ADVANCE PROGRAM

2013 INTERNATIONAL CONFERENCE ON SOLID STATE DEVICES AND MATERIALS

September 24-27, 2013

Hilton Fukuoka Sea Hawk

2013 International Conference on
Solid State Devices and Materials (SSDM 2013)

SECRETARIAT
c/o Inter Group Corp.
3rd Floor, East Tower, AKASAKA TWIN TOWERS,
17-22 Akasaka 2-chome, Minato-ku,
Tokyo 107-0052, Japan
Phone : +81-3-5549-6909
F a x : +81-3-5549-3201
E-mail : ssdm_secretariat@intergroup.co.jp
U R L : http://www.ssdm.jp

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PREFACE

On behalf of the organizing committee, it is my great pleasure and honor to welcome you to Fukuoka, Japan, for the 2013 International Conference on Solid State Devices and Materials (SSDM 2013), September 24-27, 2013. The purpose of SSDM is to contribute to the promotion of science and industry related to solid-state electronics. The conference has been providing a forum for interaction of related fields—ranging from physics and material science to circuits, systems, and process technologies—to discuss on the very latest research. Through SSDM, information has been delivered from Japan and Asia to the rest of the world. In fact, we have witnessed many globally recognized scientific findings and technical achievements that have led to real innovation. We expect that this year will be no exception.

This year, 796 high quality abstracts were submitted to SSDM 2013 from 18 countries. Great efforts by the technical program committee in selecting the abstracts have resulted in an excellent technical program consisting of 3 plenary talks, 55 invited papers, 289 contributed oral papers, 241 posters, and 35 late news papers. We hope all of the papers presented at SSDM2013 address in depth nearly all the key issues in the field and provide good stimulation and new perspectives to all participants.

Now reaching its 45th anniversary year, SSDM is held in Kyushu for the first time ever. As reflected in the way it is sometimes referred to as "the gateway to Asia," Kyushu is a region where there is a tremendous amount of interaction with Asian nations. It is on this basis that we have planned three plenary lectures under the theme of "From Asia to the World's Tomorrow" at this year's conference. The three guest speakers are Dr. Mamoru Mohri, astronaut and Chief Executive Director of the National Museum of Emerging Science and Innovation Japan; Professor Peter (Chung-Yu) Wu, former President of National Chiao Tung University, Taiwan; and Professor Hideo Hosono of Tokyo Institute of Technology, Japan, who continues to create a stream of innovative materials.

We wish to express our sincere appreciation to all the contributors who submitted technical papers and all the committee members for their great patience to prepare the way for SSDM 2013. We also express our sincere gratitude for the financial support provided by the supporting corporations and foundations, including MEXT-JSPS.

Your participation at SSDM 2013 is greatly appreciated. The utmost consideration has been taken to ensure that throughout the entire conference you will enjoy discussions and create fresh ideas.

September 2013

Tanemasa Asano
General Chair, Organizing Committee, SSDM2013
Professor, Kyushu University

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GENERAL INFORMATION

DATE

Short Courses: **September 24, 2013 (in English)**
Technical Sessions: **September 25-27, 2013**

CONFERENCE VENUE

Hilton Fukuoka Sea Hawk
2-2-3 Jigyohama, Chuo-ku, Fukuoka-shi 810-8650 Japan
Phone: +81-92-844-8111, Fax: +81-92-844-7887
http://www.hiltonfukuokaseahawk.jp/
SSDM2013 will be held at Hilton Fukuoka Sea Hawk. The access map to conference is available in the conference website.

SHORT COURSES

Short Course lectures are scheduled on September 24, 13:00-17:45. Three Short Courses will be held each at NAVIS A, B and C.
These three courses are designed for beginners such as young researchers, young engineers, and students.
A) Fundamentals on Advanced CMOS/Memory Technologies
B) Fundamentals and Applications of Spintronics Frontier
C) Trends for Future Power Devices
*Registrants for Short Course are able to attend all courses freely. One printed copy of the text book for the primary course that you chose is included in the registration fee. A printed copy of the text books for the other two courses can be purchased, but numbers are limited. Details can be found on page 43.

TECHNICAL SESSIONS

Plenary Sessions:
Plenary Sessions are scheduled on September 25, 9:05-12:15 at ARGOS-C.D.
Non-Technical Plenary Talk:
"Sustainability Beyond Science and Technology" by Mamoru Mohri (Miraikan)
Technical Plenary Talks:
"Medical Electronics --- A Challenge and Opportunity for Semiconductor Technologies and Biomedical Sciences" by Peter (Chung-Yu) Wu (National Chiao Tung Univ.)
"Materials Innovation for Future Solid State Electronics" by Hideo Hosono (Tokyo Tech)
Details can be found on page 11.

Oral and Poster Presentations:
Oral presentations will be held in the rooms located on 1st and 3rd floors of Hilton Fukuoka Sea Hawk from September 25 to 27. Poster presentations will be held on September 26, 13:00-15:00, at ARGOS-C.D.E.

Rump Sessions:
Rump Sessions are scheduled on September 26, 19:00-20:30 at NAVIS-A and B. Details can be found on page 42.

OTHER EVENTS

Welcome Reception:

Welcome Reception will be held on September 24, 18:30-20:00 at BOUKAIROU (5th floor).

Banquet:

Conference Banquet will be held on September 25, 18:30-20:30 on the 34th floor. The banquet fee is NOT included in the registration fee. Participants who wish to attend the banquet are requested to order the banquet ticket beforehand.

Award Ceremony:

Award Ceremony for SSDM Award /Paper Award will be held in Opening Session starting at 9:05 on September 25 at ARGOS-C.D. Young Researcher Award Ceremony will be held in the Banquet starting at 18:30 on September 25 at the 34th floor.

REGISTRATION

The on-site registration desk will be open September 24 to 27 at the Lobby (1F). Open hours are as follows:

September 24	16:00 – 19:00
September 25	08:00 – 17:30
September 26	08:30 – 17:30
September 27	08:30 – 14:00

SPECIAL ISSUE of JJAP

The Special Issue of Japanese Journal of Applied Physics will be published in February and April, in 2014.

INTERNET ACCESS

Complementary internet connection will be available on free Wi-Fi area, open spaces on the 1st, 3rd and 4th floors.

Non-Technical Plenary Talk

9:30-10:30

"Sustainability Beyond Science and Technology"

Mamoru Mohri

Astronaut / Chief Executive Director, National Museum of Emerging Science and Innovation (Miraikan), Japan

Break (15min.)

Technical Plenary Talks

10:45-11:30

"Medical Electronics --- A Challenge and Opportunity for Semiconductor Technologies and Biomedical Sciences"

Peter (Chung-Yu) Wu

National Chiao Tung University, Taiwan

11:30-12:15

"Materials Innovation for Future Solid State Electronics"

Hideo Hosono

Tokyo Institute of Technology, Japan

Wednesday, September 25

Opening & Plenary Sessions (ARGOS-C.D)

Opening Session
Chairs: T. Asano, Kyushu Univ. and K. Tsutsui, Tokyo Tech

9:05
Welcome Address
M. Konagai, JSAP

9:15
SSDM Award / SSDM Paper Award Ceremony

Non-Technical Plenary Session
Chair: D. Ueda, Panasonic Corp.

9:30 PL-1-1
"Sustainability Beyond Science and Technology"
M. Mohri, Astronaut / Chief Executive Director, Miraikan, Japan

10:30 Break

Technical Plenary Session
Chairs: D. Ueda, Panasonic Corp. and K. Tsutsui, Tokyo Tech

10:45 PL-2-1
"Medical Electronics --- A Challenge and Opportunity for Semiconductor Technologies and Biomedical Sciences"
P. Wu, National Chiao Tung Univ., Taiwan

11:30 PL-2-2
"Materials Innovation for Future Solid State Electronics"
H. Hosono, Tokyo Tech, Japan

Lunch

1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-1: Flash Memory (1) (13:30-15:10) Chairs: S. Shuto (Toshiba) E. Yang (eMemory)	**B-1: FinFET and Strain Engineering** (13:30-14:30) Chairs: K. Kita (Univ. of Tokyo) S. Migita (AIST)	**C-1: Carbon Nanotubes** (13:30-15:15) Chairs: S. Sato (AIST) K. Maehashi (Osaka Univ.)	**D-1: Advanced CMOS** (13:30-15:20) Chairs: M. Goto (Toshiba) T.S. Chao (NCTU)		**F-1: Spin Dynamics** (13:30-15:00) Chairs: H. Shimizu (TUAT) T. Nagahama (Hokkaido Univ.)	**G-1: Lab-on-a-Chip and Medical Applications** (13:30-15:15) Chairs: K. Ajito (NTT Labs.) Y. Taguchi (Keio Univ.)
13:30 A-1-1 **An Investigation on GIDL Mechanism of Program Disturbance in Sub-20nm NAND Flash Memory** *Y.J. Jeong, I. Kim, D.H. Yoon, H.Y. Shim, M.K. Cho, K.O. Ahn and J.W. Kim, SK Hynix (Korea)*	**13:30 B-1-2** **Thermal and Plasma Treatments for Improved (Sub-)1nm EOT Planar and FinFET-based RMG High-k Last Devices and Enabling a Simplified Scalable CMOS Integration Scheme** *A. Veloso[1], G. Boccardi[1], L.A. Ragnarsson[1], Y. Higuchi[2], H. Arimura[1,3], J.W. Lee[1,3], E. Simoen[1], M.J. Cho[1], Ph.J. Roussel[1], V. Paraschiv[1], X. Shi[1], T. Schram[1], S.A. Chew[1], S. Brus[1], A. Dangol[1], E. Vecchio[1], F. Sebaai[1], K. Kellens[1], N. Heylen[1], K. Devriendt[1], H. Dekkers[1], A. Van Ammel[1], T. Witters[1], T. Conard[1], I. Vaesen[1], O. Richard[1], H. Bender[1], R. Athimulam[1], A. Thean[1] and N. Horiguchi[1], [1]Imec, [2]Panasonic and [3]K. U. Leuven (Belgium)*	**13:30 C-1-1 (Invited)** **Wrapping Carbon Nanotubes in a Gate-All-Around Geometry** *A.D. Franklin, IBM Research (USA)*	**13:30 D-1-1 (Invited)** **Process/Design co-optimization with FDSOI Technology for Advanced CMOS Applications** *F. Arnaud and N. Planes, STMICROELECTRONICS (France)*		**13:30 F-1-1 (Invited)** **Generation and Directional Control of Spin Wave by Spatially-Shaped Light Pulses** *T. Satoh, [1]Univ. of Tokyo and [2]Japan Sci. and Tech. Agency (Japan)*	**13:30 G-1-1 (Invited)** **Fighting Cancer through Physical Sciences and Engineering Approaches** *L.A. Nagahara, National Cancer Institute/National Institutes of Health (USA)*
13:50 A-1-2 **Abnormal Cell-to-Cell Interference of NAND Flash Memory** *Y.J. Kim[1], J.G. Kang[1], B. Lee[2], G.S. Cho[2], S.K. Park[2] and W.Y Choi[1], [1]Univ. of Sogang and [2]SK Hynix (Korea)*		**14:00 C-1-2** **Single-Walled Carbon-Nanotube P-N Junction Diode for Optoelectronics** *R. Shimizu[1], J. Pu[1], T. Fujimoto[1], Y. Zhang[2], K. Yanagi[3], Y. Iwasa[2] and T. Takenobu[1], [1]Waseda Univ., [2]The Univ. of Tokyo and [3]Tokyo Metropolitan Univ. (Japan)*	**14:00 D-1-2** **Physical Limitation of pn Junction in Two Dimensional Si Layers for Future CMOS** *T. Mizuno[1], Y. Nakahara[1], Y. Nagata[1], Y. Suzuki[1], Y. Kubodera[1], Y. Shimizu[1], T. Aoki[1] and T. Sameshima[2], [1]Kanagawa Univ. and [2]Tokyo Univ. of Agriculture/Tech. (Japan)*		**14:00 F-1-2** **Systematic investigation of precessional magnetization damping for Ta/CoFeB/MgO thin films with perpendicular magnetic anisotropy** *S. Iihama[1], S. Mizukami[2], Q. Ma[2], T. Kubota[2], H. Naganuma[1], M. Oogane[1], Y. Ando[1] and T. Miyazaki[2], [1]Univ. of Tohoku and [2]WPI-AIMR (Japan)*	**14:00 G-1-2** **Improvement of Spatial Resolution of Breast Cancer Detection Using 4x4 UWB Antenna Array with Impedance Matching Layer** *T. Sugitani[1], S. Kubota[1], X. Xiao[2], L. Xu[2] and T. Kikkawa[1], [1]Hiroshima Univ. and [2]Tianjin Univ. (Japan)*

Opening & Plenary Sessions (ARGOS-C.D)

Lunch

1F KASHI	3F VEGA	3F RIGEL	3F BOARDROOM	3F CHAPEL	3F RAN
H-1: Image Sensors (13:30-15:20) Chairs: M. Ikebe (Hokkaido Univ.) K. Kagawa (Shizuoka Univ.)	**J-1: GaN Power Devices** (13:30-15:15) Chairs: T. Tanaka (Panasonic) W. Saito (Toshiba)	**K-1: Optical Interconnects** (13:30-15:15) Chairs: H. Ishii (Toyohashi Tech) Y. Tanaka (Fujitsu Lab.)		**N-1: Flexible Electronics and Thin-film Devices** (13:30-15:15) Chairs: T. Someya (Univ. of Tokyo) M. Kitamura (Kobe Univ.)	**P-1: Growth and Characterization of Group IV Related Materials (1)** (13:30-15:15) Chairs: K. Hara (Shizuoka Univ.) T. Suemasu (Univ. of Tsukuba)
13:30 H-1-1 (Invited) **Ultra-high Speed Image Sensors for Scientific Imaging** *R. Kuroda[1], Y. Tochigi[1], K. Miyauchi[1], T. Takeda[1], R. Hirose[2], H. Tominaga[2], K. Takubo[2], Y. Kondo[2] and S. Sugawa[1], [1]Tohoku Univ. and [2]Shimadzu Corp. (Japan)*	**13:30 J-1-1 (Invited)** **Advanced GaN Power Devices for Automotive Applications** *T. Kachi, TOYOTA Central R&D Labs., Inc. (Japan)*	**13:30 K-1-1 (Invited)** **Ge Active Photonic Devices on Si for Optical Interconnects** *Y. Ishikawa, Univ. of Tokyo (Japan)*		**13:30 N-1-1 (Invited)** **Advances in Flexible Electronics based on Shape Memory Polymers** *T. Ware[1,2], D. Simon[1], D. Arreaga-Salas[1], A. Avendano-Bolivar[1], J. Reeder[1] and W. Voit[1,2], [1]The Univ. of Texas at Dallas and [2]Syzygy Memory Plastics (USA)*	**13:30 P-1-1 (Invited)** **Atomically controlled diamond: homoepitaxy, doping, and surface structures** *N. Tokuda[1,2,3], S. Yamasaki[2,3] and T. Inokuma[1,3], [1]Kanazawa Univ., [2]AIST and [3]JST CREST (Japan)*
14:00 H-1-2 **A CMOS Image Sensor Using Column-Parallel Forward Noise-Canceling Circuitry** *T.L. Li, S. Wakashima, Y. Goda, R. Kuroda and S. Sugawa, Univ. of Tohoku (Japan)*	**14:00 J-1-2 (Invited)** **Growth of bulk GaN Crystal by Na Flux Method** *Y. Mori, M. Imade, M. Maruyama and M. Yoshimura, Osaka Univ. (Japan)*	**14:00 K-1-2** **High Performance Silicon Waveguide-Integrated PIN and Schottky Ge Photodiodes and their Link with Inverter-Type CMOS TIA Circuits** *J. Fujikata[1,2], M. Noguchi[1,2], M. Miura[1,2], D. Okamoto[1,2], T. Horikawa[1,3] and Y. Arakawa[1,4], [1]PECST, [2]PETRA, [3]AIST and [4]Univ. of Tokyo (Japan)*		**14:00 N-1-2** **Novel Solution Process for Inch-Sized Single-Crystalline Organic Semiconductors and Application for Arrayed TFTs** *J. Soeda[1,2], T. Uemura[2], T. Okamoto[2], C. Mitsui[2] and J. Takeya[1,2], [1]Osaka Univ. and [2]Univ. of Tokyo (Japan)*	**14:00 P-1-2** **Groundbreaking room-temperature mobility of 2D holes in a strained Ge quantum well heterostructure grown by Reduced Pressure Chemical Vapor Deposition** *M. Myronov, C. Morrison, C. Casteleiro, J. Halpin, S. Rhead, J. Foronda and D.R. Leadley, Univ. of Warwick (UK)*

Wednesday, September 25

1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-1: Flash Memory (1)	**B-1: FinFET and Strain Engineering**	**C-1: Carbon Nanotubes**	**D-1: Advanced CMOS**		**F-1: Spin Dynamics**	**G-1: Lab-on-a-Chip and Medical Applications**
14:10 A-1-3 **Possibility of MONOS Type Memory for Long Lifespan Archive Memory** *H. Shirakawa[1], K. Yamaguchi[1], K. Kamiya[1] and K. Shiraishi[1,2], [1]Univ. of Tsukuba and [2]Nagoya Univ. (Japan)*	**13:50 B-1-3** **Si:C-S/D Engineering using Cascade C_7H_x Implantation Followed by Rapid Solid-Phase Epitaxy and Laser Annealing for nMOSFET with Highly-Strained and Low-Resistive S/D** *T. Yamaguchi[1], Y. Kawasaki[1], T. Yamashita[1], Y. Nishida[1], M. Mizuo[2], K. