

Opening & Plenary Sessions (Main Hall A, B)

Opening Session

Chair: S. Hara, Hokkaido Univ.

9:00

Welcome Address

T. Fukui, Hokkaido Univ.

9:05

Welcome Address

K. Masu, JSAP

SSDM Award

SSDM Paper Award Ceremony

Non-Technical Plenary Session

Chair: S. Hara, Hokkaido Univ.

9:30 PL-1-1

Building a Sustainable Society through Innovative Devices and Materials

R. Chubachi, AIST, Japan

10:15 Break

Technical Plenary Session

Chair: S. Fujita, Kyoto Univ.

10:30 PL-2-1

Beyond blue LED

H. Amano, Nagoya Univ., Japan

11:15 PL-2-2

Low Power Electronics beyond 5nm

K. L. Wang, UCLA, USA

Lunch

| 1F Middle-Sized Hall A                                                                                                                                                                                                                                                                                                                    | 1F Middle-Sized Hall B | 1F 101                                                                                                                                                                                            | 1F 102 | 1F 107a                                                                                                                                           | 1F 107b                                                                                                                                                                                                                                                     | 1F 108a                                                                                                                        |
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| <b>A-1: Light Sources and Related Technologies</b><br>(14:00-15:45)<br>Chairs: K. Kojima (Tohoku Univ.)<br>T. Isu (Tokushima Univ.)                                                                                                                                                                                                       |                        | <b>C-1: Organic and Perovskite Photovoltaics</b><br>(14:00-15:45)<br>Chairs: K. Tajima (RIKEN)<br>T. Taima (Kanazawa Univ.)                                                                       |        | <b>E-1: Carbon Interconnects</b><br>Chairs: S. Ogawa (AIST)<br>M. Sato (Fujitsu Labs.)                                                            | <b>F-1: Advanced Vision &amp; Imaging Circuits</b><br>(14:00-15:30)<br>Chairs: T. Minotani (NTT TELECON)<br>H. Lin (Nat. Chung-Hsing Univ.)                                                                                                                 | <b>G-1: Wide-gap Materials</b><br>(14:00-15:45)<br>Chairs: T. Nagata (NIMS)<br>T. Iwai (Fujitsu Labs.)                         |
| <b>14:00 A-1-1 (Invited)</b><br><b>Photonic Structures in LEDs and Solar Cells</b><br><i>U.T. Schwarz<sup>1</sup>, O. Höhn<sup>2</sup>, B. Bläsi<sup>3</sup>, C. Wiesmann<sup>3</sup> and N. Linder<sup>4</sup>, <sup>1</sup>Univ. of Freiburg, <sup>2</sup>Fraunhofer ISE, <sup>3</sup>Osram OS and <sup>4</sup>Osram GmbH (Germany)</i> |                        | <b>14:00 C-1-1 (Invited)</b><br><b>Bandgap Science for Organic Solar Cells</b><br><i>M. Hiramoto<sup>1,2</sup>, <sup>1</sup>Institute for Molecular Science and <sup>2</sup>JST-CREST (Japan)</i> |        | <b>14:00 E-1-1 (Invited)</b><br><b>Functionalized Insulated Molecular Wires for Molecular Electronics</b><br><i>J. Terao, Kyoto Univ. (Japan)</i> | <b>14:00 F-1-1 (Invited)</b><br><b>VLSI Pulse-Coupled Phase Oscillator Networks and Their Emulator toward Spike-based Computation for Intelligent Processing</b><br><i>H. Tamukoh, Y. Suedomi, K. Matsuzaka and T. Morie, Kyushu Inst. of Tech. (Japan)</i> | <b>14:00 G-1-1 (Invited)</b><br><b>Ultrapure Diamond Growth by Chemical Vapor Deposition</b><br><i>T. Teraji, NIMS (Japan)</i> |

## Lunch

| 2F 201 | 2F 202                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2F Small Hall                                                                                                                                                                                                                                                            | 2F 204                                                                                                                                                                                                     | 2F 206                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2F 207                                                                                                                                                                                                                                     | 1F 108b                                                                                                                                                                                                                                                                                                    |
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|        | <b>J-1: Device and Characterization</b><br>(14:00-15:30)<br>Chairs: S. Matsumoto (Kyushu Inst. of Tech.)<br>H. Umezawa (AIST)                                                                                                                                                                                                                                                                                                                                                                                | <b>K-1: Tunnel FET</b><br>(14:00-15:50)<br>Chairs: M. Masahara (AIST)<br>M. Kobayashi (Univ. of Tokyo)                                                                                                                                                                   | <b>M-1: High-Speed &amp; High-Frequency Devices</b><br>(14:00-15:45)<br>Chairs: S. Suzuki (Tokyo Tech)<br>E. Y. Chang (NCTU)                                                                               | <b>N-1: Junction Technology</b><br>(14:00-15:30)<br>Chairs: S. Migita (AIST)<br>T. Yamaguchi (Renesas Electronics)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>O-1: CBRAM and IGZO Memory</b><br>(14:00-15:30)<br>Chairs: T. Sakamoto (NEC)<br>Y. Sasago (Hitachi)                                                                                                                                     | <b>P-1: Spin-orbit Effect and Application for Sensors</b><br>(14:00-15:45)<br>Chairs: S. Mizukami (Tohoku Univ.)<br>C. Song (Tsinghua Univ.)                                                                                                                                                               |
|        | <b>14:00 J-1-1 Self-Aligned Formation of the Trench Bottom Shielding Region in 4H-SiC UMOSFETs</b><br><i>T. Kojima<sup>1,2</sup>, S. Harada<sup>1,3</sup>, Y. Kobayashi<sup>1,2</sup>, M. Sometani<sup>1,2</sup>, K. Ariyoshi<sup>1,4</sup>, J. Senzaki<sup>1,3</sup>, M. Takei<sup>1,2</sup>, Y. Tanaka<sup>1,3</sup> and H. Okumura<sup>1,2</sup>, R&amp;D Partnership for Future Power Electronics Tech., <sup>2</sup>Fuji Electric Co., Ltd., <sup>3</sup>AIST and <sup>4</sup>Toshiba Corp. (Japan)</i> | <b>14:00 K-1-1 (Invited) Novel Steep-Slope Switch Device with Improved Figures of Merit (FOM) through Mechanism Engineering for Ultra-Low-Power Applications</b><br><i>R. Huang, Q. Huang, C. Wu, J. Wang, H. Zhu, C. Chen, L. Guo and Y. Wang, Peking Univ. (China)</i> | <b>14:00 M-1-1 (Invited) InGaAs Channel for Low Supply Voltage</b><br><i>Y. Miyamoto, T. Kanazawa, Y. Yonai, K. Ohsawa, Y. Mishima, M. Fujimatsu, K. Ohashi, S. Nestu and S. Iwata, Tokyo Tech (Japan)</i> | <b>14:00 N-1-1 (Invited) Annealing Techniques for Low Temperature Junctions Design in a 3D VLSI Integration</b><br><i>C. Fenouillet Beranger<sup>1</sup>, P. Batude<sup>1</sup>, S. Kerdiles<sup>1</sup>, B. Mathieu<sup>1</sup>, P. Acosta Alba<sup>1</sup>, L. Pasini<sup>2,1</sup>, V. Lu<sup>2,1</sup>, F. Deprat<sup>1</sup>, L. Brunet<sup>1</sup>, B. Sklenard<sup>1</sup>, P. Rivallin<sup>1</sup>, O. Rozeau<sup>1</sup>, M-P. Samson<sup>2,1</sup>, B. Previtali<sup>1</sup>, L. Hortemel<sup>1</sup>, N. Rambal<sup>1,2</sup>, V. Lapras<sup>1,2</sup>, M. Casse<sup>1</sup>, S. Reboh<sup>1</sup>, F. Piegas Luce<sup>1</sup>, P. Besson<sup>1</sup>, R. Kachtouli<sup>1</sup>, A. Royer<sup>1</sup>, D. Lafond<sup>1</sup>, H. Dansas<sup>1</sup>, F. Aussenac<sup>1</sup>, J-P. Barnes<sup>1</sup> and M. Vinet<sup>1</sup>, <sup>1</sup>CEA-LETI and <sup>2</sup>STMicroelectronics (France)</i> | <b>14:00 O-1-1 (Invited) Conductive Bridge RAM (CBRAM): functionality, reliability and applications</b><br><i>G. Molas, J. Guy, M. Barci, F. Longnos, G. Palma, E. Vianello, P. Blaise, B. De Salvo and L. Perniola, CEA-LETI (France)</i> | <b>14:00 P-1-1 (Invited) Observation of the Quantum Anomalous Hall Effect in a Magnetic Topological Insulator Electrically Tuned Magnetic Order and Magnetoresistance in a Topo-logical Insulator</b><br><i>S.-H. Ji, L.-L. Wang, X. Chen, K. He, Y. Wang, X.-C. Ma, Q.-K. Xue, Tsinghua Univ. (China)</i> |

