W. Wu¹, ¹National Chiao Tung Univ. (Taiwan)

PS-11-05
Optical Characterization of PbI₂ Crystals Grown by Chemical Vapor Transport
°B.C. Kuo¹, D.Y. Lin¹, H.P. Hsu², S.B. Hwang³, ¹National Changhua Univ. of Edu. (Taiwan), ²Ming Chi Univ. of Tech. (Taiwan), ³Chienkuo Tech. Univ. (Taiwan)

PS-11-06
Influence of Dopant on Thermoelectric Properties of Si-rich Poly-Si_{1-x}Sn_x Layers Grown on Insulators
°K. Sato¹, O. Nakatsuka^{1,2}, M. Kurosawa^{1,3,4}, ¹Grad. Sch. Eng., Nagoya Univ. (Japan), ²IMaSS, Nagoya Univ. (Japan), ³IAR, Nagoya Univ. (Japan), ⁴JST-PRESTO (Japan)

PS-11-07
Hole Mobility Enhancement Observed in (110)-Oriented Strained Si
°K. Arimoto¹, N. Utsuyama¹, S. Mitsui¹, K. Satoh¹, T. Yamada¹, J. Yamanaka¹, K.O. Hara¹, K. Sawano², K. Nakagawa¹, ¹Univ. of Yamanashi (Japan), ²Tokyo City Univ. (Japan)

PS-11-08
Low-Temperature Bi-Induced Layer Exchange Crystallization for Formation of n-Type Ge on Insulator
°X. Gong¹, S. Liu¹, H. Gao¹, T. Sadoh¹, ¹Kyushu Univ. (Japan)

PS-11-09
Metamorphic Growth of GaSb/AlGaSb on GaAs Substrates Using Antimonidation of Epitaxial Aluminum Nanofilms
°Y.H. Wu¹, J.S. Wu², S.D. Lin¹, ¹National Chiao Tung Univ. (Taiwan), ²National Changhua Univ. of Edu. (Taiwan)

PS-11-10
Laser Slicing Lift-Off Process for GaN-on-GaN Technology
°V. Voronenkov^{1,2}, N. Bochkareva¹, R. Gorbunov^{1,2}, A. Zubrilov^{1,2}, V. Kogotkov², P. Latyshev², Y. Lelikov^{1,2}, A. Leonidov², Y. Shreter^{1,2}, ¹Ioffe Institute (Russia), ²TRINITRI-Technology (Russia)

PS-11-11
Hydride Vapor Phase Epitaxy Reactor for Bulk GaN Substrate Manufacturing
°V. Voronenkov^{1,2}, N. Bochkareva¹, R. Gorbunov^{1,2}, A. Zubrilov^{1,2}, V. Kogotkov², P. Latyshev², Y. Lelikov^{1,2}, A. Leonidov², Y. Shreter^{2,1}, ¹Ioffe Institute (Russia), ²TRINITRI-Technology (Russia)

PS-11-12
Study on Initial Growth Mechanism of $(\text{ZnO})_{1-x}(\text{InN})_x$ Using First Principles Calculations
°R. Furuki¹, M. Oda¹, Y. Shinozuka¹, ¹Wakayama Univ. (Japan)

PS-11-13
Dynamic Observation of Functional Metal Oxide Conversion Behaviors in Fe/ZnO Interfaces
°C.Y. Huang¹, K.L. Tai¹, J.Y. Chen², W.W. Wu¹, ¹National Chiao Tung Univ. (Taiwan), ²National United Univ. (Taiwan)

PS-11-14
Optical and Humidity Sensors Fabricated by SnS₂ film and SnS₂ bulk Materials
°Y.C. Yang¹, D.Y. Lin¹, C.F. Lin², H.P. Hsu³, ¹National Changhua Univ. of Edu. (Taiwan), ²National Chung Hsing Univ. (Taiwan), ³Ming Chi Univ. of Tech. (Taiwan)

PS-11-15
Optical Sensors of Cd_{1-x}Zn_xTe Bulk Semiconductors Grown by Vertical Bridgman-Stockbarger method
°C.W. Chen¹, D.Y. Lin¹, H.P. Hsu², Y.F. Wu², K. Strzalkowski³, P. Sitarek⁴, ¹National Changhua Univ. of Edu. (Taiwan), ²Ming Chi Univ. of Tech. (Taiwan), ³Nicolaus Copernicus Univ. (Poland), ⁴Wroclaw Univ. of Sci. and Tech. (Poland)

PS-11-16
Electrochemical properties of Co-doped BiVO₄ nanoparticles
°J. Khajonrit¹, ¹Suranaree Univ. of Tech. (Thailand)

PS-11-17 (Late News)
Study of Si-layers on graphite-substrates obtained through electrochemical reduction of silica powder
°M.M. Islam¹, H. Said², H.H. Ahmed², K. Akimoto¹, T. Sakurai¹, ¹Univ. of Tskuba (Japan), ²Univ. Tunis-El-Manner (Tunisia)

PS-11-18 (Late News)
Optoelectronic properties of PSS/oxidized cabon nanohorns composite films
°R. Obara¹, Y. Chonan¹, T. Komiyama¹, K. Kotani¹, H. Yamaguchi¹, Y. Momo^{1,2}, ¹Akita Prefectural Univ. (Japan), ²Toyo Ltd. (Japan)

PS-11-19 (Late News)
Activation and Recrystallization of Ultra-High-Dose Phosphorus-Implanted Silicon using Multi-Pulse Nanosecond Laser Annealing
°H. Shin¹, H.-Y. Ryu¹, C.H. Song¹, H. Park¹, D.-H. Ko¹, ¹Yonsei Univ. (Korea)

Special: Advanced Circuits/Systems Interacting with Innovative Devices & Materials
(7 papers)

PS-SP-01
A 17.6-to-24.3 GHz -193.3-dB FoM₁ LC-VCO for 60-GHz Wireless Applications
°Z. Zhang^{1,2}, L. Liu^{1,2}, N. Qi^{1,2}, J. Liu^{1,2}, N. Wu^{1,2}, ¹Inst. of Semiconductors, Chinese Academy of Sciences (China), ²Univ. of Chinese Academy of Sciences (China)

PS-SP-02
Ultrasmall Area and Ultralow Frequency Ring-oscillator Using GIDL Current for IoT Edge Applications
°B. Du¹, Z. Qian¹, K.M. Lee¹, R. Yabuki¹, T. Fukushima¹, F. Alves Satake¹, H. Kino¹, T. Fukushima¹, K. Kiyoyama², T. Tanaka¹, ¹Tohoku Univ. (Japan), ²Nagasaki Inst. of Applied Sci. (Japan)

PS-SP-03
A Fast-Locking All-Digital PLL with Dynamic Loop Gain Control and Phase Self-Alignment Mechanism for Sub-GHz IoT Applications
°H.H. Wang¹, Y.L. Lo¹, W.B. Yang², ¹National Kaohsiung Normal Univ. (Taiwan), ²Tamkang Univ. (Taiwan)

PS-SP-04
Plasmonic Filters Integrated into Back-illuminated CMOS Image Sensor for Spectrometric Applications
Y. Lee, B. Kim, °D. Keum¹, T. Kim, H. Song, C. Moon, Y. Park, ¹Samsung Electronics CO., LTD. (Korea)

PS-SP-05
Gain control circuit for audio mixer utilizing CAAC-IGZO FETs
°K. Kimura¹, T. Hirose¹, Y. Ando¹, H. Kobayashi¹, T. Ikeda¹, S. Yamazaki¹, ¹Semiconductor Energy Lab. Co., Ltd. (Japan)

PS-SP-06
The Impact of Layout Dependent Parasitic RLC on High Frequency Performance in 3T and 4T MF nMOSFETs
°J.C. Guo¹, J.R. Ou¹, J.-M. Lin¹, ¹National Chiao Tung Univ. (Taiwan)

PS-SP-07 (Late News)
An Inductively Coupled Wireless Bus for Inter-Chiplet Communication
°J. Kadomoto¹, S. Mitsuno¹, H. Irie¹, S. Sakai¹, ¹Univ. of Tokyo (Japan)

