Tuesday, September 27

Opening & Plenary Sessions (Main Convention Hall)

Opening Session
Chair: M. Masahara, AIST
9:15 Welcome Address
T. Kanayama, AIST
9:20 Welcome Address
N. Yokoyama, JSAP
9:25 SSDM Award/SSDM Paper Award Ceremony

Non-Technical Plenary Session
Chair: M. Masahara, AIST
9:45 PL-1-01
Future of Television: 8K Super Hi-Vision
T. Saito, NHK Science & Technology Research Laboratories, Japan

Technical Plenary Session
Chair: T. Hiramoto, Univ. of Tokyo
10:30 PL-2-01
Crossbar arrays for Storage Class Memory and non-Von Neumann computing
G.W. Burr, IBM Almaden Research Center, USA

11:15 PL-2-02
Step Back for Going Beyond
A. Toriumi, Univ. of Tokyo, Japan

Lunch

13:30 A-1-01(Invited)
Stackable MoS2 FinFETs and Applications
Reconfigurable Logic (RL)
(NEM) Hybrid Circuits for Nano-Electromechanical Semiconductor (CMOS)-
13:30 B-1-01(Invited)
Complementary Metal-Oxide-Semiconductor (CMOS)-
Nanoelectromechanical (NEM) Hybrid Circuits for Low-Power and High-Speed Reconfigurable Logic (RL) Applications
(W. Cho, Sogang Univ. (Korea))

13:30 C-1-01(Invited)
Operation Mechanism and Novel Functions of Oxide-Based Atomic Switches
Compact Photonic Integrated Circuits
Z. Zhou, L. Liu, Peking Univ. (China)

13:30 D-1-01(Invited)
Refractive Index Engineering of High Performance Coupler for Graphene and 2D Materials
13:30 E-1-01(Invited)
Current and Future Technologies of SIC Power Devices

13:30 F-1-01(Invited)
Smf Liquid Crystals for High Performance Solution-processed Poly-crystalline Organic Field Effect Transistors

13:30 G-1-01(Invited)
Antiferromagnetic Domain Wall Motion Driven by Spin-orbit Torques

13:30 H-1-01(Invited)
Kurishima, M. Ida, H. Teraoka, K. Amemiya, S. Akahori, T. Tanaka, 1. Tohoku Univ. (Japan)

13:30 J-1-01(Invited)
H. Moriyama, 1. Kyoto Univ. (Japan)

13:30 K-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 L-1-01(Invited)
T. Moriyama, 1. Kyoto Univ. (Japan)

13:30 M-1-01(Invited)

13:30 N-1-01(Invited)
K. Kajifusa, K. Kita, Y. Amemiya, Y. Koyanagi, A. Kurishima, T. Tanaka, 1. Tohoku Univ. (Japan)

13:30 O-1-01(Invited)
A. Kavas, J. Franco, T. Conard, P. Loo, 1. imec (Belgium)

13:30 P-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 Q-1-01(Invited)
T. Moriyama, 1. Kyoto Univ. (Japan)

13:30 R-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 S-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 T-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 U-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 V-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 W-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 X-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 Y-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 Z-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 AA-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 BB-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 CC-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 DD-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 EE-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)