| 1F Middle-Sized Hall A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1F Middle-Sized Hall B | 1F 101                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1F 102 | 1F 107a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1F 107b                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1F 108a                                                                                                                                                                                                                                                                                                                                                                                              |
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| <b>A-1: Light Sources and Related Technologies</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        | <b>C-1: Organic and Perovskite Photovoltaics</b>                                                                                                                                                                                                                                                                                                                                                                                             |        | <b>E-1: Carbon Interconnects</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>F-1: Advanced Vision &amp; Imaging Circuits</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>G-1: Wide-gap Materials</b>                                                                                                                                                                                                                                                                                                                                                                       |
| <b>14:30 A-1-2</b><br><b>High Power and High Temperature Operation over 3W/85°C of an InGaN Laser using a Novel Double-heat-flow Packaging Technology</b><br><i>S. Nozaki<sup>1</sup>, S. Yoshida<sup>2</sup>, K. Yamanaka<sup>2</sup>, O. Imafuji<sup>1</sup>, S. Takigawa<sup>1</sup>, T. Katayama<sup>1</sup> and T. Tanaka<sup>1</sup>, <sup>1</sup>Panasonic Corp. and <sup>2</sup>Panasonic Semiconductor Solutions Co., Ltd. (Japan)</i>                                                                                                   |                        | <b>14:30 C-1-2 (Invited)</b><br><b>Low Temperature Solution Processable n-i-p Perovskite Solar Cell</b><br><i>C.Y. Chu, C.Y. Chang and W.F. Su, National Taiwan Univ. (Taiwan)</i>                                                                                                                                                                                                                                                           |        | <b>14:30 E-1-2</b><br><b>MEMS Ascorbic Acid Fuel Cells with Flexible Electrodes of Enzyme-Coated Graphene Carbon Fiber Cloth</b><br><i>K. Hoshi<sup>1</sup>, F. Yudai<sup>1</sup>, K. Muramatsu<sup>2</sup>, H. Sumi<sup>2</sup>, Y. Otani<sup>3</sup>, D. Kanakura<sup>3</sup> and Y. Nishioka<sup>1</sup>, <sup>1</sup>Nihon Univ., <sup>2</sup>Incubation Alliance, Inc. and <sup>3</sup>Inoue Mago Co. Ltd. (Japan)</i>                                                                                                                                                                                                                            | <b>14:30 F-1-2</b><br><b>Reconfigurable Hybrid Parallel Vision Processor with Full-custom Compact Distributed Memory</b><br><i>Z. Chen, J. Yang, L. Liu and N. Wu, Chinese Academy of Sci. (China)</i>                                                                                                                                                                                                                                                                                                                                      | <b>14:30 G-1-2</b><br><b>Effect of Stacking Faults on Magnetic Flux Pinning in Boron-Doped Superconducting Diamond Films</b><br><i>M. Shibata<sup>1,2</sup>, T. Kageura<sup>1,2</sup>, T. Yamaguchi<sup>3</sup>, Y. Takano<sup>3</sup> and H. Kawarada<sup>1,2</sup>, <sup>1</sup>Waseda Univ., <sup>2</sup>Kagami Memorial Res. Inst. for Materials Sci. and Tech. and <sup>3</sup>NIMS (Japan)</i> |
| <b>14:45 A-1-3</b><br><b>High Circular Dichroism Lasing Characteristics in Metal-GaN Spiral Cavity at Room Temperature</b><br><i>Y.H. Hsiao<sup>1</sup>, S.W. Liao<sup>1</sup>, K.J. Chen<sup>1</sup>, M.H. Shih<sup>1,2</sup> and H.C. Kuo<sup>1</sup>, <sup>1</sup>NCTU and <sup>2</sup>Research Center for Applied Sci., Academia Sinica (Taiwan)</i>                                                                                                                                                                                          |                        | <b>15:00 C-1-3</b><br><b>Suppression of Thermal Degradation in Perovskite Solar Cells by Robust Encapsulation</b><br><i>N. Hayashi, R. Uchida, M. Suzuka, K. Kawano and T. Sekiguchi, Panasonic Corp. (Japan)</i>                                                                                                                                                                                                                            |        | <b>14:45 E-1-3</b><br><b>Interfacial Charge Transfer Behaviour of Conducting Polymers as Contact Electrode for Semiconductor Devices</b><br><i>J. Kawakita, Y. Fujikawa, T. Nagata and T. Chikyov, NIMS (Japan)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>14:50 F-1-3</b><br><b>Low Contrast Motion Capturing Vision Sensor with Crystalline Oxide Semiconductor FET-based In-Pixel Threshold Voltage Compensation Circuit</b><br><i>S. Maeda<sup>1</sup>, T. Ohmaru<sup>1</sup>, H. Inoue<sup>1</sup>, T. Nakagawa<sup>1</sup>, Y. Kurokawa<sup>1</sup>, T. Ikeda<sup>1</sup>, Y. Suzuki<sup>1</sup>, N. Yamade<sup>1</sup>, H. Miyairi<sup>1</sup>, M. Ikeda<sup>2</sup> and S. Yamazaki<sup>1</sup>, <sup>1</sup>Semiconductor Energy Lab. Co., Ltd. and <sup>2</sup>Univ. of Tokyo (Japan)</i> | <b>14:45 G-1-3</b><br><b>Beyond 10 µm Thick Crack-Free GaN Growth on Si for High Power Device Applications</b><br><i>A. Tanaka, R. Chen and S.A. Dayeh, Univ. of California, San Diego (USA)</i>                                                                                                                                                                                                     |