Wednesday, September 4

ES Meeting Room	ES021	ES022	ES024	ES025	ES033
Area 7:Organic & Bio A-4:Biophotonic Devices (15:30-16:30) Session Chair: H.M. Chen (NCTU), T. Tokuda (Tokyo Tech)		Area 6:Energy C-4:Energy Harvesting (15:30-16:00) Session Chair: M. Ikegami (Toin Univ. of Yokohama) H. Shinohara (CEREBA)	Area 8:Low D D-4:2D Materials & Devices I (15:30-16:30) Session Chair: T. Kawanago (Tokyo Tech), K. Nagashio (Univ. of Tokyo)	Area 9:Novel Function & Spintronics E-4:Novel Functional Devices (15:30-16:30) Session Chair: Y. Nishi (Toshiba Corp.), K. Ota (Toshiba Memory Corp.)	Area 11:Growth & Characterization F-4:2D Materials (15:30-16:30) Session Chair: A. Heya (Univ. of Hyogo), J. Yamaguchi (Fujitsu Labs. Ltd.)
15:30 A-4-01 (Invited) Intelligent biophotonic imaging for clinical applications °C.-W. Sun ¹ , ¹ National Chiao Tung Univ. (Taiwan)		15:30 C-4-01 (Invited) Percutaneous Electrical Stimulation for Virtual Reality °K. Aoyama ¹ , ¹ Univ. of Tokyo (Japan)	15:30 D-4-01 (Invited) Artificial Synapses based on 2D Materials for Neuromorphic Computing Lin Wang ^{1,2} , Yong-Wei Zhang ³ , Dongzhi Chi ¹ , °Kah-Wee Ang ^{1,2} , ¹ National Univ. of Singapore (Singapore), ² Centre for Advanced 2D Materials, National Univ. of Singapore (Singapore), ³ Institute of High Performance Computing, A*STAR (Singapore), ⁴ Institute of Materials Research and Engineering, A*STAR (Singapore)	15:30 E-4-01 (Invited) Neuromorphic computing based on Highly reliable Analog ReRAM by filament control °T. Mikawa ¹ , R. Yasuhara ¹ , K. Katayama ¹ , K. Kouno ¹ , T. Ono ¹ , R. Mochida ¹ , M. Nakayama ¹ , H. Suwa ¹ , Y. Gohou ¹ , T. Kakiage ¹ , ¹ Panasonic Semiconductor Solutions Co., Ltd. (Japan)	15:30 F-4-01 (Invited) 2D Oxide and Hydroxide Nanosheets: Synthesis, Layer-by-Layer Assembly and Function Design °T. Sasaki ¹ , Y. Ebina ¹ , N. Sakai ¹ , R. Ma ¹ , M. Osada ¹ , ¹ NIMS (Japan)
16:00 A-4-02 Development of Wireless Opto-Neural Probe with Upconversion Nanoparticles (UCNP) for Optogenetics °S. Urayama ¹ , H. Kino ¹ , T. Fukushima ¹ , T. Tanaka ¹ , ¹ Tohoku Univ. (Japan)		16:00 C-4-02 Withdrawn	16:00 D-4-02 Band Alignment in Charge-Transfer-Type p⁺-WSe₂/MoS₂ Tunnel FET °K. Nakamura ¹ , N. Nagamura ² , K. Ueno ³ , T. Taniguchi ² , K. Watanabe ² , K. Nagashio ¹ , ¹ Univ. of Tokyo (Japan), ² NIMS (Japan), ³ Saitama Univ. (Japan)	16:00 E-4-02 Impact of Scaling the VO₂-Channel Mott Transistor below Material Correlation Length °T. Yajima ^{1,2} , Y. Samata ¹ , T. Nishimura ¹ , A. Toriumi ¹ , ¹ Univ. of Tokyo (Japan), ² JST PRESTO (Japan)	16:00 F-4-02 Synthesis of Ge-based Nanosheet Bundles Using Calcium Germanides as Templates in IP6 Aqueous Solution °V. Saxena ¹ , Y. Shimura ² , H. Tatusoka ¹ , ¹ GSIST, Shizuoka Univ. (Japan), ² Res. Inst. of Electronics, Shizuoka Univ. (Japan)
16:15 A-4-03 (Late News) A Printed Metal-oxide-free Cathode for Mechanically-durable and Ultra-flexible Organic Photovoltaics °Z. Jiang ^{1,2} , K. Fukuda ^{1,3} , T. Someya ^{1,2,3} , ¹ The Thin-film Device Lab, RIKEN (Japan), ² Univ. of Tokyo (Japan), ³ CEMS, RIKEN (Japan)		16:15 C-4-03 Withdrawn	16:15 D-4-03 High Performance Three-Terminal Synaptic Transistor based on Ferroelectric Hf_{0.5}Zr_{0.5}O₂/Tungsten Disulfide for Neuromorphic Computing °L. Chen ^{1,2} , L. Wang ^{1,2} , Y. Peng ³ , X. Feng ^{1,2} , S. Sarkar ¹ , S. Li ^{1,2} , B. Li ^{1,2} , L. Liu ² , J. Chen ³ , Y. Liu ³ , G. Han ³ , K.-W. Ang ^{1,2} , ¹ Department of Electrical and Computer Engineering, National Univ. of Singapore (Singapore), ² Centre for Advanced 2D Materials, National Univ. of Singapore (Singapore), ³ State Key Discipline Laboratory of Wide Band Gap Semiconductor Technology, Xidian Univ. (China), ⁴ NUSNNI-NanoCore, National Univ. of Singapore (Singapore), ⁵ Department of Materials Science and Engineering, National Univ. of Singapore (Singapore)	16:15 E-4-03 Fabrication and Irradiation Effects of Field-Induced Two-Dimensional Electron Gas in Dopant-Etched Modulation-Doped GaAs/AlGaAs Heterostructures °G. Fukuda ¹ , T. Fujita ¹ , Y. Kanai ¹ , K. Matsumoto ¹ , J. Ritzmann ² , A. Ludwig ² , A.D. Wieck ² , A. Oiwa ¹ , ¹ Osaka Univ. (Japan), ² Ruhr-Univ. (Germany)	16:15 F-4-03 Growth of Ultrathin Segregated-Ge Crystal on Al/Ge(111) Surface °M. Kobayashi ¹ , A. Ohta ¹ , M. Kurosawa ¹ , M. Araidai ¹ , M. Ikeda ¹ , N. Taoka ¹ , T. Shimizu ² , K. Makihara ¹ , S. Miyazaki ¹ , ¹ Nagoya Univ. (Japan), ² Kansai Univ. (Japan)

Rump Sessions (17:00~18:30)

[Rump Session A] (Toyoda Auditorium Meeting Room)
Will Memory change in the age of AI, IoT, VR/AR and 5G?
Moderator: N. Takaura, Hitachi, Ltd.

[Rump Session B] (Noyori Conference Hall)
Wide Band Gap and Silicon Power: Vision to Reality
Coordinator: D. Hisamoto, Hitachi, Ltd.
Moderator: I. Omura, Kyushu Institute of Technology

Wednesday, September 4

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
