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101	200	201A	201B	202A	202B	304
A-3:Transport Analysis and Modeling (9:30-10:40) Chairs: S. Cho (Gachon Univ.), N. Mori (Osaka Univ.)	**B-3:ReRAM-2/PRAM** (9:10-10:50) Chairs: T. Sakamoto (NEC Corp.), M.H. Lee (Macronix Int. Co., Ltd.)	**C-3:Silicon Photonics II** (9:30-10:45) Chairs: S. Akiyama (Fujitsu Labs. Ltd.), T. Amano (AIST)		**E-3:SiC MOS Interface** (9:30-10:45) Chairs: D. Hisamoto (Hitachi, Ltd.), H. Fujiwara (Toyota Motor Corp.)	**F-3:Organic Photonics** (9:30-10:45) Chairs: T. Shimada (Hokkaido Univ.), K. Shinbo (Niigata Univ.)	**G-3:Spintronics Devices** (9:30-10:45) Chairs: Y. Saito (Toshiba Corp.), T. Fukumura (Tohoku Univ.)
9:30 A-3-01 **Evaluation of Effective Mass of Inversion-layer Holes in Strained-Si pMOSFETs utilizing Shubnikov de-Haas (SdH) Oscillation** *A. Shimada[1], R. Nakane[1], M. Takenaka[1,2], °S. Takagi[1,2], [1]Univ. of Tokyo (Japan), [2]JST-CREST (Japan)*	**9:10 B-3-01** **A Physics-Based Compact Model of Resistive Switching for Bi-layered TaO_X-RRAM** *°Y.D. Zhao[1], P. Huang[1], J.J. Hu[1], X.Y. Liu[1], J.F. Kang[1], [1]Peking Univ. (China)*	**9:30 C-3-01(Invited)** **CMOS Photonics Based on SiGe and Ge for near and Mid-infrared Photonic Integrated Circuits** *°M. Takenaka[1,2], Y. Kim[1], J. Han[1,2], J. Kang[1,2], S. Takagi[1,2], [1]Univ. of Tokyo (Japan), [2]JST-CREST (Japan)*		**9:30 E-3-01(Invited)** **Opportunities to Design Thermal Oxidation and Post-Oxidation Processes to Control 4H-SiC MOS Interface Characteristics** *°K. Kita[1], H. Hirai[1], H. Kajifusa[1], [1]Univ. of Tokyo (Japan)*	**9:30 F-3-01(Invited)** **Bio-metamaterial: Black Ultrathin Gold Film Fabricated on Leaves of Plants** *°K. Kajikawa[1], [1]Tokyo Tech (Japan)*	**9:30 G-3-01(Invited)** **Quantum-Well Based Tunneling Magnetoresistance Effect in Double-Barrier Magnetic Tunnel Junctions** *°X. Han[1], [1]Chinese Academy of Sci. (China)*
9:50 A-3-02(Invited) **Carrier Transport Analysis of High-performance Poly-Si Nanowire Transistors** *°M. Oda[1], K. Sakuma[1], Y. Kamimuta[1], M. Saitoh[1], [1]Toshiba Corp. (Japan)*	**9:30 B-3-02** **Switching Operation of Double-Layer Conductive Bridging RAM Investigated using In-situ Transmission Electron Microscopy** *°M. Arita[1], S. Hirata[1], A. Takahashi[1], T. Hiroi[1], M. Jo[1], A. Tsurumaki-Fukuchi[1], Y. Takahashi[1], [1]Hokkaido Univ. (Japan)*	**10:00 C-3-02** **1.3μm Hybrid III-V on Silicon Transmitter Operating at 25Gb/s** *T. Ferrotti[1,2,3], B. Blampey[1], H. Duprez[1], C. Jany[1], A. Chantre[2], F. Boeuf[2], C. Seassal[3], °B. Ben Bakir[1], [1]Univ. Grenoble Alpes, CEA, LETI, MINATEC Campus (France), [2]STMicroelectronics (France), [3]Univ. de Lyon (France)*		**10:00 E-3-02** **Oxidation Induced Stress in the SiO_2/SiC System** *°X. Li[1], A. Ermakov[1], V. Amarasinghe[1], T. Gustafsson[1], L.C. Feldman[1], E. Garfunkel[1], [1]Rutgers Univ. (USA)*	**10:00 F-3-02** **Surface-emitting Vertical Cavity with Vapor-grown Single Crystal of Cyano-substituted Thiophene/Phenylene Co-oligomer** *R. Hatano[1], K. Goto[2], K. Yamashita[2], F. Sasaki[3], °H. Yanagi[1], [1]NAIST (Japan), [2]Kyoto Inst. of Tech. (Japan), [3]AIST (Japan)*	**10:00 G-3-02** **In-plane Magnetic Field Pulse Driven Perpendicularly Magnetized Racetrack Memory** *°J.S. Kim[1], N.H. Kim[2], F. Ummelen[1], C.Y. You[2,3], H.J.M. Swagten[1], B. Koopmans[1], [1]Eindhoven Univ. of Tech. (Netherlands), [2]Inha Univ. (Korea), [3]DGIST (Korea)*