| <b>15:00 A-1-4</b><br><b>Room Temperature Operation of GaAs/AlGaAs Quantum Nanodisks Light Emitting Diodes Fabricated by Fusion of Bio-Template and Neutral Beam Etching</b><br><i>Y.C. Lai<sup>1,2</sup>, A. Higo<sup>2</sup>, C. Thomas<sup>2</sup>, T. Kiba<sup>3</sup>, J. Takayama<sup>3</sup>, M. Sugiyama<sup>4</sup>, Y. Nakano<sup>1</sup>, P. Yu<sup>1</sup>, A. Murayama<sup>3</sup> and S. Samukawa<sup>1,2</sup>, <sup>1</sup>NCTU, <sup>2</sup>Tohoku Univ., <sup>3</sup>Hokkaido Univ. and <sup>4</sup>Univ. of Tokyo (Taiwan)</i> |                        | <b>15:15 C-1-4</b><br><b>Degradation Mechanism for Planar Heterojunction Perovskite Solar Cells</b><br><i>K. Yamamoto, Md. Shahiduzzaman, Y. Furumoto, T. Kuwabara, K. Takahashi and T. Taima, Kanazawa Univ. (Japan)</i>                                                                                                                                                                                                                    |        | <b>15:00 E-1-4</b><br><b>Effect of Current Stress during Thermal CVD of Multilayer Graphene on Cobalt Catalytic Layer</b><br><i>H. Ichikawa, T. Uchida and K. Ueno, Shibaura Inst. of Tech. (Japan)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>15:10 F-1-4</b><br><b>A CMOS SPAD Sensor Featuring Asynchronous Event-Extraction Readout Architecture for Faint Light Detection</b><br><i>X. Yang<sup>1</sup>, H.Z. Zhu<sup>2</sup>, T. Nakura<sup>2</sup>, T. Iizuka<sup>1</sup> and K. Asada<sup>2</sup>, <sup>1</sup>Univ. of Tokyo and <sup>2</sup>VDEC Univ. of Tokyo (Japan)</i>                                                                                                                                                                                                   | <b>15:00 G-1-4</b><br><b>Electrical Characteristics of N-polar p-type GaN Schottky Contacts</b><br><i>T. Aoki<sup>1</sup>, T. Tanikawa<sup>2</sup>, R. Katayama<sup>2</sup>, T. Matsuoka<sup>2</sup> and K. Shiojima<sup>1</sup>, <sup>1</sup>Univ. of Fukui and <sup>2</sup>IMR, Tohoku Univ. (Japan)</i>                                                                                           |
| <b>15:15 A-1-5</b><br><b>Plate-Insertion Stacking Method for Three-Dimensional Photonic Crystal Fabrication</b><br><i>T. Tajiri<sup>1</sup>, S. Takahashi<sup>2</sup>, J. Tatebayashi<sup>2</sup>, S. Iwamoto<sup>1,2</sup> and Y. Arakawa<sup>1,2</sup>, <sup>1</sup>IIS, Univ. of Tokyo and <sup>2</sup>NanoQuine, Univ. of Tokyo (Japan)</i>                                                                                                                                                                                                   |                        | <b>15:30 C-1-5</b><br><b>Single-walled Carbon Nanotube Film as Cathode in Flexible Indium-free Planar Heterojunction Perovskite Solar Cells</b><br><i>I. Jeon<sup>1</sup>, T. Chiba<sup>1</sup>, C. Delacou<sup>1</sup>, Y. Guo<sup>1</sup>, A. Kaskela<sup>2</sup>, O. Reynaud<sup>2</sup>, E. Kauppinen<sup>2</sup>, S. Maruyama<sup>1</sup> and Y. Matsuo<sup>1</sup>, <sup>1</sup>Univ. of Tokyo and <sup>2</sup>Aalto Univ. (Japan)</i> |        | <b>15:15 E-1-5</b><br><b>Intercalation Doping with Metal Chlorides in Low-Temperature-Grown Multilayer CVD Graphene for Interconnect Applications</b><br><i>H. Miyazaki<sup>1,2</sup>, R. Matsumoto<sup>3</sup>, M. Katagiri<sup>1,2</sup>, D. Nishide<sup>1,4</sup>, R. Ifuku<sup>1,4</sup>, M. Takahashi<sup>1</sup>, Y. Yamazaki<sup>1,2</sup>, T. Matsumoto<sup>1,4</sup>, N. Sakuma<sup>1,2</sup>, K. Ueno<sup>5</sup>, T. Sakai<sup>1,2</sup> and A. Kajita<sup>1,2</sup>, <sup>1</sup>LEAP, <sup>2</sup>Toshiba Corp., <sup>3</sup>Tokyo Polytechnic Univ., <sup>4</sup>Tokyo Electron Ltd. and <sup>5</sup>Shibaura Inst. of Tech. (Japan)</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>15:15 G-1-5</b><br><b>Novel Evaluation Technique of GaN Surfaces Using Laser-induced Terahertz Emission</b><br><i>Y. Sakai<sup>1</sup>, I. Kawayama<sup>1</sup>, H. Nakanishi<sup>2</sup> and M. Tonouchi<sup>1</sup>, <sup>1</sup>Osaka Univ. and <sup>2</sup>SCREEN Holdings Co., Ltd. (Japan)</i>                                                                                              |
| <b>15:30 A-1-6</b><br><b>Precise Coupling of Single Germanium Quantum Dot to Silicon Photonic Crystal Nanocavity</b><br><i>C. Zeng<sup>1</sup>, Y. Ma<sup>2</sup>, Y. Zhang<sup>1</sup>, Z. Jiang<sup>2</sup>, J. Yu<sup>1</sup> and J. Xia<sup>1</sup>, <sup>1</sup>Huazhong Univ. of Sci. and Tech. and <sup>2</sup>Fudan Univ. (China)</i>                                                                                                                                                                                                     |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                              |        | <b>15:30 E-1-6</b><br><b>Doped Carbon Nanotubes for Interconnects</b><br><i>J. Robertson<sup>1</sup>, S. Esconjauregui<sup>1</sup>, L. D'Arsie<sup>1</sup>, J. Yang<sup>1</sup>, H. Sugime<sup>1</sup>, G. Zhong<sup>1</sup>, S. Vollebregt<sup>2</sup>, R. Ishihara<sup>2</sup>, C. Cepek<sup>3</sup>, G. Duesberg<sup>1</sup>, T. Hallam<sup>4</sup> and Y. Guo<sup>1</sup>, <sup>1</sup>Univ. of Cambridge, <sup>2</sup>Delft Univ., <sup>3</sup>TASC and <sup>4</sup>Trinity College Dublin (UK)</i>                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>15:30 G-1-6</b><br><b>In Situ Synchrotron X-ray Diffraction Studies of Nitride Semiconductor Materials</b><br><i>T. Sasaki and M. Takahasi, JAEA (Japan)</i>                                                                                                                                                                                                                                      |