Area 10:Thin Film G-4:Advanced Fabrication Technologies (15:30-16:30) Session Chair: H. Ikenoue (Kyushu Univ.), W. Yeh (Shimane Univ.)			Area 4:Power & High-speed K-4:GaN High Frequency Devices (15:30-16:45) Session Chair: T. Suzuki (JAIST), K. Tsuda (Toshiba Infrastructure Systems & Solutions Corp.)	Joint Session(Area2&SP) M-4:Advanced Memory Systems (15:30-16:45) Session Chair: K. Johguchi (Shinshu Univ.), T. Sakamoto (NEC Corp.)	Area 1:Advanced CMOS N-4:3D and Stacking Technology (15:30-16:30) Session Chair: H. Oishi (Sony Semiconductor Solutions Corp.) F.L. Yang (Academia Sinica)
15:30 G-4-01 Development of High Yield Layer Transfer Process of Single Crystalline Silicon Thin Film on Plastic Substrate and Its Application to Floating Gate Memory Fabrication °T. Hirano ¹ , R. Mizukami ¹ , T. Yamashita ¹ , F. Kondo ¹ , H. Hanafusa ¹ , Y. Mizukawa ¹ , S. Higashi ¹ , ¹ Hiroshima Univ. (Japan)			15:30 K-4-01 (Invited) Surface Activated Bonding of SiC/Diamond for Thermal Management of High-Output Power GaN HEMTs °Y. Minoura ^{1,2} , T. Ohki ^{1,2} , N. Okamoto ^{1,2} , A. Yamada ^{1,2} , K. Makiyama ^{1,2} , J. Kotani ^{1,2} , S. Ozaki ^{1,2} , M. Sato ^{1,2} , N. Nakamura ^{1,2} , ¹ Fujitsu Ltd. (Japan), ² Fujitsu Labs. Ltd. (Japan)	15:30 M-4-01 An Ultra-Low-Power STT-MRAM-Based Multi-Core Associative Coprocessor with Inter-Core Pipeline Scheme for Large-Scale Full-Adaptive Nearest Pattern Search °Y. Ma ¹ , S. Miura ¹ , H. Honjo ¹ , S. Ikeda ¹ , T. Endoh ¹ , ¹ Tohoku Univ. (Japan)	15:30 N-4-01 (Invited) Recent progress in sequential 3D device stacking: Low temperature reliable top tier junction-less devices on 300mm wafers. °A. Vandooren ¹ , J. Franco ¹ , Z. Wu ¹ , B. Parvais ¹ , G. Besnard ² , W. Schwarzenbach ² , I. Radu ² , B.-Y. Nguyen ² , N. Collaert, ¹ imec (Belgium), ² SOITEC (France)
15:45 G-4-02 High-performance Transfer Printing method using Acetone Soluble Tape without adhesion promoter for Heterogeneous Integration °J. Zhang ¹ , Y.C. Wu ¹ , Z. Li ¹ , Y. Peng ¹ , Y.C. Zhang ¹ , C.F. Zhang ¹ , Y. Hao ¹ , ¹ Xidian Univ. (China)				15:45 M-4-02 Design of an Energy-Efficient Controller for Realizing a Data-Shift-Minimized Nonvolatile FPGA °D. Suzuki ¹ , T. Hanyu ¹ , ¹ Tohoku Univ. (Japan)	
16:00 G-4-03 Low Temperature Poly-Si Junctionless TFTs with Low Temperature Cyclic Trimming Process for 3D-ICs and Low Power Applications °C.C-C. Chung ¹ , C.M. Ko ¹ , T.S. Chao ¹ , ¹ National Chiao Tung Univ. (Taiwan)			16:00 K-4-02 Low Turn-on Voltage and High Breakdown GaN Schottky Barrier Diodes for RF Energy Harvesting Applications C.-H. Li ¹ , °H. Wang ¹ , Y. Liu ¹ , S.D. Joseph ² , Y. Huang ² , S.S.H. Hsu ¹ , ¹ National Tsing Hua Univ. (Taiwan), ² Univ. of Liverpool (UK)	16:00 M-4-03 Alternate Pulse Scheme in a Hardware Neural Network for Reducing the Influence of Asymmetry on Weight Updating °C. Li ¹ , J. An ¹ , Y.-H. Song ¹ , ¹ Hanyang Univ. (Korea)	16:00 N-4-02 Bottom Tier High Voltage Device Thermal Stability in 3D Sequential Integration for More than Moore Applications °C. Cavalcante ^{1,2,3} , G. Ghibaud ² , X. Garros ¹ , M. Cassé ¹ , T. Karatsori ² , J. Lacord ¹ , C. Fenouillet ¹ , N. Rambal ¹ , O. Rozeau ¹ , J.P. Colinge ¹ , M. Vinet ¹ , D. Lattard ¹ , F. Andrieu ¹ , P. Batude ¹ , ¹ Lab. CEA-LETI, MINATEC (France), ² Inst. IMEP-LAHC, Grenoble INP (France), ³ Univ. Grenoble Alpes (France)
16:15 G-4-04 Asymmetrical Voltage Driving for Memory Window Improvement of Flexible 1TFT-1RRAM Cells for Future Internet-of-Things Applications °A. Lebanov ^{1,2} , A. Fantini ¹ , J. Genoe ^{1,2} , P. Heremans ^{1,2} , K. Myny ¹ , ¹ imec (Belgium), ² KU Leuven (Belgium)			16:15 K-4-03 Gallium-nitride-based Heterojunction Bipolar Transistors with Two-dimensional Hole Gas Fabricated by Epitaxial Lift-off Process °T. Kumabe ¹ , M. Ogura ¹ , A. Tanaka ^{2,3} , Y. Ando ¹ , H. Watanabe ² , S. Usami ¹ , M. Deki ² , S. Nitta ² , Y. Honda ² , H. Amano ^{2,3,4,5} , ¹ Dept. of Electronics, Nagoya Univ. (Japan), ² IMaSS, Nagoya Univ. (Japan), ³ NIMS (Japan), ⁴ VBL, Nagoya Univ. (Japan), ⁵ ARC, Nagoya Univ. (Japan)	16:15 M-4-04 Investigation of Gate-Length Dependence of Memory Window for 2D Ferroelectric-FET NVMs Considering the Impact of Spacers °W.-X. You ¹ , P. Su ¹ , ¹ National Chiao Tung Univ. (Taiwan)	16:15 N-4-03 Effects of hydrogen ion implantation dose on electrical and physical properties of (100) and (111) Ge-on-insulator substrates fabricated by Smart-cut process °C.-M. Lim ¹ , Z. Zhao ¹ , K. Sumita ¹ , K. Toprasertpong ¹ , M. Takenaka ¹ , S. Takagi ¹ , ¹ Univ. of Tokyo (Japan)
			16:30 K-4-04 (Late News) High-Power GaN-on-Diamond HEMTs Fabricated by Surface-Activated Room-Temperature Bonding °S. Hiza ¹ , M. Fujikawa ¹ , Y. Takiguchi ¹ , K. Nishimura ¹ , E. Yagyu ¹ , T. Matsumae ² , Y. Kurashima ² , H. Takagi ² , M. Yamamuka ¹ , ¹ Mitsubishi Electric Corp. (Japan), ² AIST (Japan)	16:30 M-4-05 (Late News) An Accuracy Improved Resistance Measurement Platform For Evaluation of Emerging Memory Materials °T. Maeda ¹ , Y. Omura ¹ , R. Kuroda ¹ , A. Teramoto ¹ , T. Suwa ¹ , S. Sugawa ¹ , ¹ Tohoku Univ. (Japan)	