10:20 A-3-03 **On the Drain Bias Dependence of Tunnel FETs** *°K. Fukuda[1], T. Mori[1], H. Asai[1], J. Hattori[1], W. Mizubayashi[1], Y. Morita[1], H. Fuketa[1], S. Migita[1], H. Ota[1], M. Masahara[1], K. Endo[1], T. Matsukawa[1], [1]AIST (Japan)*	**9:50 B-3-03** **Analysis of "hot spot" in Conducting-bridge Random Access Memory (CBRAM) by Impedance Method** *°A. Fukushima[1], K. Kinoshita[1], [1]Tottori Univ. (Japan)*	**10:15 C-3-03** **High Efficiency and Low Power Horizontal Capacitive Modulators for 56Gb/s** *°M. Douix[1,2], D. Marris-Morini[2], C. Baudot[1], F. Boeuf[1], [1]STMicroelectronics (France), [2]Univ. of Paris-Sud (France)*		**10:15 E-3-03** **First-principles Study on Carrier Scattering Property at 4H-SiC(0001)/SiO_2** *°T. Ono[1,2], S. Iwase[1], C.J. Kirkham[1], [1]Univ. of Tsukuba (Japan), [2]JST-PRESTO (Japan)*	**10:15 F-3-03** **Investigation of Transmission Light Induced by Grating-Coupled Long-Range Surface Plasmon Resonance and Its Use for Sensors** *°H. Nakajyo[1], K. Shinbo[1], N. Obata[1], C. Lertvachirapaiboon[1], Y. Ohdaira[1], A. Baba[1], K. Kato[1], F. Kaneko[1], [1]Niigata Univ. (Japan)*	**10:15 G-3-03** **Magnetic Field Angle Dependence of Switching Field in CoFeB-MgO Magnetic Tunnel Junctions with Perpendicular Easy Axis at Low Temperature** *°J. Igarashi[1], E. Enobio[1], J. Llandro[1], H. Sato[1], S. Fukami[1], F. Matsukura[1], H. Ohno[1], [1]Tohoku Univ. (Japan)*
	10:10 B-3-04 **Bipolar and Unipolar Switching Characteristics of GeTe-Sb_2Te_3 Superlattice iPCM** *X. Wang[1], °N. Miyata[1], K.V. Mitrofanov[1], Y. Saito[1], P.J. Fons[1], A. Kolobov[1], J. Tominaga[1], [1]AIST (Japan)*	**10:30 C-3-04** **Waveguide-Integrated Vertical pin Photodiodes of Ge Fabricated on p^+ and n^+ Si-on-Insulator Layers** *°K. Ito[1], Y. Ishikawa[1], [1]Univ. of Tokyo (Japan)*		**10:30 E-3-04** **An Extraction Method of Interface State Density near Conduction Band Edge at SiC MOS Interfaces** *°S. Takagi[1,2], M. Takenaka[1,2], [1]Univ. of Tokyo (Japan), [2]JST-CREST (Japan)*	**10:30 F-3-04(Late News)** **Fabrication and Performance of Pressure Sensor Device consisted of Electrets film and Organic Semiconductor** *°T. Kodzasa[1], D. Nobeshima[1], K. Kuribara[1], S. Uemura[1], M. Yoshida[1], [1]AIST (Japan)*	**10:30 G-3-04** **New Model of Switching Delay Induced by Modulation Effect of Damping and STT Pumping Balance with Programing Current and Interference Phenomena in p-MTJ Array** *°S. Ohuchida[1,2,3], K. Ito[2], M. Muraguchi[1,2,3], T. Endoh[1,2,3], [1]Graduate School of Eng., Tohoku Univ. (Japan), [2]CIES, Tohoku Univ. (Japan), [3]JST-ACCEL (Japan)*
	10:30 B-3-05 **Multi-level Operation of a High-speed, Low Power Topological Switching Random-access Memory (TRAM) Based on a Ge Deficient Ge_xTe/Sb_2Te_3 Superlattice** *°H. Shirakawa[1], M. Takato[1], M. Araidai[1,2], T. Ohyanagi[3], N. Takaura[3], K. Shiraishi[1], [1]Nagoya Univ. (Japan), [2]JST-CREST (Japan), [3]Hitachi, Ltd. (Japan)*					