| 2F 201 | 2F 202                                                                                                                                                                                                                                                                      | 2F Small Hall                                                                                                                                                                                                                                                                                                                                       | 2F 204                                                                                                                                                                                                                                                                                                                                                                                                                               | 2F 206                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2F 207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1F 108b                                                                                                                                                                                                                                                                                                                                                                                     |
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|        | <b>J-1: Device and Characterization</b>                                                                                                                                                                                                                                     | <b>K-1: Tunnel FET</b>                                                                                                                                                                                                                                                                                                                              | <b>M-1: High-Speed &amp; High-Frequency Devices</b>                                                                                                                                                                                                                                                                                                                                                                                  | <b>N-1: Junction Technology</b>                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>O-1: CBRAM and IGZO Memory</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>P-1: Spin-orbit Effect and Application for Sensors</b>                                                                                                                                                                                                                                                                                                                                   |
|        | <b>14:15 J-1-2</b><br><b>Characterization of Process-Induced Defects in SiC MOSFETs by Cross-Sectional Cathodoluminescence</b><br><i>R. Sugie, T. Uchida, K. Kosaka and K. Matsumura, Toray Research Center Inc. (Japan)</i>                                                | <b>14:30 K-1-2</b><br><b>Design of Complementary Raised-Drain Tunneling FET for Ultra-Low Voltage Applications</b><br><i>Y.B. Zhao, E.R. Hsieh, C.H. Chien and S.S. Chung, NCTU (Taiwan)</i>                                                                                                                                                        | <b>14:30 M-1-2</b><br><b>Evaluation of InAs HEMT with Non-Alloyed Ohmic Contacts &amp; Mesa Sidewall Etch for RF and Low-Power Logic Applications</b><br><i>K.C. Yang<sup>1</sup>, J.N. Yao<sup>1</sup>, H.H. Hsu<sup>1</sup>, Y.C. Lin<sup>1</sup>, H.T. Hsu<sup>2</sup>, J.S. Maa<sup>1</sup>, E.Y. Chang<sup>2</sup> and H. Iwai<sup>3</sup>, <sup>1</sup>NCTU, <sup>2</sup>Yuan Ze Univ. and <sup>3</sup>Tokyo Tech (Taiwan)</i> | <b>14:30 N-1-2</b><br><b>Microwave Plasma Doping: As Activation and Transport in Ge and Si</b><br><i>H. Miyoshi<sup>1</sup>, M. Oka<sup>1</sup>, Y. Kobayashi<sup>1</sup>, H. Ueda<sup>1</sup>, P.L.G. Ventzek<sup>2</sup>, Y. Sugimoto<sup>1</sup>, G. Nakamura<sup>1</sup>, Y. Hirota<sup>1</sup>, T. Kaitsuka<sup>1</sup> and S. Kawakami<sup>1</sup>, <sup>1</sup>Tokyo Electron Ltd. and <sup>2</sup>Tokyo Electron America, Inc. (Japan)</i> | <b>14:30 O-1-2</b><br><b>Visible-Light Effects on Nanoscale Conducting Filament in SiO<sub>2</sub>/Cu CBRAM</b><br><i>T. Kawashima<sup>1,2</sup>, K.S. Yew<sup>1</sup>, Y. Zhou<sup>1</sup>, M.K. Bera<sup>1</sup>, H.Z. Zhang<sup>1</sup> and D.S. Ang<sup>1</sup>, <sup>1</sup>NTU and <sup>2</sup>Toshiba Corp. (Singapore)</i>                                                                                                                                                                                                                                                  | <b>14:30 P-1-2</b><br><b>The Interfacial Dzyaloshinskii-Moriya Interaction on Pt/Co/AlO<sub>x</sub> Multilayer with Ta Buffer Layer</b><br><i>N.H. Kim<sup>1</sup>, J. Cho<sup>1</sup>, J.S. Kim<sup>2</sup>, H.J.M. Swagten<sup>2</sup> and C.Y. You<sup>1</sup>, <sup>1</sup>Inha Univ. and <sup>2</sup>Eindhoven Univ. of Tech. (Korea)</i>                                              |
|        | <b>14:30 J-1-3</b><br><b>Effects of High-Temperature Diluted-H<sub>2</sub> Annealing on Effective Mobility of 4H-SiC MOSFETs with Thermally-Grown SiO<sub>2</sub></b><br><i>H. Hirai and K. Kita, Univ. of Tokyo (Japan)</i>                                                | <b>14:50 K-1-3</b><br><b>Steep Subthreshold Swing Metal-Oxide-Semiconductor Field-Effect Transistors Utilizing Nonlinear Gate Dielectric Insulators</b><br><i>H. Ota<sup>1,3</sup>, S. Migita<sup>1,3</sup>, K. Fukuda<sup>1</sup> and A. Toriumi<sup>2,3</sup>, <sup>1</sup>AIST, <sup>2</sup>Univ. of Tokyo and <sup>3</sup>JST-CREST (Japan)</i> | <b>14:45 M-1-3 (Invited)</b><br><b>25nm InP HEMT TMIC Process with 1 THz Amplifier Circuit Gain</b><br><i>X.B. Mei, W. Yoshida, Z. Zhou, M. Lange, J. Lee, P.H. Liu, K. Leong, R. Lai and W.R. Deal, Northrop Grumman Corp (USA)</i>                                                                                                                                                                                                 | <b>14:50 N-1-3</b><br><b>Formation of n<sup>+</sup>Poly-Ge Films with High Electron Concentration and High Electron Mobility by Flash Lamp Annealing for Poly-Ge nMOSFETs</b><br><i>M. Koike<sup>1,3</sup>, K. Usuda<sup>1,3</sup>, T. Mori<sup>1,2</sup>, T. Maeda<sup>1,2</sup> and T. Tezuka<sup>1,3</sup>, <sup>1</sup>GNC, AIST, <sup>2</sup>AIST and <sup>3</sup>Toshiba Corp. (Japan)</i>                                                   | <b>14:50 O-1-3</b><br><b>A 32-kb Embedded SRAM Using 60-nm Crystalline Oxide Semiconductor Transistors and Power Gating with 45-ns 144-fJ/bit Data Backup</b><br><i>W. Uesugi<sup>1</sup>, T. Ishizu<sup>1</sup>, K. Kato<sup>1</sup>, T. Onuki<sup>1</sup>, H. Tamura<sup>1</sup>, A. Isobe<sup>1</sup>, N. Tsutsui<sup>1</sup>, Y. Suzuki<sup>1</sup>, Y. Okazaki<sup>1</sup>, M. Fujita<sup>2</sup>, J. Koyama<sup>1</sup>, Y. Yamamoto<sup>1</sup> and S. Yamazaki<sup>1</sup>, <sup>1</sup>Semiconductor Energy Lab. Co., Ltd. and <sup>2</sup>VDEC Univ. of Tokyo (Japan)</i> | <b>14:45 P-1-3</b><br><b>Estimation of Spin-orbit Interaction Parameters with Drifting Spins in Semiconductor Quantum Wells</b><br><i>Y. Kunihashi<sup>1</sup>, H. Sanada<sup>1</sup>, H. Gotoh<sup>1</sup>, K. Onomitsu<sup>1</sup>, M. Kohda<sup>2</sup>, J. Nitta<sup>2</sup> and T. Sogawa<sup>1</sup>, <sup>1</sup>NTT BRL and <sup>2</sup>Tohoku Univ. (Japan)</i>                    |
|        | <b>14:45 J-1-4</b><br><b>Transient Thermal Characteristics of Packaged SiC SBDs and Its Temperature Dependence</b><br><i>T. Kim and T. Funaki, Osaka Univ. (Japan)</i>                                                                                                      | <b>15:10 K-1-4</b><br><b>Variation Analysis for Ultra-Low Voltage 8T Tunnel FET SRAM Using Closed-Form Analytical Model of Static Noise Margin</b><br><i>H. Fuketa, S. O'uchi, K. Fukuda, T. Mori, Y. Morita, M. Masahara and T. Matsukawa, AIST (Japan)</i>                                                                                        | <b>15:15 M-1-4</b><br><b>Wide Frequency Tuning in Resonant-Tunneling-Diode Terahertz Oscillator Using Forward-Biased Varactor Diode</b><br><i>S. Kitagawa, S. Suzuki and M. Asada, Tokyo Tech (Japan)</i>                                                                                                                                                                                                                            | <b>15:10 N-1-4</b><br><b>Effects of Microwave Annealing on Ge pMOSFET with Hydrogen-treated Interfacial Layer</b><br><i>K.S. Chang Liao<sup>1</sup>, C.C. Li<sup>1</sup>, L.J. Liu<sup>1</sup>, M.C. Li<sup>1</sup>, W.F. Chi<sup>1</sup>, T.M. Lee<sup>1</sup>, T.H. Su<sup>1</sup>, C.H. Fu<sup>1</sup> and Y.J. Lee<sup>2</sup>, <sup>1</sup>National Tsing Hua Univ. and <sup>2</sup>NDL, NARLabs (Taiwan)</i>                                 | <b>15:10 O-1-4</b><br><b>Analysis and Experimental Proof of Deterioration-free Memory Device Using CAAC-IGZO FET</b><br><i>M. Tsubuku, T. Takeuchi, K. Ohshima, T. Murakawa, M. Fujita, D. Shimada, S. Sambonsuge, T. Atsumi, M. Sakakura, K. Kato, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Lab. Corp. Ltd. (Japan)</i>                                                                                                                                                                                                                                                   | <b>15:00 P-1-4</b><br><b>Electric Field Control of Induced Magnetic Moment in Pd on Co Layer</b><br><i>A. Obinata<sup>1</sup>, D. Hayakawa<sup>1</sup>, Y. Hibino<sup>1</sup>, T. Koyama<sup>1</sup>, K. Miwa<sup>2</sup>, S. Ono<sup>2</sup> and D. Chiba<sup>1</sup>, <sup>1</sup>Univ. of Tokyo and <sup>2</sup>CRIEPI (Japan)</i>                                                       |
|        | <b>15:00 J-1-5</b><br><b>Turn-on Analysis of Si-IGBTs with Emitter Trenches</b><br><i>S. Machida and Y. Yamashita, Toyota Central R&amp;D Labs., Inc. (Japan)</i>                                                                                                           | <b>15:30 K-1-5</b><br><b>Performance Improvement in Lattice Matched SiGeSn/GeSn P-Channel TFET with Type-II Staggered Tunneling Junction</b><br><i>H. Wang<sup>1</sup>, G. Han<sup>1,2</sup>, Y. Liu<sup>1</sup>, C. Zhang<sup>2</sup> and Y. Hao<sup>2</sup>, <sup>1</sup>Chongqing Univ. and <sup>2</sup>Xidian Univ. (China)</i>                 | <b>15:30 M-1-5</b><br><b>A Resonant Tunneling Super Regenerative Detector with Input/Output Isolation and Improved Sensitivity</b><br><i>K. Hu, J. Pan, M. Mori and K. Maezawa, Univ. of Toyama (Japan)</i>                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>15:15 P-1-5</b><br><b>Observation of the D'yakonov-Perel' Spin Relaxation in Epitaxial Pt Thin Film and Its Electrical Manipulation</b><br><i>J.C. Ryu, S. Takasuna, K. Yoshizumi, M. Kohda and J. Nitta, Tohoku Univ. (Japan)</i>                                                                                                                                                       |
|        | <b>15:15 J-1-6</b><br><b>RF Characteristics of LDMOS Transistors with Superjunction Structures</b><br><i>B.Y. Chen<sup>1,2</sup>, K.M. Chen<sup>1</sup>, G.W. Huang<sup>1</sup> and Edward Y. Chang<sup>2</sup>, <sup>1</sup>NDL, NARLabs and <sup>2</sup>NCTU (Taiwan)</i> |                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>15:30 P-1-6</b><br><b>Highly Sensitive Magnetic Field Sensor Devices Based on Magnetic Tunnel Junctions with CoFeSiB Electrode</b><br><i>D. Kato<sup>1</sup>, K. Oogane<sup>1</sup>, K. Fujiwara<sup>1</sup>, J. Jouno<sup>2</sup>, H. Naganuma<sup>1</sup>, H. Katsurada<sup>2</sup> and Y. Ando<sup>1</sup>, <sup>1</sup>Tohoku Univ. and <sup>2</sup>KONICA MINOLTA, Inc. (Japan)</i> |

Monday, September 28

| 1F Middle-Sized Hall A                                                                                                                                                                                                                                                                                                            | 1F Middle-Sized Hall B | 1F 101 | 1F 102                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1F 107a                                                                                                                                                                                                                                                                                                                                                                                              | 1F 107b                                                                                                                                                                                                                                                                                                                                                                                                           | 1F 108a |
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| <b>A-2: MO and EO Devices</b><br>(16:05-17:50)<br>Chairs: H. Shimizu<br>(Tokyo Univ. of Agri. & Tech.)<br>T. Shimizu<br>(PETRA)                                                                                                                                                                                                   |                        |        | <b>D-2: 2D Material-based Devices</b><br>(16:05-17:50)<br>Chairs: K. Nagashio<br>(Univ. of Tokyo)<br>Y. Ohno<br>(Nagoya Univ.)                                                                                                                                                                                                                                                                                                            | <b>E-2: Interconnects and Bonding</b><br>(16:05-18:05)<br>Chairs: M. Kodera<br>(Toshiba)<br>M. Fujino<br>(Univ. of Tokyo)                                                                                                                                                                                                                                                                            | <b>F-2: Advanced Imaging &amp; Measurement Circuits for Bio and Medical Applications</b><br>(16:05-17:55)<br>Chairs: H. Takao<br>(Kagawa Univ.)<br>J. Ohta (NAIST)                                                                                                                                                                                                                                                |         |
| <b>16:05 A-2-1 (Invited)</b><br><b>Magneto-surface-plasmon Effect in Magnetic/Nonmagnetic Films</b><br><i>Y. Ashizawa and K. Nakagawa, Nihon Univ. (Japan)</i>                                                                                                                                                                    |                        |        | <b>16:05 D-2-1 (Invited)</b><br><b>Atomically-thin Semiconductors</b><br><i>K. Tsukagoshi, NIMS (Japan)</i>                                                                                                                                                                                                                                                                                                                               | <b>16:05 E-2-1 (Invited)</b><br><b>Ultra-Heat Resistant Interconnection for Wide Band Gap Semiconductors</b><br><i>K. Suganuma, S. Nagao, T. Sugahara and J. Jiu, Osaka Univ. (Japan)</i>                                                                                                                                                                                                            | <b>16:05 F-2-1 (Invited)</b><br><b>Electronic Device from TFT Display for Applications on Biological Cells</b><br><i>A. Tixier Mita, S. Ihida, B.D. Segard, G.A. Cathcart, T. Takahashi, H. Fujita and H. Toshiyoshi, Univ. of Tokyo (Japan)</i>                                                                                                                                                                  |         |
| <b>16:35 A-2-2</b><br><b>Spatially Resolved Pump-probe Magneto-optical Kerr Effect in Permalloy Films</b><br><i>S. Iihama<sup>1</sup>, Y. Sasaki<sup>1</sup>, Y. Ando<sup>1</sup> and S. Mizukami<sup>2</sup>, <sup>1</sup>Tohoku Univ. and <sup>2</sup>WPI-AIMR, Tohoku Univ. (Japan)</i>                                        |                        |        | <b>16:35 D-2-2</b><br><b>Ultra-Sensitive 2D Photodetectors Based on Large-Scale Molybdenum Disulfide Crystals</b><br><i>Z.P. Ling<sup>1</sup>, R. Yang<sup>1</sup>, J.W. Chai<sup>2</sup>, S.J. Wang<sup>1</sup>, Y. Tong<sup>1</sup>, D. Lei<sup>1</sup>, Q. Zhou<sup>1</sup>, X. Gong<sup>1</sup>, D.Z. Chi<sup>2</sup> and K.W. Ang<sup>1</sup>, <sup>1</sup>SNDL, NUS and <sup>2</sup>Inst. of Material Res. and Eng. (Singapore)</i> | <b>16:35 E-2-2 (Invited)</b><br><b>Nanomechanical Characterization of Intermetallic Compounds in Miniaturized Interconnections</b><br><i>J.M. Song, Natl. Chung Hsing Univ. (Taiwan)</i>                                                                                                                                                                                                             | <b>16:35 F-2-2</b><br><b>A CMOS Image Sensor with Lateral Electric Field Modulation Pixels for Sub Nano-Second Time Response Fluorescence Lifetime Imaging Microscopy</b><br><i>Z. Li, M.W. Seo, K. Kagawa, K. Yasutomi and S. Kawahito, Univ. of Shizuoka (Japan)</i>                                                                                                                                            |         |
| <b>16:50 A-2-3</b><br><b>Magneto-Optical Switching Devices Based on Si Photonic Resonators</b><br><i>K. Noda, K. Okada, Y. Amemiya and S. Yokoyama, Hiroshima Univ. (Japan)</i>                                                                                                                                                   |                        |        | <b>16:50 D-2-3</b><br><b>Source/Drain Contact Engineering of Molybdenum Disulphide (MoS<sub>2</sub>) Devices</b><br><i>W.S. Leong, X. Luo, Y. Li, K.H. Khoo, S.Y. Quek and J.T.L. Thong, NUS (Singapore)</i>                                                                                                                                                                                                                              | <b>17:05 E-2-3</b><br><b>Wafer Bonding of SiC-SiC and SiC-Si by Modified Surface Activated Bonding Method</b><br><i>F. Mu<sup>1</sup>, M. Fujino<sup>1</sup>, T. Suga<sup>1</sup>, K. Iguchi<sup>2</sup>, H. Nakazawa<sup>2</sup> and Y. Takahashi<sup>2</sup>, <sup>1</sup>Univ. of Tokyo and <sup>2</sup>Fuji Electric Co., Ltd. (Japan)</i>                                                       | <b>16:55 F-2-3</b><br><b>Improvement of Power Consumption and SNR of Self-reset Pixels for an Implantable CMOS Image Sensor</b><br><i>T. Yamaguchi, Y. Sunaga, M. Haruta, H. Takehara, T. Noda, K. Sasagawa, T. Tokuda and J. Ohta, NAIST (Japan)</i>                                                                                                                                                             |         |
| <b>17:05 A-2-4</b><br><b>Electro-Optic Polymer/TiO<sub>2</sub> Slot Waveguide Modulators and Enhanced Electro-Optic Coefficient of 260 pm/V</b><br><i>Y. Enami<sup>1</sup>, Y. Jouane<sup>1</sup>, J. Luo<sup>2</sup> and A. Jen<sup>2</sup>, <sup>1</sup>Kochi Univ. of Tech. and <sup>2</sup>Washington State Univ. (Japan)</i> |                        |        | <b>17:05 D-2-4</b><br><b>Tolerance to UV-O<sub>3</sub> Exposure of CVD and Mechanically Exfoliated MoS<sub>2</sub> &amp; Fabrication of Top-Gated CVD MoS<sub>2</sub> FETs</b><br><i>S. Kurabayashi<sup>1</sup> and K. Nagashio<sup>1,2</sup>, <sup>1</sup>Univ. of Tokyo and <sup>2</sup>JST-PRESTO (Japan)</i>                                                                                                                          | <b>17:25 E-2-4</b><br><b>Transfer Methods of Ultrathin Piezoelectric Strain Sensor to Flexible Printed Circuits</b><br><i>T. Yamashita<sup>1</sup>, S. Takamatsu<sup>1</sup>, H. Okada<sup>1</sup>, T. Itoh<sup>2</sup> and T. Kobayashi<sup>1</sup>, <sup>1</sup>AIST and <sup>2</sup>Univ. of Tokyo (Japan)</i>                                                                                    | <b>17:15 F-2-4</b><br><b>Wireless Data Transmission in a Brain Tissue with Intra-Body Communication by a Micro-Sized Image Sensor</b><br><i>H. Hayami, K. Nagata, M. Haruta, H. Takehara, T. Noda, K. Sasagawa, T. Tokuda and J. Ohta, NAIST (Japan)</i>                                                                                                                                                          |         |
| <b>17:20 A-2-5 (Late News)</b><br><b>Stimulated Emission with Nearly 100% Circular Polarization at RT in GaAs-based DHs with Fe/Crystalline AlO<sub>x</sub> Spin Injectors</b><br><i>N. Nishizawa, K. Nishibayashi and H. Munekata, Tokyo Tech (Japan)</i>                                                                        |                        |        | <b>17:20 D-2-5</b><br><b>HfS<sub>2</sub> Electron Double Layer Transistor with High Drain Current</b><br><i>T. Kanazawa<sup>1</sup>, T. Amemiya<sup>1,2</sup>, A. Ishikawa<sup>2,3</sup>, V. Upadhyaya<sup>1</sup>, T. Tanaka<sup>2</sup>, K. Tsuruta<sup>3</sup> and Y. Miyamoto<sup>1</sup>, <sup>1</sup>Tokyo Tech, <sup>2</sup>RIKEN and <sup>3</sup>Okayama Univ. (Japan)</i>                                                        | <b>17:45 E-2-5</b><br><b>3D Sequential Integration via Direct Bonding of Highly Conductive Sputtered Tungsten Films</b><br><i>L. Benaissa<sup>1,2</sup>, P. Gondcharton<sup>1,2</sup>, B. Imbert<sup>1,2</sup>, C. Sabbione<sup>1,2</sup>, G. Rodriguez<sup>1,2</sup>, D. Mariolle<sup>1,2</sup> and D. Lafond<sup>1,2</sup>, <sup>1</sup>Univ. Grenoble Alpes and <sup>2</sup>CEA-LETI (France)</i> | <b>17:35 F-2-5</b><br><b>Area-Efficient and Wide-Range Impedance Analysis Circuit for Multichannel High Quality Brain Signal Recording System</b><br><i>T. Iwagami<sup>1</sup>, T. Tani<sup>1</sup>, K. Ito<sup>1</sup>, S. Nishino<sup>1</sup>, T. Harashima<sup>1</sup>, K. Kiyoyama<sup>2</sup> and T. Tanaka<sup>1</sup>, <sup>1</sup>Tohoku Univ. and <sup>2</sup>Nagasaki Inst. of Applied Sci. (Japan)</i> |         |