Rump Sessions (17:00~18:30)

Thursday, September 5

ES Meeting Room	ES021	ES022	ES024	ES025	ES033
Area 7:Organic & Bio A-5:Sensor and Application	Area 5:Photonics B-5:Photonic Devices Based on Novel Materials	Area 6:Energy C-5:Compound Solar Cell	Area 8:Low D D-5:Nanodevices	Area 9:Novel Function & Spintronics E-5:Spintronics I	Area 11:Growth & Characterization F-5:Growth Mechanism of III-V Materials
(9:00-10:15) Session Chair: T. Tanaka (Tohoku Univ.), C.H. Liu (National Tsing Hua Univ.)	(9:00-10:15) Session Chair: D. Okamoto (PETRA), Y. Ota (Univ. of Tokyo)	(9:00-10:15) Session Chair: T. Hoshii (Tokyo Tech), H. Suzuki (Univ. of Miyazaki)	(9:00-10:15) Session Chair: T. Mano (NIMS), R. Kaji (Hokkaido Univ.)	(9:00-10:15) Session Chair: J. Nitta (Tohoku Univ.), H. Sanada (NTT Basic Res. Labs.)	(9:00-10:15) Session Chair: Y. Tominaga (Hiroshima Univ.), T. Yamaguchi (Kogakuin Univ.)
9:00 A-5-01 (Invited) Wearable Respiratory Sensor Measuring Capacitance Constructed Across Skin Allowing Walking Motion °M. Sasaki ¹ , ¹ Toyota Tech. Inst. (Japan)	9:00 B-5-01 (Invited) Graphene-Based Optical Modulators for Next Generation Datacom °C. Alessandri ^{1,2} , I. Asselberghs ¹ , S. Brems ¹ , C. Huyghebaert ¹ , J.V. Campenhout ¹ , D.V. Thourhour ² , M. Pantouvaki ¹ , ¹ Imec (Belgium), ² Ghent Univ. (Belgium)	9:00 C-5-01 (Invited) Recent progress on HVPE-grown III-V solar cells with extremely high growth rates °R. Oshima ¹ , Y. Shoji ¹ , A. Ubukata ² , T. Aihara ¹ , K. Makita ¹ , T. Sugaya ¹ , ¹ AIST (Japan), ² TNSC (Japan)	9:00 D-5-01 (Invited) Development of Quantum Dot Lasers and their Applications °K. Nishi ¹ , K. Takemasa ¹ , M. Sugawara ¹ , ¹ QD Laser, Inc. (Japan)	9:00 E-5-01 (Invited) Flexible spintronics devices for mechanical sensing °D. Chiba ¹ , ¹ Osaka Univ. (Japan)	9:00 F-5-01 Ab initio Study for Adsorption and Desorption Behavior at Step Edges of AlN(0001) and GaN(0001) Surfaces °T. Akiyama ¹ , T. Ohka ¹ , K. Nakamura ¹ , T. Ito ¹ , ¹ Mie Univ. (Japan)
9:30 A-5-02 1-Chip ExG Recording System with Electrode Interface Evaluation Functions for Biologically Safe Recording °Z. Qian ¹ , H. Hashimoto ¹ , K.M. Lee ¹ , R. Yabuki ¹ , B. Du ¹ , H. Kino ¹ , T. Fukushima ¹ , K. Kiyoyama ² , T. Tanaka ¹ , ¹ Tohoku Univ. (Japan), ² Nagasaki Inst. of Applied Sci. (Japan)	9:30 B-5-02 Photoreponsivity Evaluation of a Multi-Channel Graphene Nanoribbon based Field Effect Transistor Structure °J.A. Goundar ¹ , K. Suzuki ² , H. Miura ² , ¹ Department of Finemechanics, Graduate School of Engineering, Tohoku Univ. (Japan), ² Fracture and Reliability Research Institute, Graduate School of Engineering, Tohoku Univ. (Japan)	9:30 C-5-02 Control of electronic structure in Cu(In,Ga)(S,Se)₂ for high efficiency solar cells °T. Maeda ¹ , M. Yanagita ¹ , R. Nakanishi ¹ , T. Wada ¹ , ¹ Ryukoku Univ. (Japan)	9:30 D-5-02 Enhancement to Optical Gain Difference of Structures and Interdot spacing in Multi-stack Semiconductor Quantum Dots °K. Goshima ¹ , N. Tsuda ¹ , T. Sugaya ² , T. Amano ² , ¹ Aichi Institute of Technology (Japan), ² AIST (Japan)	9:30 E-5-02 In-plane to perpendicular magnetic anisotropy switching in heavily-Fe-doped ferromagnetic semiconductor (Ga,Fe)Sb with high Curie temperature °S. Goel ¹ , L.D. Anh ¹ , S. Ohya ^{1,2} , M. Tanaka ^{1,2} , ¹ Univ. of Tokyo (Japan), ² CSR Univ. of Tokyo (Japan)	9:30 F-5-03 Novel approach for Growth Mechanism of Atomic Layer Epitaxy of GaAs and AlAs °N. Ohtsuka ¹ , M. Oda ¹ , T. Eshita ^{1,2} , I. Tanaka ¹ , C. Itoh ¹ , ¹ Wakayama Univ. (Japan), ² Fujitsu Semiconductor LTD. (Japan)
9:45 A-5-03 (Late News) Carrier Transport Study on Triphenylamine-Thienothiophene-Based Hole Transport Material by Utilizing MIS-CELIV Method °W.J. Kim ¹ , Y. Nishikawa ¹ , T.-T. Bu ¹ , Q.-D. Dao ³ , A. Fujii ¹ , M. Ozaki ¹ , ¹ Osaka Univ. (Japan), ² Univ. de Cergy-Pontoise (France), ³ VNU-Univ. of Science (Viet Nam)	9:45 B-5-03 Optical Gain in Mid-Refractive Index Contrast (Er_{0.1}Y_{0.9})₂Zr₂O₇/SiO₂ Waveguide Prepared by Radical Assisted Sputtering K. Miyagi ¹ , Y. Tanaka ^{1,2} , A. Minowa ¹ , G. Nakamura ¹ , °H. Isshiki ¹ , ¹ The Univ. of Electro-Communications (Japan), ² Shincron Co., LTD. (Japan)	9:45 C-5-03 Characterization of subcell open-circuit voltages in InGaP/GaAs tandem solar cells fabricated using hydride vapor phase epitaxy °T. Aihara ¹ , T. Tayagaki ¹ , R. Oshima ¹ , Y. Shoji ¹ , K. Makita ¹ , T. Sugaya ¹ , ¹ AIST (Japan)	9:45 D-5-03 Growth and Electrical Properties of In-Situ Doped GeSn Nanowires for Low Power Tunnel Field Effect Transistor. °T.J. Haffner ¹ , F. Bassani ¹ , P. Gentile ² , N. Pauc ³ , E. Martinez ³ , T. Baron ¹ , E. Robin ¹ , S. David ¹ , B. Salem ¹ , ¹ CEA/LETI/DCOS/LTM (France), ² CEA/INAC-Pheligs (France), ³ CEA/LETI/DTSI (France), ⁴ CEA/INAC-MEM (France)	9:45 E-5-03 Magnetic Dynamics of Quasi-antiferromagnetic Layer Fabricated by 90 Degrees Magnetic Coupling °S. Horiike ¹ , G. Nagashima ¹ , Y. Kurokawa ¹ , Y. Zhong ¹ , K. Yamano ^{1,2} , T. Tanaka ¹ , K. Matsuyama ¹ , H. Yuasa ¹ , ¹ Kyushu Univ. ISSE (Japan), ² Univ. College London (UK)	9:45 F-5-04 Pregrowth treatment induced below-bandgap states in GaAs °R.C.I. Roca ¹ , K. Fukui ¹ , H. Mizuno ¹ , M. Suzuki ¹ , I. Kamiya ¹ , ¹ Toyota Tech. Inst. (Japan)
10:00 A-5-04 (Late News) Co-porphyrin-functionalized CVD graphene ammonia sensor with high selectivity to hydrogen. °K. Sawada ^{1,2} , T. Tanaka ¹ , T. Yokoyama ² , R. Yamachi ² , Y. Oka ³ , Y. Chiba ³ , H. Masa ² , J. Terao ³ , K. Uchida ¹ , ¹ Dept. of Materials Engineering, Univ. of Tokyo (Japan), ² Dept. of Electronics and Electrical Engineering, Keio Univ. (Japan), ³ Dept. of Basic Sci. Graduate School of Arts and Sciences Univ. of Tokyo (Japan)	10:00 B-5-04 Photonic Crystal Nanolasers with Enhanced Wavelength Tunability by Waveguides °T.-W. Lu ¹ , C.-H. Lai ¹ , P.-T. Lee ¹ , ¹ National Chiao Tung Univ. (Taiwan)	10:00 C-5-04 Growth and Evaluation of GaAsN Films With Different N Distribution Grown by Atomic Layer Epitaxy °M. Kawano ¹ , R. Minematsu ¹ , T. Haraguchi ¹ , A. Fukuyama ¹ , H. Suzuki ¹ , ¹ Univ. of Miyazaki (Japan)	10:00 D-5-04 (Late News) Realization of Large Breakdown Voltage of GaAsSb-Based Backward Diodes using Carrier Depletion Effect Originating from Nanowires °T. Takahashi ^{1,2} , K. Kawaguchi ^{1,2} , M. Sato ^{1,2} , M. Suhara ³ , N. Okamoto ^{1,2} , ¹ Fujitsu Ltd. (Japan), ² Fujitsu Labs. Ltd. (Japan), ³ Tokyo Metropolitan Univ. (Japan)	10:00 E-5-04 Large magnetoresistance and spin-dependent output voltage in a lateral MnGa/GaAs/MnGa spin-valve device °K. Chonan ¹ , N.H.D. Khang ¹ , M. Tanaka ^{2,3} , P.N. Hai ^{1,3} , ¹ Department of Electrical and Electronic Eng., Tokyo Inst. of Tech. (Japan), ² Department of Electrical Eng. and Info. Systems, Univ. of Tokyo (Japan), ³ Center for Spintronics Research Network, Graduate School of Eng., Univ. of Tokyo (Japan)	10:00 F-5-05 (Late News) Analysis of Inclined Threading Dislocation from GaN [0001] by Raman mapping °N. Kokubo ^{1,2} , S. Inotsume ^{1,2} , Y. Tsunooka ^{1,2} , F. Fujie ¹ , J. Ohara ¹ , S. Onda ¹ , H. Yamada ² , M. Shimizu ^{1,2} , S. Harada ¹ , M. Tagawa ¹ , T. Ujihara ^{1,2} , ¹ Nagoya Univ. (Japan), ² AIST (Japan)

Thursday, September 5

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
Area 10:Thin Film G-5:Oxide Process and Applications	Area 2:Memory H-5:Memory Computing and MTP	Area 3:Interconnect J-5:3D Integration II	Area 4:Power & High-speed K-5:Wide-Bandgap Device Processing	Special Area:Circuits/Systems M-5:Low Power and High Efficiency Circuits	Area 1:Advanced CMOS N-5:Process Science and Technology
(9:00-10:15) Session Chair: S. Higashi (Hiroshima Univ.), J. Koyama (Semiconductor Energy Laboratory Co.,LTD.)	(9:00-10:15) Session Chair: N. Takaura (Hitachi, Ltd.), K. Yamamoto (Toshiba Memory Corp.)	(9:00-10:15) Session Chair: M. Kodera (Moses Lake Industries, Inc.), M. Mariappan (Tohoku Univ.)	(9:00-10:15) Session Chair: S. Ohmagari (AIST), S. Ozaki (Fujitsu Labs. Ltd.)	(9:00-10:15) Session Chair: T. Minotani (NTT Device Tech. Labs.), J.C. Guo (NCTU)	(9:00-10:15) Session Chair: H. Itokawa (Toshiba Memory Corp.), N. Planes (STMicroelectronics)
9:00 G-5-01 Characteristics Variations and Reliability of CAAC-IGZO FETs °S. Tezuka ¹ , T. Takeuchi ¹ , H. Sawai ¹ , M. Kurata ¹ , T. Kakehata ¹ , K. Ikeda ¹ , R. Motoyoshi ¹ , T. Hanada ¹ , E. Asano ¹ , T. Murakawa ¹ , S. Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co., Ltd. (Japan)	9:00 H-5-01 (Invited) Next Generation Memory System in Data-centric Computing °M. Takahashi ¹ , ¹ Toshiba Memory Corp. (Japan)	9:00 J-5-01 (Invited) Wafer to Wafer Stacking and Hybrid Bonding for Heterogeneous Integration °K. Takahashi ¹ , ¹ AIST (Japan)	9:00 K-5-01 (Invited) Advances in inversion channel diamond MOSFETs °N. Tokuda ^{1,2} , T. Matsumoto ¹ , T. Inokuma ¹ , S. Yamasaki ^{1,2} , H. Kato ² , T. Makino ² , C.E. Nebel ^{1,3} , ¹ Kanazawa Univ. (Japan), ² AIST (Japan), ³ Fraunhofer Inst. (Germany)	9:00 M-5-01 (Invited) High-efficiency Wireless Power Transfer System L. Pamungkas ¹ , M. Tampubolon ¹ , °H.-J. Chiu ¹ , ¹ National Taiwan Univ. of Sci. and Tech. (Taiwan)	9:00 N-5-01 (Invited) FinFET Extension towards N3 and Beyond – Local Fin Trimming °T. Miyashita ¹ , S. Mittal ¹ , K. Suen ¹ , M.S. Kim ¹ , A. Pal ¹ , A. Sachid ¹ , M. Cogorno ¹ , ¹ Applied Materials, Inc. (USA)
9:15 G-5-02 Low-temperature (150 °C) Processed Metal-Semiconductor Field-Effect Transistor with Hydrogenated In–Ga–Zn–O Stacked Channel °Y. Magari ¹ , M. Aman ¹ , D. Koretomo ¹ , K. Masuda ¹ , K. Shimpo ¹ , M. Furuta ^{1,2} , ¹ Kochi Univ. of Tech. (Japan), ² Center for Nanotech. (Japan)					
9:30 G-5-03 Analyzing the effect of Rapid Thermal Annealing on Mg-doped ZnO EIS Structure Membrane for Na⁺ and K⁺ Sensing °C.F. Lin ¹ , C.H. Kao ^{1,2,3} , K.L. Chen ¹ , Y.H. Lin ¹ , C.Y. Lin ² , ¹ Chang Gung Univ. (Taiwan), ² Chang Gung Memorial Hospital (Taiwan), ³ Ming Chi Univ. of Technology (Taiwan)	9:30 H-5-02 Crystalline Oxide Semiconductor FET/Si-FET Hybrid Structure-based In-Memory Computing Circuit for Artificial Neural Network Applications °T. Aoki ¹ , M. Kozuma ¹ , Y. Kurokawa ¹ , H. Kimura ¹ , S. Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co., Ltd. (Japan)	9:30 J-5-02 Texture Control for Cu Hybrid Bonding Pads using a PVD Cu Process °J. De Messemaeker ¹ , N. Jourdan ¹ , P. Nolmans ¹ , S.-W. Kim ¹ , G. Beyer ¹ , ¹ imec (Belgium)	9:30 K-5-02 RF Power Performance of 2DHG Diamond MOSFETs with thick ALD-Al₂O₃ Film °K. Kudara ¹ , S. Imanishi ¹ , K. Horikawa ¹ , A. Hiraiwa ¹ , H. Kavarada ^{1,2} , ¹ Waseda Univ. (Japan), ² Kagami Memorial Res. Inst. for Materials Science and Tech. (Japan)	9:30 M-5-02 A 65nm CMOS Process 4.2V Battery Charging Cascode SIDO Boost Converter with 87% Maximum Efficiency for RF Wireless Power Transfer Receiver °Y. Isshiki ¹ , D. Suzuki ¹ , R. Ishida ¹ , K. Miyajiri ¹ , ¹ Shinshu Univ. (Japan)	9:30 N-5-02 Surface Modification of SiO₂ Thin Film using High-Dose Ion Implantation Technique as a Manufacturing Worthy Process °R. Wada ¹ , H. Kai ¹ , J. Sasaki ¹ , T. Kuroi ¹ , T. Ikejiri ¹ , ¹ NISSIN ION EQUIPMENT CO.,LTD. (Japan)
9:45 G-5-04 5291-ppi OLED Display using CAAC-IGZO FET with Channel Length of 60 nm °H. Kobayashi ¹ , S. Katsui ¹ , T. Nakagawa ¹ , Y. Tamatsukuri ¹ , H. Shishido ¹ , S. Uesaka ¹ , R. Yamaoka ¹ , T. Nagata ¹ , T. Aoyama ¹ , Y. Okazaki ¹ , T. Ikeda ¹ , S. Yamazaki ¹ , ¹ Semiconductor Energy Laboratory Co., Ltd. (Japan)	9:45 H-5-03 Multi-level Operations by Self-clamping Programming Scheme on Fine Floating Gate MTP Cells C.-T. Chien ¹ , °C.-Y. Chang ¹ , C.-J. Lin ¹ , Y.-C. King ¹ , ¹ National Tsing Hua Univ. (Taiwan)	9:45 J-5-03 Microstructural Analysis of Sintered Ag Interconnections through Different Reduction Methods J.-H. Liu ¹ , °J.-M. Song ¹ , ¹ Nat'l Chung Hsing Univ. (Taiwan)	9:45 K-5-03 (111) Vertical-type 2DHG Diamond MOSFETs with Hexagonal Trench Structures °J. Nishimura ¹ , M. Iwataki ¹ , N. Oi ¹ , A. Morishita ¹ , A. Hiraiwa ¹ , H. Kavarada ^{1,2} , ¹ Waseda Univ. (Japan), ² The Kagami Memorial Lab. for Materials Sci. and Tech. (Japan)	9:45 M-5-03 A 42-mV Startup Ring Oscillator Using Self-Bias Inverters for Extremely Low Voltage Energy Harvesting °R. Matsuzuka ¹ , T. Terada ² , K. Matsumoto ² , M. Kitamura ² , T. Hirose ¹ , ¹ Osaka Univ. (Japan), ² Kobe Univ. (Japan)	9:45 N-5-03 Solid phase recrystallization induced by nanosecond pulsed laser °P. Acosta Alba ¹ , J. Aubin ² , F. Mazzamuto ² , S. Perrot ² , S. Kerdiles ¹ , ¹ Univ. Grenoble Alpes (France), ² Indus. SCREEN-LASSE (France)
10:00 G-5-05 Roll-to-toll Growth of Ga-doped ZnO Transparent Conducting Films by Using Plasma-assisted Molecular Beam Deposition °T. Muranaka ¹ , Y. Tsuchiya ¹ , T. Aoki ¹ , N. Onojima ¹ , T. Matsumoto ¹ , S. Hiraki ² , H. Kono ³ , K. Kijima ³ , S. Hagiwara ² , ¹ Univ. of Yamanashi (Japan), ² Nakaya Corp. (Japan), ³ Yamanashi Indus. Tech. Center (Japan)	10:00 H-5-04 Cross-Coupled Differential Multiple-Time-Programming Memory Cells by CMOS FinFET Technologies Y.-F. Chiang ¹ , °C.-W. Chu ¹ , Y.-D. Chih ² , J. Chang ² , C.-J. Lin ¹ , Y.-C. King ¹ , ¹ National Tsing Hua Univ. (Taiwan), ² Taiwan Semiconductor Manufacturing Company (Taiwan)	10:00 J-5-04 Development of Electret made of SiO₂ Thin Film with Micro Bump Array to Avoid Electrostatic Stiction and Enhance Its Surface Potential °M. Suzuki ¹ , Y. Onishi ¹ , T. Takahashi ¹ , S. Aoyagi ¹ , ¹ Kansai Univ. (Japan)	10:00 K-5-04 Impact of Post Deposition Annealing on Chemical Bonding Features and Filled Electronic Defects of AlSiO/ GaN(0001) Structure °A. Ohta ¹ , D. Kikuta ² , T. Narita ² , K. Itoh ² , K. Makihara ² , T. Kachi ¹ , S. Miyazaki ¹ , ¹ Nagoya Univ. (Japan), ² Toyota Central R&D Labs. Inc. (Japan)	10:00 M-5-04 Proposal of a Novel SPDT Switch and Duplexer Dual-Function Circuit °H. Mizutani ¹ , R. Ishikawa ² , K. Honjo ² , ¹ Salesian Polytechnic (Japan), ² Univ. of Electro-Communications (Japan)	10:00 N-5-04 Selective epitaxial p-SiGe Source-Drain Contacts: Low Contact Resistivity (1.5x10⁹ ohm.cm²) by Optimizing Strain and Doping Concentration °C. Porret ¹ , Y.H. Huang ^{1,2,3} , G. Rengo ^{1,3} , H. Yu ¹ , M. Schaeckers ¹ , J.-L. Everaert ¹ , M. Heyns ^{1,3} , A. Vohra ^{1,3} , A. Hikavyi ¹ , E. Rosseel ¹ , R. Langer ¹ , R. Loo ¹ , ¹ imec vzw (Belgium), ² National Tsing Hua Univ. (Taiwan), ³ K.U. Leuven (Belgium)