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H-3:Biomedical Micro Devices & Systems

(9:30-10:45)
Chairs: T. Sakata (Univ. of Tokyo), C.H. Liu (National Tsing Hua Univ.)

9:30 H-3-01(Invited)
Stretchable Sensors for Bio-medical Applications
°T. Sekitani[1], [1]Osaka Univ. (Japan)

10:00 H-3-02
An On-Chip Fluorescence Imaging System Using a Compact CMOS Image Sensor
°H. Takehara[1], K. Osawa[1], H. Takehara[1], T. Noda[1], K. Sasagawa[1], T. Tokuda[1], J. Ohta[1], [1]NAIST (Japan)

10:15 H-3-03
A Low Detection Limit Filter-free Fluorescence Sensor Using Charge Accumulation Technique
°K. Tanaka[1], Y. Moriwaki[1], T. Hizawa[1], T. Iwata[1], I. Akita[1], F. Dasai[1], Y. Kimura[1], K. Takahashi[1], K. Sawada[1], [1]Toyohashi Univ. of Tech. (Japan)

10:30 H-3-04
Insertion Characteristics Evaluation of Si Opto-Neural Probe with Embedded Optical fiber
°T. Morikawa[1], T. Harashima[1], H. Kino[1], T. Fukushima[1], T. Tanaka[1], [1]Tohoku Univ. (Japan)

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J-3:Low-dimensional Materials and Devices

(9:30-10:45)
Chairs: Y. Ohno (Nagoya Univ.), K. Nagashio (Univ. of Tokyo)

9:30 J-3-01(Invited)
Carbon Nanotube Transistor Technology for Scaling Beyond Si CMOS
°Q. Cao[1], [1]IBM T.J. Watson Research Center (USA)

10:00 J-3-02
High-Yield Fabrication of n-Type Carbon Nanotube Thin-Film Transistors on Plastic Substrate
°F.W. Tan[1], J. Hirotani[1], T. Yasunishi[1], S. Kishimoto[1], Y. Ohno[1], [1]Nagoya Univ. (Japan)

10:15 J-3-03
Field Effect Transistor of Thin Anatase Obtained through Solid-State Transformation of $Ti_{0.87}O_2$ Nanosheet
°S. Sekizaki[1], M. Osada[2], K. Nagashio[1,3], [1]Univ. of Tokyo (Japan), [2]NIMS (Japan), [3]JST-PRESTO (Japan)

10:30 J-3-04
Measurement of Enzyme Molecules and Their Reactions Using Graphene-FET Equipped with Microwells
°T. Ono[1], Y. Kanai[1], Y. Ohno[2], K. Maehashi[3], K. Inoue[1], K. Matsumoto[1], [1]Osaka Univ. (Japan), [2]Tokushima Univ. (Japan), [3]Tokyo Univ. of Agric. & Tech. (Japan)

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K-3:MEMS & Systems

(9:30-11:00)
Chairs: H. Kanaya (Kyushu Univ.), S. Itabashi (NTT Advanced Technology Corp.)

9:30 K-3-01(Invited)
Roles and Expectations for LSI and MEMS Technologies in the IoT Era
°H. Morimura[1], S. Oshima[1], K. Matsunaga[1], A. Musa[1], T. Minotani[2], T. Kondo[1], [1]NTT Device Innovation Center, NTT Corp. (Japan), [2]NTT TELECON (Japan)

10:00 K-3-02
Large Scale Integration of Silicon Nanomechanical Resonators above Industrial CMOS Wafers
W. Ludurczak[1], °G. Gourlat[1], M. Gély[1], G. Billiot[1], J. Philippe[1], P. Villard[1], G. Sicard[1], T. Ernst[1], S. Hentz[1], [1]CEA-LETI (France)

10:20 K-3-03
A Spring Design for Tri-axis MEMS Accelerometer by Multi-layer Metal Technology
°D. Yamane[1], T. Konishi[2], T. Safu[2], H. Toshiyoshi[3], M. Sone[1], K. Masu[1], K. Machida[2], [1]Tokyo Tech (Japan), [2]NTT Advanced Tech. Corp. (Japan), [3]Univ. of Tokyo (Japan)

10:40 K-3-04
Thermal Change in Resonance Wavelength of Si Resonator Sensors on Si on Insulator Substrate and Solution by Differential Operation
°A.K. Sana[1], S. Yokoyama[1], Y. Nakashima[1], Y. Amemiya[1], S. Yokoyama[1], [1]Hiroshima Univ. (Japan)

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M-3:Novel Functional Devices

(9:30-10:45)
Chairs: K. Terabe (NIMS), R.M. Stevenson (Toshiba Res. Europe)

9:30 M-3-01
Time Response of Gate-Controlled Metal-Insulator Transitions in Ultrathin VO_2 Channel
°T. Yajima[1], T. Nishimura[1], A. Toriumi[1], [1]Univ. of Tokyo (Japan)

9:45 M-3-02
An Innovative BEOL 3D IGZO-TFTs Logic Gate with Vertically Stacked Load and Drive Transistors and Tunable V_{th}
R. Lyu[1], °H. Lin[1], P. Li[1], T. Huang[1], [1]NCTU (Taiwan)

10:00 M-3-03
All-Solid-State Magnetic Properties Tuning Device Achieved by Redox Reaction of Fe_3O_4 Thin Film
°T. Tsuchiya[1], K. Terabe[1], M. Ochi[2], T. Higuchi[2], M. Osada[1], Y. Yamashita[1], S. Ueda[1], M. Aono[1], [1]NIMS (Japan), [2]Tokyo Univ. of Science (Japan)