| 2F 201 | 2F 202                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2F Small Hall                                                                                                                                                                                                                                                                                                                         | 2F 204                                                                                                                                                                                                                                                                                                                                      | 2F 206                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2F 207                                                                                                                                                                                                                                                                                                                                                                                                | 1F 108b |
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|        | <b>J-2: Process and Characterization</b><br>(16:05-17:05)<br>Chairs: S. Harada (Nagoya Univ.)<br>T. Uesugi (Toyota Central R&D Labs.)                                                                                                                                                                                                                                                                                                           | <b>K-2: Ge / III-V</b><br>(16:05-17:50)<br>Chairs: O. Weber (CEA-LETI)<br>G. Tsutsui (IBM)                                                                                                                                                                                                                                            | <b>M-2: GaN FETs</b><br>(16:05-17:50)<br>Chairs: T. Hashizume (Hokkaido Univ.)<br>M. Kuzuhara (Univ. of Fukui)                                                                                                                                                                                                                              | <b>N-2: Process for Fully-Depleted Devices</b><br>(16:05-17:05)<br>Chairs: H. Morioka (SOCIONEXT)<br>T. Aoyama (Toshiba)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>O-2: Nano Engineered Thin Oxide Film</b><br>(16:05-17:55)<br>Chairs: N. Fujimura (Osaka Pref. Univ.)<br>H. Saito (Fujitsu Semicon.)                                                                                                                                                                                                                                                                |         |
|        | <b>16:05 J-2-1</b><br><b>Al Doping of 4H-SiC by Laser Irradiation to Coated Film and Its Application to Junction Barrier Schottky Diode</b><br><i>A. Ikeda, R. Sumina, H. Ikenoue and T. Asano, Kyushu Univ. (Japan)</i>                                                                                                                                                                                                                        | <b>16:05 K-2-1 (Invited)</b><br><b>Ge CMOS Devices and Logic Circuits</b><br><i>H. Wu and P.D. Ye, Purdue Univ. (USA)</i>                                                                                                                                                                                                             | <b>16:05 M-2-1 (Invited)</b><br><b>GaN Metal-Oxide-Semiconductor HEMTs: Selected Physical Aspects and Characterization</b><br><i>M. Tapajna, D. Gregusova and J. Kuzmik, Institute of Electrical Engineering, Slovak Academy of Sciences (Slovakia)</i>                                                                                     | <b>16:05 N-2-1</b><br><b>Optimization of Extension Doping Condition of FinFETs for Ultra-Low-Power Applications</b><br><i>T. Matsukawa, Y.X. Liu, T. Mori, Y. Morita, S. O'uchi, H. Fuketa, S. Otsuka, S. Migita and M. Masahara, AIST (Japan)</i>                                                                                                                                                                                                                                                                                                                                                                                                                | <b>16:05 O-2-1 (Invited)</b><br><b>Scaling and Optimization of Ferroelectric Hafnium Oxide for Memory Applications and Beyond</b><br><i>J. Mueller, P. Polakowski and S. Riedel, Fraunhofer IPMS (Germany)</i>                                                                                                                                                                                        |         |
|        | <b>16:20 J-2-2</b><br><b>4H-SiC Vertical Gate Trench with a Well-Controlled Shape Uniformly Formed by High Rate Etching and Annealing with Solid Source</b><br><i>H. Kitai, H. Shiomi, H. Tamaso and K. Fukuda, AIST (Japan)</i>                                                                                                                                                                                                                | <b>16:35 K-2-2</b><br><b>Impact of Bandstructure Effects in III-V nMOSFETs</b><br><i>G. Hiblot<sup>1,3</sup>, Q. Rafhay<sup>3</sup>, G. Mugny<sup>1,2</sup>, T. Ferrotti<sup>1,2</sup>, G. Ghibaudo<sup>3</sup> and F. Boeuf<sup>1</sup>, <sup>1</sup>STMicroelectronics, <sup>2</sup>CEA-LETI and <sup>3</sup>IMEP-LAHC (France)</i> | <b>16:35 M-2-2 (Late News)</b><br><b>Highly Reduced Current Collapse in AlGaIn/GaN HEMTs by Combined Application of Oxygen Plasma Treatment and Field-plate Structures</b><br><i>J. Asubar, S. Yoshida, H. Tokuda and M. Kuzuhara, Univ. of Fukui (Japan)</i>                                                                               | <b>16:25 N-2-2</b><br><b><math>\Omega</math>-Gate Nanowire Transistors Realized by Sidewall Image Transfer Patterning: 35nm Channel Pitch and Opportunities for Stacked-Nanowires Architectures</b><br><i>L. Gaben<sup>1,2,3</sup>, S. Barraud<sup>1</sup>, P. Pimenta-Barros<sup>1</sup>, Y. Morand<sup>1</sup>, J. Pradelles<sup>1</sup>, M.P. Samson<sup>3</sup>, B. Previtali<sup>1</sup>, P. Besson<sup>2</sup>, F. Alain<sup>1</sup>, S. Monfray<sup>2</sup>, F. Boeuf<sup>1</sup>, T. Skotnicki<sup>2</sup>, F. Balestra<sup>3</sup> and M. Vinet<sup>1</sup>, <sup>1</sup>CEA-LETI, <sup>2</sup>STMicroelectronics and <sup>3</sup>IMEP-LAHC (France)</i> | <b>16:35 O-2-2</b><br><b>Effect of Stress on Ferroelectricity of (Hf<sub>0.5</sub>Zr<sub>0.5</sub>)O<sub>2</sub> Thin Films</b><br><i>H. Funakubo<sup>1</sup>, T. Shiraishi<sup>1</sup>, T. Shimizu<sup>1</sup>, T. Yokouchi<sup>1</sup>, T. Oikawa<sup>1</sup> and H. Uchida<sup>2</sup>, <sup>1</sup>Tokyo Tech and <sup>2</sup>Sophia Univ. (Japan)</i>                                            |         |
|        | <b>16:35 J-2-3</b><br><b>Fabrication of Nitrogen-vacancy Centers in Diamond Power Devices for Electric-Field Sensing</b><br><i>W. Naruki<sup>1</sup>, K. Tahara<sup>1</sup>, T. Iwasaki<sup>1,3</sup>, H. Kato<sup>2,3</sup>, T. Makino<sup>2,3</sup>, M. Ogura<sup>2,3</sup>, D. Takeuchi<sup>2,3</sup>, S. Yamasaki<sup>2,3</sup> and M. Hatano<sup>1,3</sup>, <sup>1</sup>Tokyo Tech, <sup>2</sup>AIST and <sup>3</sup>JST-CREST (Japan)</i> | <b>16:55 K-2-3</b><br><b>High Performance Low Thermal Budget Ge n- and p-MOSFETs by using Ion Implantation after Germanidation Technique</b><br><i>W.H. Chang, H. Ota and T. Maeda, AIST (Japan)</i>                                                                                                                                  | <b>16:50 M-2-3</b><br><b>AlGaIn/GaN MOS-HFETs Exhibiting Improved Hysteresis in Transfer Characteristics with Recessed Gate Structures Formed by Selective Regrowth</b><br><i>S. Nakazawa, N. Shiozaki, N. Negoro, N. Tsurumi, Y. Anda, M. Ishida and T. Ueda, Panasonic Corp. (Japan)</i>                                                  | <b>16:45 N-2-3</b><br><b>A New Method to Induce Local Tensile Strain in SOI Wafers: First Strain Results of the "BOX Creep" Technique</b><br><i>A. Bonneville<sup>1,2,3</sup>, C. Le Royer<sup>2</sup>, Y. Morand<sup>1</sup>, S. Rebol<sup>1,2</sup>, J.M. Pedini<sup>1</sup>, A. Roule<sup>2</sup>, D. Marseilhan<sup>2</sup>, P. Besson<sup>1</sup>, D. Rouchon<sup>2</sup>, N. Bernier<sup>2</sup>, C. Tabone<sup>2</sup>, C. Plantier<sup>2</sup> and M. Viner<sup>2</sup>, <sup>1</sup>STMicroelectronics and <sup>2</sup>CEA-LETI (France)</i>                                                                                                             | <b>16:55 O-2-3</b><br><b>Switching Mechanism in GeSbTe Phase Change Memory Superlattices</b><br><i>J. Robertson and X. Yu, Cambridge Univ. (UK)</i>                                                                                                                                                                                                                                                   |         |
|        | <b>16:50 J-2-4</b><br><b>Evaluation of Temperature Dependence of Surface Recombination Velocities for n-type 4H-SiC</b><br><i>K. Kohama, Y. Mori, M. Kato and M. Ichimura, Nagoya Inst. of Tech. (Japan)</i>                                                                                                                                                                                                                                    | <b>17:15 K-2-4</b><br><b>Steep-Slope Tunnel FET using InGaAs-InP Core-Shell Nanowire/Si Heterojunction</b><br><i>K. Tomioka<sup>1,2</sup>, F. Ishizaka<sup>1</sup>, J. Motohisa<sup>1</sup> and T. Fukui<sup>1</sup>, <sup>1</sup>Hokkaido Univ. and <sup>2</sup>JST-PRESTO (Japan)</i>                                               | <b>17:05 M-2-4</b><br><b>MOS Characteristics on Homoepitaxial GaN Layer</b><br><i>S. Takashima<sup>1</sup>, K. Ueno<sup>1</sup>, H. Matsuyama<sup>1</sup>, M. Edo<sup>1</sup>, J. Suda<sup>2</sup> and K. Nakagawa<sup>1</sup>, <sup>1</sup>Fuji Electric Co., Ltd., <sup>2</sup>Kyoto Univ. and <sup>3</sup>Univ. of Yamanashi (Japan)</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>17:15 O-2-4</b><br><b>Topotactic Reductive Synthesis of A-site Cation-Ordered Perovskite YBaCo<sub>2</sub>O<sub>x</sub> (x = 4.5-5.5) Epitaxial Thin Films</b><br><i>T. Katayama<sup>1</sup>, A. Chikamatsu<sup>1,2</sup>, T. Fukumura<sup>2,3</sup> and T. Hasegawa<sup>1,2,4</sup>, <sup>1</sup>Univ. of Tokyo, <sup>2</sup>JST-CREST, <sup>3</sup>Tohoku Univ. and <sup>4</sup>KAST (Japan)</i> |         |
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>17:35 K-2-5 (Late News)</b><br><b>Investigation of FOM of Tunnel FET Devices and OTA Design for Analog/Mixed-Signal Applications</b><br><i>Y.N. Chen<sup>1</sup>, P. Su<sup>1</sup>, J.C.S. Woo<sup>2</sup> and C.T. Chuang<sup>1</sup>, <sup>1</sup>NCTU and <sup>2</sup>UCLA (Taiwan)</i>                                        | <b>17:20 M-2-5</b><br><b>Low-Frequency Noise in AlTiO/AlGaIn/GaN Metal-Insulator-Semiconductor Heterojunction Field-Effect Transistors</b><br><i>S.P. Le, T. Ui, T.Q. Nguyen, H.A. Shih and T. Suzuki, JAIST (Japan)</i>                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>17:35 O-2-5</b><br><b>Formation of Ge Oxide Film by Neutral Beam Post Oxidation using Al Metal Film</b><br><i>T. Ohno<sup>1,2</sup>, D. Nakayama<sup>3</sup> and S. Samukawa<sup>1,3</sup>, <sup>1</sup>WPI-AIMR, Tohoku Univ., <sup>2</sup>JST-PRESTO and <sup>3</sup>IFS, Tohoku Univ. (Japan)</i>                                                                                               |         |