Thursday, September 5

ES Meeting Room	ES021	ES022	ES024	ES025	ES033
Area 7:Organic & Bio A-6:Transistors and Applications	Area 5:Photonics B-6:III-V Photonic Devices	Area 6:Energy C-6:Silicon Solar Cell	Area 8:Low D D-6:2D Materials & Devices II	Area 9:Novel Function & Spintronics E-6:Spintronics II	Area 11:Growth & Characterization F-6:Group IV Materials
(10:30-11:45) Session Chair: M. Nakamura (NAIST), N. Clement (Univ. of Tokyo)	(10:30-11:45) Session Chair: N. Ozaki (Wakayama Univ.), T. Tawara (NTT Basic Res. Labs.)	(10:30-12:00) Session Chair: K. Nakada (Tokyo Tech), Y. Kurokawa (Nagoya Univ.)	(10:30-12:00) Session Chair: M. Takamura (NTT Basic Res. Labs.), S. Nakaharai (NIMS)	(10:30-12:00) Session Chair: H. Yuasa (Kyushu Univ.), S. Ohya (Univ. of Tokyo)	(10:30-12:00) Session Chair: T. Sadoh (Kyushu Univ.), H. Tatsuoka (Shizuoka Univ.)
10:30 A-6-01 (Invited) Applicable p-Type Organic Semiconducting Materials °T. Okamoto ^{1,2,3} , ¹ Univ. of Tokyo (Japan), ² AIST (Japan), ³ PRESTO, JST (Japan)	10:30 B-6-01 Monolithically Integrated Optical OR Gate Using Light-Emitting Transistors °Y.T. Huang ¹ , H.H. Chen ¹ , C.H. Wu ¹ , ¹ National Taiwan Univ. (Taiwan)	10:30 C-6-01 (Invited) Liquid phase crystalline Silicon on Glass: A pathway to high efficiency thin film solar cells C.T. Trinh ¹ , S. Garud ¹ , M. Trahms ¹ , °D. Amkreutz ¹ , ¹ Institut für Silizium Photovoltaik Helmholtz Zentrum Berlin für Materialien und Energie GmbH (Germany)	10:30 D-6-01 Demonstration of Electromechanical Device Based on 2D Piezoelectric Materials for Nanogenerator Applications °N. Higashitarumizu ¹ , H. Kawamoto ¹ , K. Nagashio ¹ , ¹ Univ. of Tokyo (Japan)	10:30 E-6-01 (Invited) Spin-orbit torque and neural network °S. Fukami ¹ , ¹ Tohoku Univ. (Japan)	10:30 F-6-01 Thickness dependent crystal and electrical properties of polycrystalline Ge on a plastic substrate formed by solid-phase crystallization °T. Imajo ¹ , T. Suemasu ¹ , K. Toko ¹ , ¹ Univ. of Tsukuba (Japan)
	10:45 B-6-02 Nearly Wavelength-shift Free (20-21) Semipolar Micro Light-emitting Diodes with Improved Performance via Atomic Layer Deposition °S.W. Huang Chen ¹ , L.F. Chen ¹ , Y.C. Hsu ¹ , J. Song ² , J. Choi ² , C. Chen ² , C.W. She ² , P.T. Lee ¹ , A.J. Tzou ¹ , J. Han ⁴ , H.C. Kuo ¹ , ¹ Nation Chiao Tung Univ. (Taiwan), ² Saphlux Inc. (USA), ³ Fok Ying Tung Research Institute (Hong Kong), ⁴ Yale Univ. (USA)		10:45 D-6-02 388 K High Temperature Retention Study of 2D Hetero-stack Based Non-Volatile Memory °T. Sasaki ¹ , T. Taniguchi ² , K. Watanabe ² , K. Nagashio ¹ , ¹ Univ. of Tokyo (Japan), ² NIMS (Japan)		10:45 F-6-02 High Carrier Mobility Sn-Doped Ge Thin-Films (< 50 nm) on Insulator by Interface-Modulated Solid-Phase Crystallization at Low-Temperature °X. Gong ¹ , C. Xu ¹ , T. Sadoh ¹ , ¹ Kyushu Univ. (Japan)
11:00 A-6-02 An Extended-Gate Type Organic Transistor Based on a Solution Processable Small-Molecule Semiconductor Capable of Detecting Glutathione in Water M. Aiko ¹ , Y. Yamanashi ² , Y. Sasaki ¹ , K. Nakahara ² , T. Minamiki ¹ , T. Koike ² , °T. Minami ¹ , ¹ Univ. of Tokyo (Japan), ² JNC Petrochemical Corp. (Japan)	11:00 B-6-03 Characteristics of GaN-based VCSELs with conducting AlInN/GaN DBR °R. Iida ¹ , W. Muranaga ¹ , S. Iwayama ¹ , T. Takeuchi ¹ , S. Kamiyama ¹ , M. Iwaya ¹ , I. Akasaki ^{1,2} , °Meijo Univ. (Japan), ² Nagoya Univ. (Japan)	11:00 C-6-02 Surface inversion layer effective minority carrier mobility as one of the measures of surface quality of the p-aSi:H/i-aSi:H/cSi heterojunction solar cell °Y. Hayashi ¹ , T. Kamioka ^{1,3} , K. Gotoh ² , R. Ozaki ¹ , K. Nakamura ¹ , M. Morimura ¹ , S. Naitou ¹ , N. Usami ² , A. Ogura ³ , Y. Ohshita ¹ , ¹ Toyota Technological Institute (Japan), ² Nagoya Univ. (Japan), ³ Meiji Univ. (Japan)	11:00 D-6-03 ReS₂ Based High-k Dielectric Stack Charge-Trapping Memory °Z.-H. Fan ¹ , M. Zhang ¹ , L. Chen ¹ , °Q.-Q. Sun ¹ , D.W. Zhang ¹ , ¹ Univ. of Fudan (China)	11:00 E-6-02 Spin Polarization Characterization by Spin Hall Magnetoresistance in Ferrimagnetic Pt/Co_xTb_x bilayers °Y. Xu ^{1,2} , D. Chen ^{1,2} , S. Tong ^{1,2} , H. Chen ¹ , X. Qiu ³ , D. Wei ^{1,2} , J. Zhao ^{1,2} , ¹ Inst. of Semiconductors, CAS (China), ² Univ. of CAS (China), ³ Tongji Univ. (China)	11:00 F-6-03 Ge / SiGe Multi Quantum Well Fabrication by Using Reduced Pressure Chemical Vapor Deposition °Y. Yamamoto ¹ , O. Skibitzki ¹ , M.A. Schubert ¹ , M. Scuderi ^{1,2} , F. Reichmann ¹ , M. Zöllner ¹ , G. Capellini ^{1,3} , B. Tillack ^{1,4} , ¹ IHP-Leibniz Institut für Innovative Mikroelektronik (Germany), ² Istituto per la Microelettronica e Microsistemi (CNR-IMM) (Italy), ³ Univ. degli Studi Roma Tre (Italy), ⁴ Technische Univ. Berlin (Germany)
11:15 A-6-03 Development of highly sensitive aqueous chemical sensor using double-gate In-Ga-Zn-O nanofiber thin-film transistor °E.K. Hong ¹ , W.J. Cho ¹ , ¹ Univ. of Kwangwoon (Korea)	11:15 B-6-04 Scheme for Coherent Control of Vacuum Rabi Oscillations in a Quantum Dot-Cavity System using Geometric Phases °K. Kuruma ¹ , Y. Ota ² , S. Iwamoto ^{1,2} , Y. Arakawa ² , ¹ Inst. of Indus. Sci., Univ. of Tokyo (Japan), ² Inst. for Nano Quantum Info. Electronics, Univ. of Tokyo (Japan)	11:15 C-6-03 Solute PEDOT:PSS as an Excellent Passivation Material of Si Substrate °V.H. Nguyen ¹ , S. Kato ² , K. Gotoh ¹ , Y. Kurokawa ¹ , N. Usami ¹ , ¹ Nagoya Univ. (Japan), ² Nagoya Institute of Technology (Japan)	11:15 D-6-04 Electrical characteristics of 2D MoS₂ ferroelectric memory transistor with ferroelectric Hf_xZr_{1-x}O₂ gate structure °S. Zhang ¹ , Y. Liu ¹ , G. Han ¹ , J. Zhang ¹ , Y. Hao ¹ , X. Wang ² , ¹ Xidian Univ. (China), ² Nanjing Univ. (China)	11:15 E-6-03 Current Direction-dependent Spin Hall Magnetoresistance in Epitaxial Pt/Co Bilayers on MgO (110) °R. Thompson ¹ , J. Ryu ² , Y. Du ¹ , S. Karube ^{1,3} , M. Kohda ^{1,3,4} , J. Nitta ^{1,3,4} , ¹ Tohoku Univ. (Japan), ² KAIST (Korea), ³ Center for Spintronics Res. Network, Tohoku Univ. (Japan), ⁴ Center for Sci. and Innovation in Spintronics, Tohoku Univ. (Japan)	11:15 F-6-04 Low Temperature (< 130 °C) Formation of Crystalline Ge Film on Insulator by Stress Stimulated GILC °T. Nishijima ¹ , K. Kusano ¹ , K. Kudo ¹ , M. Furuta ² , Y. Kusuda ² , S. Motoyama ² , N. Naka ¹ , T. Numata ⁴ , I. Tsumoda ¹ , ¹ National Inst. of Tech., Kumamoto College (Japan), ² SAMCO Inc. (Japan), ³ HORIBA Ltd. (Japan), ⁴ HORIBA TECHNO SERVICE Co., Ltd (Japan)
11:30 A-6-04 Experimental study of bias stress degradation of organic thin film transistors °K. Oshima ¹ , M. Saito ¹ , M. Shintani ² , K. Kuribara ² , Y. Ogasahara ³ , T. Sato ¹ , ¹ Kyoto Univ. (Japan), ² NAIST (Japan), ³ AIST (Japan)	11:30 B-6-05 (Late News) Plasmonic modulator driven by phase-transition of GST superlattice °T. Sugiyama ¹ , A. Kubo ¹ , T. Nakano ² , ¹ Univ. of Tsukuba (Japan), ² AIST (Japan)	11:30 C-6-04 Organic Hole Conducting Layer Achieves 80.5% Fill Factor in Conventional Silicon Solar Cells °L.J. Kuo ¹ , P.P. Pancham ¹ , Y.C. Chang ¹ , C.T. Lin ¹ , B.H. Lin ¹ , H.F. Meng ¹ , P. Yu ¹ , ¹ National Chiao Tung Univ. (Taiwan)	11:30 D-6-05 Room-Temperature Valley-Polarized Light-Emitting Devices via Strained Monolayer Semiconductors °J. Pu ¹ , H. Matsuoka ¹ , Y. Kobayashi ² , Y. Miyata ² , T. Takenobu ¹ , ¹ Nagoya Univ. (Japan), ² Tokyo Metropolitan Univ. (Japan)	11:30 E-6-04 Disentanglement of Spin Orbit Torques Originated from Spin Hall Effect and Rashba-Edelstein Effect Using Harmonic Hall Measurements °Y. Du ¹ , H. Gamou ¹ , S. Takahashi ² , S. Karube ^{1,3} , M. Kohda ^{1,3,4} , J. Nitta ^{1,3,4} , ¹ Dept. Mater. Sci., Tohoku Univ. (Japan), ² AIMR, Tohoku Univ. (Japan), ³ CSRN, Tohoku Univ. (Japan), ⁴ CSIS, Tohoku Univ. (Japan)	11:30 F-6-05 Strain Relaxation Enhancement of Ge_{1-x}Si_xSn_y Epitaxial Layer on Ge Substrate Using Ion-Implantation Method °H. Sofue ¹ , M. Fukuda ¹ , S. Shibayama ¹ , S. Zaima ^{1,2} , O. Nakatsuka ^{1,3} , ¹ Nagoya Univ. (Japan), ² Meijo Univ. (Japan), ³ ImaSS, Nagoya Univ. (Japan)