13:30 FF-1-01(Invited)
K. Hara, T. Saito, T. Nishiguchi, S. Kunii, 1. Tokyo Tech (Japan)
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<tr>
<td>13:30 J-1-01(Invited)</td>
<td>Hydroged-Based Cell-compatible Electrode Systems</td>
<td>Integration of High Speed and Low Power CMOS Front-end Circuits with Silicon Photonic Devices</td>
<td>Electrostatic Perturbations from TVS Processing during 3D Integration of Advanced CMOS Technologies</td>
<td>N-on-One-01(Invited)</td>
<td>Compositonally Graded-Base InP/InGaAsSb Double Heterojunction Bipolar Transistors with 500-GHz fT and BVCEO &gt; 5V</td>
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<tr>
<td>Chairs: M. Nishizawa, T. Tohoku Univ. (Japan)</td>
<td>Chairs: H. Hsu, Y. Li, C. Liao, P. Wang, Y. Lin, P. Chu, S. Chen, K. Li, D. Thomson, G. Reed, National Tsing Hua Univ. (Taiwan), Univ. of Southampton (UK)</td>
<td>Chairs: C. Kothenbam, K. Sakuma, S.A. Cohen, T.J. Watson Research Center IBM Research (USA)</td>
<td>Chairs: R. Zhang, X. Tang, X. Yu, J. Li, Y. Zhao, Zhejiang Univ. (China)</td>
<td>14:00 K-1-02</td>
<td>Contact resistivity to C-doped InGaAs/Sb TeP/TeAu and TeP/TeAu</td>
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<td>12:40</td>
<td>F-2: Organic Photovoltaic Cells</td>
<td>(15:40-17:25) Chairs: M. Iegami (Toin Univ. of Yokohoma), T. Kaji (Tokyo Univ. of Agri. &amp; Tech.)</td>
<td>Y. Lu1, W. Wangun Univ. Inc. (Japan)</td>
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16:10 J-2-02
The Physical Origin of Interface Defects and Its Influence on MOSCAP with Magnetron Sputtered MoS2 and HfO2 High-k Gate Dielectric
P. Xu1, S. Wang2, D. Chi1, C. Li1, Z. He1, X. Liu1, K.W. Ang1, 1 National Univ. of Singapore (Singapore), 2 Institute of Materials Research and Engineering (Singapore), 1 South Univ. of Sci. and Tech. of China (China), 3 Shenzhen Univ. (China)

16:10 K-2-02
Impact of Dry Process Damage on Chemical Mechanical Planarization with Cuchow-k Structure
M. Kodera1, H. Yam1, N. Miyashita2, 3Toshiba Corp. (Japan)

16:10 M-2-02
Quantum Dots for Quantum Information Applications in the Conventional Telecom Wavelength Band.
R.M. Stevenson1, J. Skiba1, Szymandru1, C. Varnare2, M. Felle2, J. Huevel1, T. Muller1, I. Farrer1, A. Krysal1, S. Spencer1, D.A. Ritchie1, J. Hefferman1, A.J. Shields1, 1Toshiba Research Europe Ltd. (UK), 2Univ. of Cambridge (UK), 3Univ. of Sheffield (UK)

16:25 M-2-03
Gate-controlled Spin-orbit Interaction in an InAs Nanowire MOSFET
K. Takase1, Y. Ashikawa1,2, G. Mishima2, K. Shiojima1, 1Univ. of Fukui (Japan), 2Hosei Univ. (Japan)

16:40 M-2-04(Invited)
Device and Circuit considerations towards Spin-Based Logic
P. Rapha1, S. Sayon1, C. Adelmann1, A. Theun1, 1IMEC (Belgium)

15:40 H-2-01(Invited)
Solid-State Nanopore System for Label-free DNA Sequencing
Y. Yang1, J. He2, Y. Kato1, T. Nakamura1, T. Nakamura1, K. Nakamura1, Z. He3, X. Liu4, K. Wang4, 1Nanjing Tech. Univ. (China), 2Taiwan Univ. of Science and Technology (Taiwan), 3National Univ. of Singapore (Singapore), 4National Taiwan Univ. (Taiwan)

15:40 J-2-01(Invited)
Hurdles and Progress towards Device Applications of Graphene and Layered Materials
D. June1, 3Cornell Univ. (USA)

15:40 K-2-01(Invited)
CMP-Stack Trek
V. Balan1, 3CEA-LETI (France)

15:40 L-2-01(Invited)
Topological Phenomena in Ultracold Atoms
M. Ueda1, 1Univ. of Tokyo (Japan)

15:40 M-2-01(Invited)
GaN-based Polarized Semiconductor Devices for Future Power Switching Systems
H. Ishida1, K. Kajitani1, Y. Kinoshita1, H. Umeda1, S. Ujina1, M. Ogawa1, K. Tanaka1, S. Tanaka1, M. Ishida1, T. Ueda1, 1Panasonic Corp. (Japan)