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| 1F Middle-Sized Hall A                                                                                                                                                                                                                                                        | 1F Middle-Sized Hall B | 1F 101 | 1F 102                                                                                                                                                  | 1F 107a | 1F 107b | 1F 108a |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|---------|
| A-2: MO and EO Devices                                                                                                                                                                                                                                                        |                        |        | D-2: 2D Material-based Devices                                                                                                                          |         |         |         |
| 17:35 A-2-6 (Late News)<br>Electrical Manipulation of Exchange Spring in Antiferromagnetic Metals<br><i>C. Song<sup>1</sup>, Y.Y. Wang<sup>1</sup>, S.M. Zhou<sup>2</sup> and F. Pan<sup>1</sup>,<br/><sup>1</sup>Tsinghua Univ. and<br/><sup>2</sup>Tongji Univ. (China)</i> |                        |        | 17:35 D-2-6<br>Schottky Barrier Heights and Band Alignments in Transition Metal Dichalcogenides<br><i>J. Robertson and Y. Guo, Cambridge Univ. (UK)</i> |         |         |         |

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| 2F 201 | 2F 202 | 2F Small Hall | 2F 204                                                                                                                                                                                                                                                                                              | 2F 206 | 2F 207 | 1F 108b |
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|        |        |               | M-2: GaN FETs                                                                                                                                                                                                                                                                                       |        |        |         |
|        |        |               | <b>17:35 M-2-6</b><br><b>Fabrication and</b><br><b>Characterization of</b><br><b>AlTiO/InAlN/AlN/</b><br><b>GaN Metal-Insulator-</b><br><b>Semiconductor Field-</b><br><b>Effect Transistor</b><br><i>S. Yamaguchi, T. Ui, J.</i><br><i>Liang, H.A. Shih and T.</i><br><i>Suzuki, JAIST (Japan)</i> |        |        |         |