Thursday, September 5

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
Area 10:Thin Film G-6:Novel Thin Film Materials (10:30-12:00) Session Chair: T. Tezuka (Toshiba Memory Corp.), S. Higashi (Hiroshima Univ.)	Area 2:Memory H-6:Nonvolatile Memory Computing (10:30-11:45) Session Chair: N. Takaura (Hitachi, Ltd.), I. Kataeva (DENSO Corp.)	Area 3:Interconnect J-6:Compound Semiconductors and Printing Technologies (10:30-12:00) Session Chair: T. Minari (NIMS), K. Shiojima (Univ. of Fukui)	Area 4:Power & High-speed K-6:SiC MOS Interface (10:30-12:00) Session Chair: K.Y. Lee (National Taiwan Univ.), M. Sometani (AIST)	Special Area:Circuits/Systems M-6:Energy Efficient Systems and Components (10:30-12:00) Session Chair: K. Niitsu (Nagoya Univ.), H. Lin (National Chung Hsing Univ.)	Area 1:Advanced CMOS N-6:Device Reliability and Parasitics (10:30-12:00) Session Chair: T. Matsukawa (AIST), S. Cho (Gachon Univ.)
10:30 G-6-01 (Invited) Controlled CVD Growth of High-Quality 2D Materials and Their Heterostructures for Device Applications <i>°H. Ago¹, ¹Kyushu Univ. (Japan)</i>	10:30 H-6-01 (Invited) Neuromorphic Technology Using Gated Schottky Diodes with Charge Trap Function <i>Suhwan Lim¹, °Jong-Ho Lee¹, ¹Seoul National Univ. (Korea)</i>	10:30 J-6-01 (Invited) Metallization Technology for High Current Density and High Temperature Operation Power Modules <i>°K. Sugiura¹, T. Iwashige¹, K. Tsuruta¹, Y. Sakuma², Y. Oda², C. Chen¹, S. Nagao⁴, T. Sugahara⁴, K. Suganuma⁴, ¹DENSO CORP. (Japan), ²C.Uyemura & Co.,Ltd., Technical Support Group (Japan), ³C.Uyemura & Co.,Ltd., Central Research Lab. (Japan), ⁴Osaka Univ. (Japan)</i>	10:30 K-6-01 (Invited) Carrier Scattering Mechanism in SiC Trench MOSFETs <i>°K. Kutsuki¹, E. Kagoshima², T. Onishi², J. Saito², K. Yamamoto³, Y. Watanabe¹, ¹Toyota Central R&D Labs., Inc. (Japan), ²TOYOTA MOTOR CORP. (Japan), ³DENSO CORP. (Japan)</i>	10:30 M-6-01 (Invited) Packaging of SiC power device for miniaturization of power electronics system - fast switching operation and thermal management - <i>°T. Funaki¹, ¹Osaka Univ. (Japan)</i>	10:30 N-6-01 Accurate evaluation of contact resistivity between InAs/ Ni-InAs alloy <i>°K. Sumita¹, J. Takeyasu¹, K. Kato¹, K. Toprasertpong¹, M. Takenaka¹, S. Takagi¹, ¹Univ. of Tokyo (Japan)</i> 10:45 N-6-02 The Impact of Stress and Parasitic RC in Sub-40nm MF and MR nMOSFETs for RF and mm-wave CMOS Applications <i>°J.-C. Guo¹, Z.-C. Li¹, J.-M. Lin¹, ¹National Chiao Tung Univ. (Taiwan)</i>
11:00 G-6-02 (Invited) Epitaxial bridging with nanocluster assisted film growth under the mesoplasma condition <i>°M. Kambara¹, R. Yamada¹, H. Yamada¹, ¹Univ. of Tokyo (Japan)</i>	11:00 H-6-02 Impacts and Solutions of Nonvolatile-Memory-Induced Weight Error in the Computing-in-Memory Neural Network System <i>°D.-Y. Lee¹, C.H. Wang¹, Y.H. Lin¹, M.L. Wei¹, M.H. Lee¹, H.L. Lung¹, K.Y. Hsieh¹, K.C. Wang¹, C.Y. Liu¹, ¹Macronix International Co., Ltd (Taiwan)</i>	11:00 J-6-02 Uniformity Characterization of Printed Schottky Contacts Formed on n-GaN Epitaxial Layers by Using Ag Nanoink <i>°K. Shiojima¹, Y. Kashiwagi², A. Koizumi³, M. Saitoh², T. Tama², Y. Fujiwara³, ¹Univ. of Fukui (Japan), ²Osaka Res. Insti. of Indus. Sci. and Tech. (Japan), ³Osaka Univ. (Japan)</i>	11:00 K-6-02 Impact of Mechanical Uniaxial Stress on Mobility Enhancement of 4H-SiC (0001) MOSFET <i>°W. Takeuchi^{1,2}, K. Kutsuki³, E. Kagoshima⁴, T. Onishi⁴, S. Iwasaki⁴, M. Sakashita², H. Fujiwara⁴, O. Nakatsuka², ¹Aichi Institute of Tech. (Japan), ²Nagoya Univ. (Japan), ³Toyota Central R&D LABS., INC (Japan), ⁴TOYOTA MOTOR CORP. (Japan)</i>	11:00 M-6-02 (Invited) Compact Modeling and Circuit Simulation for High-Power Devices <i>°D. Navarro¹, T. Izuka¹, ¹Hiroshima Univ. (Japan)</i>	11:00 N-6-03 Plasma Induced Damage on Inter-Metal Dielectric in Nano-meter FinFET Processes <i>°C. Su¹, ¹National Tsing Hua Univ. (Taiwan)</i>
	11:15 H-6-03 Analyzation of pruning in spiking neural networks trained by STDP and Back propagation <i>°S. Oh¹, S. Lee¹, J.-S. Kim¹, B.-G. Park¹, J.-H. Lee^{1,2}, ¹Seoul Nat'l Univ. (Korea), ²Int'l-Univ. Semiconductor Research Center (Korea)</i>	11:15 J-6-03 Rapid Laser Annealing Method for Printing Silver Electrodes in Organic Thin-Film Transistors <i>C. Liu¹, °K. Huang¹, F. Dai¹, X. Liu², T. Minari², ¹Sun Yat-sen Univ. (China), ²NIMS (Japan)</i>	11:15 K-6-03 In-situ Cyclic Metal Layer Oxidation for Further Improving Interface Properties of Al₂O₃/4H-SiC(0001) Gate Stacks <i>°T. Doi^{1,2}, S. Shibayama¹, W. Takeuchi^{1,3}, M. Sakashita⁴, N. Taoka¹, M. Shimizu², O. Nakatsuka¹, ¹Nagoya Univ. (Japan), ²AIST-NU GaN-OIL (Japan), ³Aichi Inst. of Tech. (Japan)</i>		11:15 N-6-04 Simulation Study: the Effect of Random Dopants and Random Traps on Hot-Carrier Degradation in nFinFETs <i>°A. Makarov¹, B. Kaczer², P. Rousse³, A. Chasin², M. Vandemaele², G. Hellings², A.-M. El-Sayed¹, M. Jech¹, T. Grassler¹, D. Linten², S. Tyaginov^{1,2}, ¹TU Wien (Austria), ²imec (Belgium)</i>
11:30 G-6-03 Oxygen vacancy distribution control for resistive switching of epitaxial TiO_{2-x} thin films in four-terminal memristive devices <i>°R. Miyake¹, Z. Nagata¹, T. Tohei¹, A. Sakai¹, ¹Osaka Univ. (Japan)</i>	11:30 H-6-04 Characterization of Crystalline Oxide Semiconductor FET/ Si-FET Hybrid Structured Analog Multiplier for Artificial Neural Network <i>°Y. Kurokawa¹, T. Aoki¹, M. Kozuma¹, H. Kimura¹, S. Yamazaki¹, ¹Semiconductor Energy Laboratory Co., Ltd. (Japan)</i>	11:30 J-6-04 Semi-CNTs-based flexible TFTs fabricated by room-temperature printing with high performance <i>°Q. Sun¹, W. Li¹, X. Liu², M. Kanehara³, J. Zhao³, T. Minari¹, ¹NIMS (Japan), ²Zhengzhou Univ. (China), ³C-Ink. Co., Ltd., (Japan), ⁴Chinese Academy of Sciences (China)</i>	11:30 K-6-04 Practical Extraction Method of Interface State Density near Conduction Band Edge of 4H-SiC MOSFET Channel <i>°S. Sato¹, K. Kobayashi¹, Y. Mori¹, D. Hisamoto¹, A. Shima¹, ¹Hitachi Ltd. (Japan)</i>	11:30 M-6-03 Nano-Watt Voltage References with Sub-10 ppm/°C Temperature Coefficients <i>C.-S. Dai¹, °H. Lin¹, ¹National Chung Hsing Univ. (Taiwan)</i>	11:30 N-6-05 Effects of Variability in Plasma-Induced Damage to Si Substrate on Device Performance and Its Application to Variability Assessment Methodology <i>°T. Hamano¹, K. Urabe¹, K. Eriguchi¹, ¹Kyoto Univ. (Japan)</i>

Thursday, September 5

ES Meeting Room	ES021	ES022	ES024	ES025	ES033
Area 7:Organic & Bio A-6:Transistors and Applications	Area 5:Photonics B-6:III-V Photonic Devices	Area 6:Energy C-6:Silicon Solar Cell	Area 8:Low D D-6:2D Materials & Devices II	Area 9:Novel Function & Spintronics E-6:Spintronics II	Area 11:Growth & Characterization F-6:Group IV Materials
11:45 A-6-05 Withdrawn		11:45 C-6-05 Influence of Shadow on Shunt-Type Potential-Induced Degradation for Crystalline Si Photovoltaic Modules Exposed Outdoors <i>Y. Tachibana¹, T. Toyoda¹, T. Minamikawa¹, K. Ogawa², Y. Hara², K. Sakurai², ^oA. Masuda², ¹Indus. Res. Inst. Ishikawa (Japan), ²AIST (Japan)</i>	11:45 D-6-06 Controlling Color Conversion Efficiency between Monolayer Tungsten Diselenide and Quantum Dots through Plasmonic Effect of Silver Nanodisks Metasurface <i>^oA.B. Lee¹, C.A. Lin², C.Y. Chang¹, C.L. Yu¹, H.T. Lin¹, H.C. Kuo², M.H. Shih^{1,2}, ¹RCAS, Academia Sinica (Taiwan), ²National Chiao Tung Univ. (Taiwan)</i>	11:45 E-6-05 Highly efficient spin-orbit torque switching in a single GaMnAs thin film with perpendicular magnetic anisotropy <i>^oM. Jiang¹, H. Asahara¹, S. Sato¹, T. Kanaki², H. Yamasaki¹, S. Ohya^{1,2,3}, M. Tanaka^{1,2}, ¹Dept. of EEIS, Graduate School of Engineering, Univ. of Tokyo (Japan), ²CSRN, Graduate School of Engineering, Univ. of Tokyo (Japan), ³Inst. of Engineering Innovation, Graduate School of Engineering, Univ. of Tokyo (Japan)</i>	11:45 F-6-06 (Late News) Highly oriented Si(111) films on lattice-mismatched single-crystalline substrates via aluminum-induced crystallization <i>^oM.F. Hainey Jr.¹, C. Zhou², N. Usami¹, ¹Nagoya Univ. (Japan), ²UCLA (USA)</i>