10:15 M-3-04
Superconducting (111) Boron-doped Diamond Josephson Junction with Regrowth-induced (001) Step Edge Structure
°M. Hideko[1], T. Kageura[1], M. Shibata[1], Y. Kitabayashi[1], Y. Sasama[2], T. Yamaguchi[2], Y. Takano[2], H. Kawarada[1], [1]Waseda Univ. (Japan), [2]NIMS (Japan)

10:30 M-3-05(Late News)
Active Artificial Synapse Based on 2DEG
°P. Stoliar[1,2], A. Schulman[1], A. Kitoh[1], I.H. Inoue[1], [1]AIST (Japan), [2]CIC nanoGUNE (Spain)

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N-3:Novel III-V Devices

(9:30-10:45)
Chairs: S. Suzuki (Tokyo Tech), N. Shigekawa (Osaka City Univ.)

9:30 N-3-01(Invited)
III-Nitride-based Negative Differential Resistance and Resonant Tunneling Devices With up to THz Operation Capability
°D. Pavlidis[1], [1]Boston Univ. (USA)

10:00 N-3-02
Terahertz Detector Using High Electron Mobility Transistor with Reduced Series Resistance for High Responsivity
S. Shibuya[1], Y. Isobe[1], °S. Suzuki[1], [1]Tokyo Tech (Japan)

10:15 N-3-03
Photo-induced Current in n-AlGaAs/GaAs Heterojunction Field-effect Transistor Driven by Local Illumination at Edge Regions of Schottky Metal Gate
°T. Kawazu[1], T. Noda[1], Y. Sakuma[1], [1]NIMS (Japan)

10:30 N-3-04(Late News)
Breaking the GaN Material Limits with Nanoscale Vertical Polarisation Super Junction Structures – A Simulation Analysis
°V. Unni[1], S.N.E. Madathil[1], [1]Univ. of Sheffield (UK)

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O-3:FinFET and Nanowire FET

(9:30-10:40)
Chairs: H. Itokawa (Toshiba Corp.), K. Kakushima (Tokyo Tech)

9:30 O-3-01(Invited)
Strained SiGe FinFETs for High Performance CMOS
°P. Hashemi[1], [1]IBM T.J. Watson Research Center (USA)

10:00 O-3-02
Thickness-Defined Poly-Si FinFETs (TD-FinFFTs) with 5nm Fin-Width and Performance Enhancement by Local Strain Boost Technique
°J.-Y. Lin[1], T.S. Chao[1], [1]NCTU (Taiwan)

10:20 O-3-03
HSQ Lithography for Nanowire First Integration: an Interesting Alternative for Gate Last Fabrication of Sub-7nm Stacked Nanowire FETs.
°L. Gaben[1,2,3], S. Pauliac[2], J.-A. Dallery[4], J. Bustos[1], R. Dechanoz[2], B. Hemard[1], L. Koscianski[2], X. Bossy[1], M.-P. Samson[1], S. Barraud[2], S. Monfray[1], F. Boeuf[1], T. Skotnicki[1], F. Balestra[3], M. Vinet[2], [1]STMicroelectronics (France), [2]CEA-LETI (France), [3]IMEP-LAHC (France), [4]Vistec Electron Beam GmbH (Germany)

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A-4:Monolithic 3D and Reliability

(13:30-14:40)
Chairs: K. Maekawa (Renesas Electronics Corp.)
F.L. Yang (Academia Sinica)

13:30 A-4-01(Invited)
InGaAs-on-Si(Ge) 3D Monolithic Integration for CMOS and More-than-Moore Technologies
°V.V. Deshpande[1], V. Djara[1], T. Morf[1], P. Hashemi[2], E. O'Connor[1], K. Balakrishnan[2], D. Caimi[1], M. Sousa[1], J. Fompeyrine[1], L. Czornomaz[1], [1]IBM Research GmbH (Switzerland), [2]IBM T.J. Watson Research Center (USA)

14:00 A-4-02
Reliability Analysis for Monolithic 3D UTB GeOI and SOI 6T SRAM Cells considering Interlayer Coupling
°V.P.-H. Hu[1], [1]National Central Univ. (Taiwan)

14:20 A-4-03
A New NBTI Lifetime Prediction Method for Deeply Scaled pMOSFETs
C. Zhang[1], Y. Liao[1], Y. Xu[2], °X. Ji[1], [1]Nanjing Univ. (China), [2]Nanjing Univ. of Posts and Telecommunications (China)

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B-4:FeRAM/DRAM/MEMS

(13:30-14:30)
Chairs: K. Hamada (Micron Memory Japan Inc.),
Y. Hikosaka (Fujitsu Semiconductor Ltd.)

13:30 B-4-01
Combination of Volatile and Non-volatile Functions in A Single Memory Cell with Independent Asymmetric Dual-Gate Structure
°H. Kim[1], J.-H. Lee[1], B.-G. Park[1], [1]Seoul National Univ. (Korea)

13:50 B-4-02
3.3V Write-voltage Ir/$Ca_{0.2}Sr_{0.8}Bi_2Ta_2O_9$/$HfO_2$/Si Ferroelectric-gate Field-effect Transistors with 10^9 Endurance and Good Retention
°W. Zhang[1,2], M. Takahashi[1], Y. Sasaki[2], M. Kusuhara[2], S. Sakai[1], [1]AIST (Japan), [2]WACOM R&D Corp. (Japan)

14:10 B-4-03
Embedded Nano-Electro-Mechanical Memory for Reconfigurable Lookup Tables
°K. Kato[1], V. Stojanović[1], T.-J. King Liu[1], [1]Univ. of California, Berkeley (USA)

201A

C-4:Quantum Dot Devices

(13:30-14:45)
Chairs: T. Tawara (NTT Basic Res. Labs.),
N. Ozaki (Wakayama Univ.)

13:30 C-4-01(Invited)
Recent Progress in Quantum Dot Laser
°T. Kageyama[1], M. Sugawara[3], Y. Arakawa[1,2], [1]NanoQuine, Univ. of Tokyo (Japan), [2]IIS, Univ. of Tokyo (Japan), [3]QD Laser, Inc. (Japan)

14:00 C-4-02
Extremely Stable Temperature Characteristics of 1550 nm Band *p*-Doped Highly Stacked Quantum-Dot Laser Diodes Grown on an InP(311)B Substrate
°A. Matsumoto[1], K. Akahane[1], T. Umezawa[1], N. Yamamoto[1], [1]NICT (Japan)

14:15 C-4-03
GaAs/AlAs Triple-coupled Cavity with InAs Quantum dots for Ultrafast Wavelength Conversion Devices
°X.M. Lu[1], H. Ota[1], N. Kumagai[1], T. Kitada[1], T. Isu[1], [1]Tokushima Univ. (Japan)

14:30 C-4-04
Lasing in a Plasmonic Microring Resonator Containing Quantum Dots
°A. Tamada[1], Y. Ota[1], K. Kuruma[1], J. Ho[1], K. Watanabe[1], S. Iwamoto[1], Y. Arakawa[1], [1]Univ. of Tokyo (Japan)

201B

D-4:Growth of Compound Semiconductors

(13:30-14:45)
Chairs: T. Nagata (NIMS),
T. Iwai (Fujitsu Labs. Ltd.)

13:30 D-4-01(Invited)
RF-MBE Growth of GaInN Ternary Alloys Using *in-situ* Monitoring Techniques
°T. Yamaguchi[1], T. Sasaki[2], M. Takahasi[2], T. Araki[3], T. Onuma[1], T. Honda[1], Y. Nanishi[3], [1]Kogakuin Univ. (Japan), [2]QST (Japan), [3]Ritsumeikan Univ. (Japan)

14:00 D-4-02
First Principle and Thermodynamic Analysis of MOVPE Growth of GaN and AlN
°K. Sekiguchi[1], H. Shirakawa[1], K. Chokawa[1], Y. Yamamoto[1], M. Araidai[2,1], Y. Kangawa[3], K. Kakimoto[3], K. Shiraishi[2,1], [1]Graduate School of Eng., Nagoya Univ. (Japan), [2]IMaSS, Nagoya Univ. (Japan), [3]Kyushu Univ. (Japan)

14:15 D-4-03
Phase Transition from Zinc Blende to Wurtzite and Green Emission of AlInP Grown on (10-10) GaN by Crystal Structure Transfer Epitaxy
°T. Fukui[1], Y. Hiraya[1], F. Ishizaka[1], K. Tomioka[1], [1]Hokkaido Univ. (Japan)

14:30 D-4-04
Enhanced Photoluminescence from InAs Quantum Dots Monolithically Grown on Si (100) using InGaAs/GaAs dislocation filter layers
°J. Kwoen[1], K. Watanabe[1], Y. Arakawa[1], [1]Univ. of Tokyo (Japan)

202A

E-4:Group 4 Novel Devices

(13:30-14:45)
Chairs: C.F. Huang (National Tsing Hua Univ.),
D. Hisamoto (Hitachi, Ltd.)

13:30 E-4-01(Invited)
Advanced 1.2 kV Class SiC MOSFETs Fabricated on 150 mm wafers in a High-volume CMOS Fab
°S. Banerjee[1], K. Matocha[1], K. Chatty[1], [1]Monolith Semiconductor Inc. (USA)

14:00 E-4-02
Analysis of 4H-SiC IGBT Switching in the Presence of Interface Traps using Miller Plateau Characteristics
°D. Navarro[1], A. Tone[2], H. Kikuchihara[2], Y. Morikawa[1], M. Miura-Mattausch[2], [1]Silvaco Japan (Japan), [2]Hiroshima Univ. (Japan)

14:15 E-4-03
Gate Threshold Voltage Control of C-H Diamond MOSFETs
°T. Kudo[1], Y. Kitabayashi[1], D. Matsumura[1], Y. Hayashi[1], M. Inaba[1], A. Hiraiwa[1], H. Kawarada[1], [1]Waseda Univ. (Japan)

14:30 E-4-04
H-terminated Diamond Field Effect Transistor with Ferroelectric Gate Insulator
R. Karaya[1], Y. Mori[1], H. Furuichi[1], I. Baba[1], T. Nakajima[2], N. Tokuda[1], °T. Kawae[1], [1]Kanazawa Univ. (Japan), [2]Tokyo Univ. of Science (Japan)

202B

F-4:Organic Thermoelectrics, Piezoelectrics and Ferroelectrics

(13:30-14:45)
Chairs: M. Nakamura (NAIST),
M. Yoshida (AIST)

13:30 F-4-01(Invited)
Organic and Hybrid Materials for Thermoelectric Applications
°A. Carella[1], [1]CEA-Liten (France)

14:00 F-4-02
Independent Control of Phonon and Carrier Transports in Carbon Nanotube Solids with Biomolecular Junctions for Improving Thermoelectric Performance
°M. Ito[1], N. Okamoto[1], R. Abe[1], H. Kojima[1], T. Sato[2], I. Yamashita[1], M. Nakamura[1], [1]NAIST (Japan), [2]AIST (Japan)

14:15 F-4-03
Piezoelectric Vibration Energy Harvesters with Stretched and Multi-stacked Organic Ferroelectric Films
T. Kajihara[1], °M. Morimoto[1], Y. Tsujiura[1], Y. Koshiba[1], I. Kanno[1], K. Ishida[1], [1]Kobe Univ. (Japan)

14:30 F-4-04
Memory Characteristics of Organic Thin Film Transistor Using Polypeptides as Gate Dielectric Layer: Effect of Side Chains of Polypeptides on Crystallinity and Ferroelectric Characteristics of Their Thin Films
°T. Nobeshima[1], K. Oka[2], T. Ikoga[2], K. Nakamura[2], N. Kobayashi[2], K. Kuribara[1], T. Kodzasa[1], M. Yoshida[1], T. Kamata[1], S. Uemura[1], [1]AIST (Japan), [2]Chiba Univ. (Japan)

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G-4:Spin Injection

(13:30-14:45)
Chairs: T. Uemura (Hokkaido Univ.),
C. Song (Tsinghua Univ.)

13:30 G-4-01(Invited)
Extreme Exchange Bias Effect of Nanostructured Magnetic Phase Mixture Films with Increased Internal Interface
M. Jung[1], °J. Hong[1], [1]DGIST (Korea)

14:00 G-4-02
Experimental Demonstration of a Josephson Junction under Spin Current Injection
°M. Ishitaki[1], K. Ohnishi[1], T. Kimura[1], [1]Kyushu Univ. (Japan)

14:15 G-4-03
Room Temperature Observation of Large Spin Accumulation and Transport Signals in Post Annealed Co_2FeSi/MgO/n^+-Si on Insulator Devices
°A. Tiwari[1], T. Inokuchi[1], M. Ishikawa[1], H. Sugiyama[1], N. Tezuka[2], Y. Saito[1], [1]Toshiba Corp. (Japan), [2]Tohoku Univ. (Japan)

14:30 G-4-04
Spin Accumulation Up to 10 meV in Si Non-local Devices with MgO/Fe Tunnel Contacts
°A.M. Spiesser[1], H. Saito[1], Y. Fujita[2], S. Yamada[2], K. Hamaya[2], S. Yuasa[1], R. Jansen[1], [1]AIST (Japan), [2]Osaka Univ. (Japan)

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H-4:Advanced Imaging and Measurement Circuits for Medical and Bio Applications

(13:30-14:45)
Chairs: J. Ohta (NAIST), H. Majima (Toshiba Corp.)

13:30 H-4-01
Fabrication and Packaging of an Integrated Pressure and Temperature Sensor with High Immunity Against External Disturbance Under Flexible Endoscopic Operation
°Y. Maeda[1,3], K. Maeda[1], H. Kobara[2,3], H. Mori[2,3], H. Takao[1,3], [1]Faculty of Eng., Kagawa Univ. (Japan), [2]Faculty of Med., Kagawa Univ. (Japan), [3]JST-CREST (Japan)

13:45 H-4-02
Analysis of Charge Injection Characteristics of Stimulus Electrode with Wide-Range Analog Front-end for Body-Implanted Devices
°K. Ito[1], S. Uno[1], T. Goto[1], Y. Takezawa[1], T. Harashima[1], T. Morikawa[1], S. Nishino[2], H. Kino[1], K. Kiyoyama[2], T. Tanaka[1], [1]Tohoku Univ. (Japan), [2]Nagasaki Inst. of Applied Sci. (Japan)

14:00 H-4-03
A Radar-based Breast Cancer Detection Using CMOS Integrated Circuits with A Cross-shaped Dome Antenna Array
°H. Song[1], A. Azhari[1], Y. Seo[1], T. Uruma[1], X. Xiao[2], T. Kikkawa[1], [1]Hiroshima Univ. (Japan), [2]Tianjin Univ. (China)