15:40 N-2-01(Invited)
GaN-based Polarized Semiconductor Devices for Future Power Switching Systems
H. Ishida1, K. Kajitani1, Y. Kinoshita1, H. Umeda1, S. Ujina1, M. Ogawa1, K. Tanaka1, S. Tanaka1, M. Ishida1, T. Ueda1, 1Panasonic Corp. (Japan)

16:10 H-2-02
Development of Molecularly Imprinted Polymer-Gate Field Effect Transistor for Sugar Chain Sensing
S. Nishitani1, T. Kajita1, T. Kabata1, 1Univ. of Tokyo (Japan), 2PRODIGE Inc. (Japan)

16:10 J-2-02
Long-term and Real-time Monitoring of Chondrocytes Behavior Synthesizing Extracellular Matrix with Biologically-coupled Field Effect Transistor
H. Satoh1, A. Satoh1, T. Kajita1, S. Mizuno1, T. Sakata1, 1Univ. of Tokyo (Japan), 2PRODIGE Inc. (Japan), 3Hiroshima Univ. (Japan)

16:10 M-2-02
Reconstitution of Human Ion Channels into Solvent-Free Lipid Bilayers in MicroFabricated Silicon Chips: Accelerated Vesicle Fusion via Centrifugation
A. Hirano-Iwata1, M. Yoshida1, S. Araki1, T. Iwasaki1, Y. Goto1, 1Tohoku Univ. (Japan), 2Tokyo Tech (Japan)

16:40 H-2-04
Reconstitution of Human Ion Channels into Solvent-Free Lipid Bilayers in MicroFabricated Silicon Chips: Accelerated Vesicle Fusion via Centrifugation
A. Hirano-Iwata1, M. Yoshida1, S. Araki1, T. Iwasaki1, Y. Goto1, 1Tohoku Univ. (Japan), 2Tokyo Tech (Japan)

16:40 J-2-04
Using Self-Assembled Monolayers for Selective Metal Removal and Ultrathin Gate Dielectrics in MoS2 Field-Effect Transistors
W. Dai1, T. Kawanaga1, S. Ohe1, 1Tokyo Tech (Japan)

16:40 K-2-03
The Effect of the HFN Barrier Thickness on the Cu Grain Orientation Control
M. Sato1, E. Aoyagi2, M.B. Takiyama1, 3Kimitsu Inst. of Tech. (Japan), 4Toshiba Corp. (Japan)

16:40 L-2-02(Invited)
Invited Talk
S. Coffa1, 1STMicroelectronics (Italy)

16:40 N-2-03
Temperature Dependence of Current-Voltage of Ni Schottky Diodes on Cleaved m-plane GaN Surfaces
H. Imadate1, T. Akik1, T. Mishima1, A. Shoji1, 1Univ. of Fukui (Japan), 2Hosei Univ. (Japan)

16:40 O-2-05(Invited)
Advanced Implantation and Ion Beam Modification Techniques
Y. Kwon1, 1Korea Advanced Institute of Science and Technology (South Korea)
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<tr>
<td>17:10</td>
<td>A-2-05</td>
<td>InGaAs/Si Heterojunction Tunnel FET with Modulation-doped Channel</td>
<td>J. Motohisa¹, T. Fukui¹, JST-PRESTO (Japan)</td>
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<td>16:55</td>
<td>B-2-05</td>
<td>Long-Term Reliable Physically Unclonable Function using Oxide Tunnel Barrier Breakdown on 2T-2MTJ Based Embedded-STT-MRAM</td>
<td>S. Takebayi, Y. Tanimoto, H. Neguchi, K. Negami, K. Abe, S. Fujita, Toshiba Corp. (Japan)</td>
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<td>16:55</td>
<td>C-2-05</td>
<td>On-chip Silicon Photonics Technologies for WDM-based Optical Interconnects</td>
<td>S. Iwesn, Y. Tanaka, 1PETRA (Japan)</td>
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<td>17:10</td>
<td>J-2-06</td>
<td>Structure and Magnetic Properties of Electrospun LaxSr1-xMnO3 Nanofibers</td>
<td>B. Yamaoka, K. Takahashi, S. Haynse, T. Ima, Kanazawa Univ. (Japan)</td>
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<tr>
<td>17:10</td>
<td>F-2-05</td>
<td>Organic Photovoltaic Cells</td>
<td>1.PROVIGATE Inc. (Japan), 2.Univ. of Tsukuba (Japan), 3.AIST (Japan)</td>
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## Session Details