Thursday, September 5

ES034	IB011	IB013	IB014	IB015	IB Lecture Hall
Area 10:Thin Film G-6:Novel Thin Film Materials	Area 2:Memory H-6:Nonvolatile Memory Computing	Area 3:Interconnect J-6:Compound Semiconductors and Printing Technologies	Area 4:Power & High-speed K-6:SiC MOS Interface	Special Area:Circuits/Systems M-6:Energy Efficient Systems and Components	Area 1:Advanced CMOS N-6:Device Reliability and Parasitics
11:45 G-6-04 Comprehensive Study of Metal-Induced Layer-Exchange for High-Quality Multilayer Graphene °H. Murata ^{1,2} , Y. Nakajima ¹ , T. Suemasu ¹ , K. Toko ¹ , ¹ Univ. of Tsukuba (Japan), ² JSPS Res. Fellow (Japan)		11:45 J-6-05 Direct Formation of Metal Patterns for Flexible Electronic Devices °W. Li ¹ , Q. Sun ¹ , L. Li ¹ , X.-Y. Liu ² , T. Minari ¹ , ¹ NIMS (Japan), ² Zhengzhou Univ. (China)	11:45 K-6-05 Investigation of the Possible Origins of Lattice Distortion at the Surface of Thermally-Oxidized 4H-SiC (0001) based on the Physical Analysis of Remained Byproducts °A.D. Hatmanto ¹ , K. Kita ¹ , ¹ Univ. of Tokyo (Japan)	11:45 M-6-04 Compact BJT based On-Die CMOS Temperature Sensor for thermal management of SOC on 14 nm Process °T. Oshita ¹ , ¹ Intel Corporation (USA)	11:45 N-6-06 (Late News) A New Structure of High-performance Source/drain Coupling Negative-capacitance FET Featuring Excellent Short-channel Controllability and Near Hysteresis-free °F.L. Li ² , E.R. Hsieh ¹ , C.H. Chiu ¹ , C.H. Liu ² , S. Chung ¹ , T.P. Chen ³ , S.A. Huang ³ , T.J. Chen ³ , O. Cheng ³ , ¹ NCTU (Taiwan), ² National Taiwan Normal Univ. (Taiwan), ³ UMC (Taiwan)

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	Area 2:Memory H-7:MRAM, PCRAM and Emerging Memories (13:00-14:30) Session Chair: H. Sato (Tohoku Univ.), M. H Lee (Macronix International Co., Ltd.)		Area 4:Power & High-speed K-7:GaN Device Technologies (13:00-14:30) Session Chair: S. Ozaki (Fujitsu Labs. Ltd.), T. Suzuki (JAIST)	Joint Session(Area5&7&SP) M-7:Innovative Sensing Systems (13:00-14:15) Session Chair: T. Yoshida (Hiroshima Univ.), N. Nishiyama (Tokyo Tech)	Joint Session(Area1&9) N-7:Novel Functional Devices and Materials (13:00-14:30) Session Chair: A. Oiwa (Osaka Univ.), S. N Takeda (NAIST)
	13:00 H-7-01 (Invited) Memory functions of magnetic skyrmion <i>°W. Koshibae¹, ¹RIKEN CEMS (Japan)</i>		13:00 K-7-01 (Invited) GaN Wet Etching Process for Power and RF Devices <i>°F. Horikiri¹, N. Fukuhara¹, H. Ohta², N. Asai², Y. Narita¹, T. Yoshida¹, T. Mishima², M. Toguchi³, K. Miwa³, T. Sato³, ¹SCIOCS Co. Ltd. (Japan), ²Hosei Univ. (Japan), ³Hokkaido Univ. (Japan)</i>	13:00 M-7-01 (Invited) A New Flexible Photoplethysmography (PPG) Sensor Patch for Continuous Measurement of Blood Flow Volume and Pressure based on AI algorithms <i>°P.C.-P. Chao¹, ¹National Chiao Tung Univ. (Taiwan)</i>	13:00 N-7-01 (Invited) New Horizons of Topological Material Science <i>°S. Murakami¹, ¹Tokyo Tech (Japan)</i>
	13:30 H-7-02 High Reliability CoFeB/MgO/CoFeB Magnetic Tunnel Junction Fabrication Using Low-damage Ion Beam Etching <i>°H. Park¹, A. Teramoto¹, J. Tsuchimoto^{1,2}, K. Hashimoto¹, T. Suwa¹, M. Hayashi^{1,2}, R. Kuroda¹, S. Sugawa¹, ¹Tohoku Univ. (Japan), ²Canon-Anelva Corp. (Japan)</i>		13:30 K-7-02 High-Resolution Observation of In-Plane Carrier Concentration Nonuniformity in Vertical GaN p-n Diode Using Franz-Keldysh Effect and Avalanche Multiplication <i>°S. Kawasaki¹, H. Fukushima¹, S. Usami¹, Y. Ando¹, A. Tanaka², M. Deki³, M. Kushimoto⁴, S. Nitta³, Y. Honda³, H. Amano^{2,3,4,5}, ¹Dept. of Electronics, Nagoya Univ. (Japan), ²NIMS (Japan), ³IMaSS, Nagoya Univ. (Japan), ⁴VBL, Nagoya Univ. (Japan), ⁵Akasaki R.C., Nagoya Univ. (Japan)</i>	13:30 M-7-02 (Invited) Wearable Vital Sign Sensing Technology based on FBG Sensor System <i>°H. Ishizawa¹, Y. Haseda¹, K. Johguchi¹, ¹Shinshu Univ. (Japan)</i>	13:30 N-7-02 Vanishing Skyrmion Hall Effect at the Angular Momentum Compensation Temperature of a Ferrimagnet <i>°Y. Hirata¹, D.-H. Kim¹, S.K. Kim^{2,3}, D.-K. Lee⁴, S.-H. Oh⁵, D.-Y. Kim⁶, T. Nishimura⁷, T. Okuno¹, Y. Futakawa⁷, H. Yoshikawa¹, A. Tsukamoto⁷, Y. Tserkovnyak⁸, Y. Shiota⁴, T. Moriyama¹, S.-B. Choe⁶, K.-J. Lee^{4,5,8}, T. Ono^{1,9}, ¹Inst. Chemical Res. Kyoto Univ. (Japan), ²Univ. of California (USA), ³Univ. of Missouri (USA), ⁴Department of Materials Science & Engineering, Korea Univ. (Korea), ⁵Department of Nano-Semiconductor and Engineering, Korea Univ. (Korea), ⁶Seoul National Univ. (Korea), ⁷Nihon Univ. (Japan), ⁸KU-KIST Graduate School of Converging Science and Technology, Korea Univ. (Korea), ⁹CSRN, Graduate School of Engineering Science, Osaka Univ. (Japan)</i>
	13:45 H-7-03 (Invited) Engineering of Ovonic Threshold Switching Selector: A Link from the Material Properties to the Electrical Performances <i>°A. Verdy¹, M. Bernard¹, N. Castellani¹, P. Noé¹, C. Licitra¹, J. Garrione¹, G. Bourgeois¹, M.C. Cyrille¹, G. Navarro¹, ¹CEA-Leti (France)</i>		13:45 K-7-03 Characterization of Ni/GaN(0001) Interfaces by Photoemission Measurements <i>°K. Watanabe¹, A. Ohta¹, N. Taoka¹, H. Yamada², M. Ikeda¹, K. Makihara¹, M. Shimizu², S. Miyazaki¹, ¹Nagoya Univ. (Japan), ²AIST GaN-OIL (Japan)</i>		13:45 N-7-03 (Late News) Synthesis and Characterization of Topological Crystalline Insulator SnTe Nanowires <i>°Y. Xing¹, L. Hong¹, X. Wang¹, S. Huang¹, H. Xu¹, ¹Peking Univ. (China)</i>
			14:00 K-7-04 Quick measurement method of carbon-related defect concentration in n-type GaN by dual-color-sub-bandgap-light-excited isothermal capacitance transient spectroscopy <i>°K. Kanegae¹, T. Narita², K. Tomita², T. Kachi³, M. Horita^{3,1}, T. Kimoto¹, J. Suda^{1,3}, ¹Kyoto Univ. (Japan), ²Toyota Central R&D Labs. (Japan), ³Nagoya Univ. (Japan)</i>	14:00 M-7-03 Image Sensor with In-pixel Calculation using Crystalline IGZO in Display <i>°T. Nakagawa¹, Y. Negoro¹, T. Ikeda¹, S. Yoneda¹, H. Kobayashi¹, S. Yamazaki¹, ¹Semiconductor Energy Laboratory Co.,Ltd. (Japan)</i>	14:00 N-7-04 Investigation on the Factors to Determine the Efficiency of Energy Harvesting Method with Multilayered Dielectric Capacitors in Temperature Fluctuating Environment <i>°T. Hamaguchi¹, K. Kita¹, ¹Univ. of Tokyo (Japan)</i>
	14:15 H-7-04 Size Modulated Nitrogen-Doped Graphene Oxide Quantum Dots for Diffusive Memristor based Synaptic Device Applications <i>°A. Sergeevich Sokolov¹, Y.-R. Jeon¹, H. Han¹, B. Ku¹, G. Hassan¹, H. Abbas¹, C. Choi¹, ¹Hanyang Univ. (Korea)</i>		14:15 K-7-05 Microscopic Reason for the Leakage Current due to the Mg-Attached Dislocation in GaN <i>°T. Nakano¹, K. Chokawa¹, Y. Harashima², M. Araidai^{2,1}, K. Shiraishi^{2,1}, A. Oshiyama², A. Kusaba³, Y. Kangawa^{4,2}, A. Tanaka², Y. Honda^{2,1}, H. Amano^{2,1}, ¹Graduate School of Engineering, Nagoya Univ. (Japan), ²Institute of Materials and Systems for Sustainability, Nagoya Univ. (Japan), ³Computer Centre, Gakushuin Univ. (Japan), ⁴Research Institute for Applied Mechanics, Kyushu Univ. (Japan)</i>		14:15 N-7-05 Scattered distribution of oxygen vacancies in anatase TiO₂ film; first-principles study on VMCO-memory characteristics <i>°T. Oikawa¹, R. Nagasawa¹, M. Araidai², K. Shiraishi², T. Nakayama¹, ¹Chiba Univ. (Japan), ²Nagoya Univ. (Japan)</i>