14:15 H-4-04
Thermally Stable CMOS Readout Circuit with an Offest Voltage for Temperature Compensation of pH-ISFET Sensor
R.L. Wang[1], Y.F. Hao[1], J.L. Shi[1], °J.Y. Chen[1], C.S. Tsai[1], K.B. Lee[1], Y.T. Chuang[2], H.H. Liao[2], H.H. Tsai[2], Y.Z. Juang[2], [1]National Kaohsiung Normal Univ. (Taiwan), [2]National Applied Research Labs. (Taiwan)

14:30 H-4-05(Late News)
An Implantable Needle Shape Image Sensor with an On-Chip Thinned LED
°K. Sasagawa[1], T. Yamaguchi[1], M. Haruta[1], Y. Sunaga[1], Y. Ohta[1], H. Takehara[1], H. Takehara[1], T. Noda[1], T. Tokuda[1], J. Ohta[1], [1]NAIST (Japan)

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J-4:Silicon Photovoltaics I

(13:30-14:45)
Chairs: Y. Kurokawa (Nagoya Univ.), K. Ohdaira (JAIST)

13:30 J-4-01(Invited)
Characterization of Transparent Conductive Oxide films and its Influence on Amorphous/Crystalline Silicon Heterojunction Solar Cells
°F. Meng[1], J. Shi[1], L. Shen[1], G. Li[2], L. Zhang[1], J. Liu[1], Y. Liu[1], C. Sun[2], Z. Feng[2], Z. Liu[1], [1]SIMIT (China), [2]State Key Lab.of PV Sci. and Tech. (China)

14:00 J-4-02
Light-Induced Degradation of SiN_x:H Capped Metal Oxide Stacked Passivation
°H. Lee[1], T. Kamioka[1], Y. Ohshita[1], [1]Toyota Tech. Inst. (Japan)

14:15 J-4-03
Evaluation of SiO_x/Si and SiN_x/Si Interfaces using Laser Terahertz Emission Microscope
°A. Ito[1], T. Mochizuki[2], Y. Takase[1], H. Nakanishi[1], J. Mitchell[2], K. Tanahashi[2], I. Kawayama[3], M. Tonouchi[3], K. Shirasawa[2], H. Takato[2], [1]SCREEN Holdings Co., Ltd. (Japan), [2]AIST (Japan), [3]Osaka Univ. (Japan)

14:30 J-4-04(Late News)
Bandgap Tuning of Silicon Nanowire Arrays for the Application to All Silicon Tandem Solar Cells
°Y. Kurokawa[1,2], M. Yano[3], S. Miyajima[3], A. Yamada[3], [1]Nagoya Univ. (Japan), [2]JST-PRESTO (Japan), [3]Tokyo Tech (Japan)

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K-4:Organic & 2-D Materials

(13:30-15:00)
Chairs: T. Minari (NIMS), S. Ogawa (AIST)

13:30 K-4-01(Invited)
Materials Design of Electrically Conductive Pastes for Stretchable Device Packaging
°M. Inoue[1], Y. Itabashi[1], Y. Tada[1], [1]Gunma Univ. (Japan)

14:00 K-4-02
Solution-Processed Large-Area Discrete Organic Thin-Film Transistors
°X. Liu[1], M. Kanehara[2], T. Minari[1], [1]NIMS (Japan), [2]Colloidal Ink. Co., Ltd. (Japan)

14:20 K-4-03
$MoCl_5$ Intercalation Doping and Oxygen Passivation of Submicrometer-Sized Multilayer Graphene
°H. Miyazaki[1], R. Matsumoto[2], M. Katagiri[1], K. Ueno[3], T. Sakai[1], A. Kajita[1], [1]Toshiba Corp. (Japan), [2]Tokyo Polytechnic Univ. (Japan), [3]Shibaura Inst. of Tech. (Japan)

14:40 K-4-04
Fabrication of a Schottky Diode with Direct Deposition of Multilayer Graphene on n-GaN by Solid Phase Reaction
°M.S. Uddin[1], K. Ueno[1], [1]Shibaura Inst. of Tech. (Japan)

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M-4:Quantum Coherence

(13:30-14:45)
Chairs: T. Nakaoka (Sophia Univ.), T. Ota (NTT Basic Res. Labs.)

13:30 M-4-01
Coherence Properties and Charge Stability of Shallow Implanted Nitrogen Vacancy Centers in ^{12}C enrichied Diamond
°H. Yamano[1], K. Kato[1], T. Kageura[1], M. Inaba[1], T. Okada[1], I. Higashimata[1], M. Haruyama[2,3], T. Tanii[1], S. Onoda[2], W. Kada[3], O. Hanaizumi[3], T. Teraji[4], J. Isoya[5], H. Kawarada[1,6], [1]Waseda Univ. (Japan), [2]National Inst. fot Quantum and Radiological Sci. and Tech. (Japan), [3]Gunma Univ. (Japan), [4]NIMS (Japan), [5]Univ. of Tsukuba (Japan), [6]Kagami Memorial Res. Inst. For Materials Sci. and Tech. (Japan)

13:45 M-4-02
Design of Bull's Eye Structures on Gate-defined Lateral Quantum Dots
°R. Fukai[1], T. Nakagawa[1], H. Kiyama[1], A. Oiwa[1], [1]Osaka Univ. (Japan)

14:00 M-4-03
Mappings of Magnetic Field and Current Density Using Nano Superconducting Quantum Interference Device Microscope
Y. Shibata[1], °S. Nomura[1], H. Kashiwaya[2], S. Kashiwaya[2], R. Ishiguro[3], Y. Nago[4], H. Takayanagi[4], [1]Univ. of Tsukuba (Japan), [2]AIST (Japan), [3]Japan Women's Univ. (Japan), [4]Tokyo Univ. of Science (Japan)

14:15 M-4-04(Late News)
First Principle Calculation of a Negatively Charged Boron-Vacancy Center in Diamond for Highly-Sensitive Magnetic Sensor Applications
°A. Kunisaki[1], M. Muruganathan[2], H. Mizuta[2,3], T. Kodera[1], [1]Tokyo Tech (Japan), [2]JAIST (Japan), [3]Univ. of Southampton (UK)

14:30 M-4-05(Late News)
Robust Gate-Injected-Operation of Gold Nanoparticle Nonvolatile Memory with Low-Damage CF_4-Plasma-Treated Blocking Oxide Layer
°Y.H. Liu[1], J.C. Wang[1], T.C. Cheng[2], C.I. Wu[2], [1]Chang Gung Univ. (Taiwan), [2]National Taiwan Univ. (Taiwan)

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N-4:GaN Device Technologies

(13:30-14:45)
Chairs: S. Ozaki (Fujitsu Labs. Ltd.), H.Y. Cha (Hongik Univ.)

13:30 N-4-01(Invited)
Reliability challenges for GaN-based FETs
°M. Kuball[1], M. Uren[1], J. Pomeroy[1], S. Karboyan[1], I. Chatterjee[1], D. Liu[1], J. Anaya[1], T. Brazzini[1], [1]Univ. of Bristol (UK)

14:00 N-4-02
Effects of Electronic States at Insulator/AlGaN Interfaces on Threshold Voltage Instability of Al_2O_3/AlGaN/GaN Structures
°Z. Yatabe[1], J.T. Asubar[2], Y. Nakamura[1], T. Hashizume[3], [1]Kumamoto Univ. (Japan), [2]Univ. of Fukui (Japan), [3]Hokkaido Univ. (Japan)

14:15 N-4-03
Band Offset of Al_2O_3/SiO_2 Nano-laminate on GaN Evaluated by Hard X-ray Photoelectron Spectroscopy
°K. Ito[1], D. Kikuta[1], T. Narita[1], K. Kataoka[1], N. Isomura[1], K. Kitazumi[1], T. Mori[1], [1]Toyota Central R&D Labs. Inc. (Japan)

14:30 N-4-04(Late News)
Direct Carrier Number Measurement Method to Evaluate Current Collapse of GaN HEMT device
°K. Oasa[1], A. Yoshioka[1], Y. Saito[1], T. Kikuchi[2], T. Ohguro[1], T. Hamamoto[1], T. Sugiyama[1], [1]TOSHIBA Corp. Storage & Electronic Dev. Solutions Co. (Japan), [2]TOSHIBA Corp. Manufac. Eng. Center (Japan)

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O-4:Ferroelectrics and Characterization

(13:30-14:50)
Chairs: T. Yamaguchi (Renesas Electronics Corp.), T. Nakayama (Chiba Univ.)

13:30 O-4-01
Opportunity of Ferroelectric Phase Formation in Nitrogen-doped HfO_2
°L. Xu[1], T. Nishimura[1], S. Shibayama[1], T. Yajima[1], S. Migita[2], A. Toriumi[1], [1]Univ. of Tokyo (Japan), [2]AIST (Japan)

13:50 O-4-02
Evaluation of Potential Change and Electrical Dipole in HfO_2/SiO_2/Si Structure
°N. Fujimura[1], A. Ohta[1], K. Makihara[1], S. Miyazaki[1], [1]Nagoya Univ. (Japan)

14:10 O-4-03
Tunneling Electro-resistance Effect in Ultra-thin Ferroelectric HfO_2 Junctions
°X. Tian[1], S. Shibayama[1,2], T. Nishimura[1], T. Yajima[1], S. Migita[3], A. Toriumi[1], [1]Univ. of Tokyo (Japan), [2]JSPS (Japan), [3]AIST (Japan)

14:30 O-4-04
Depolarization Process in Ferroelectric HfO_2 Probed by Piezo-response Force Microscopy (PFM)
°S. Shibayama[1,2], L. Xu[1], X. Tian[1], S. Migita[3], A. Toriumi[1], [1]Univ. of Tokyo (Japan), [2]JSPS (Japan), [3]AIST (Japan)