**A-2: Ferroelectric-gate TFETs and Vertical TFETs**

1. *InGaAs/Si Heterojunction Tunnel FET with Modulation-doped Channel*
   - J. Motohisa
   - T. Fukui
   - JST-PRESTO (Japan)

2. *Channel Modulation-doped Tunnel FET with InGaAs/Si Heterojunction*
   - K. Tomioka
   - F. Ishizaka
   - JST-PRESTO (Japan)

3. *TFETs and Vertical TFETs*
   - K. Tomioka
   - F. Ishizaka
   - JST-PRESTO (Japan)

4. *Ferroelectric-gate TFETs and Vertical TFETs*
   - K. Tomioka
   - F. Ishizaka
   - JST-PRESTO (Japan)

5. *MRAM and its Application*
   - Watanabe
   - K. Nagashio
   - Univ. of Tokyo (Japan)

6. *MRAM and its Application*
   - Watanabe
   - K. Nagashio
   - Univ. of Tokyo (Japan)

7. *MRAM and its Application*
   - Watanabe
   - K. Nagashio
   - Univ. of Tokyo (Japan)

8. *Organic Photovoltaic Cells*
   - 1.PROVIGATE Inc. (Japan)
   - 2.Univ. of Tsukuba (Japan)
   - 3.AIST (Japan)

9. *Organic Photovoltaic Cells*
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    - 3.AIST (Japan)

11. *Organic Photovoltaic Cells*
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    - 2.Univ. of Tsukuba (Japan)
    - 3.AIST (Japan)

12. *Organic Photovoltaic Cells*
    - 1.PROVIGATE Inc. (Japan)
    - 2.Univ. of Tsukuba (Japan)
    - 3.AIST (Japan)

13. *Organic Photovoltaic Cells*
    - 1.PROVIGATE Inc. (Japan)
    - 2.Univ. of Tsukuba (Japan)
    - 3.AIST (Japan)
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<td>16:10 A-2-05</td>
<td>J. Robertson1, Y. Guo1, Cambridge Univ. (UK)</td>
<td>16:55 J-2-05</td>
<td>Band Offset and Band Engineering in Transition Metal Dichalcogenides</td>
<td>17:10 M-2-05(Late News)</td>
<td>Evaluation of Schottky Barrier Height on 4H-SiC m-Face [1-100] for SBD-Wall Integrated Trench MOSFET (SWITCH-MOS)</td>
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<tr>
<td>17:10 B-2-06</td>
<td>Equivalent Circuit Simulation of a Neuron-electrode Interface: Mechanism of Signal Amplification by Resistive Covering</td>
<td>17:10 J-2-06</td>
<td>Intercalation of Li atom from Solvated State to Interlayer of Graphite with Oxidized Edges as Li-Ion-Battery Anode: First-Principles Calculations</td>
<td>17:25 N-2-06</td>
<td>2-Dimensional Characterization of 3C-SiC Layers using Scanning Internal Photomission Microscopy</td>
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<td>17:25 J-2-07(Late News)</td>
<td>Improvement of L_2/</td>
<td>17:10 M-2-05(Late News)</td>
<td>Single Hole Transport and Magnetic Field Dependence of Pauli Spin Blockade in P-channel Silicon Double Quantum Dots</td>
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**Tuesday, September 27**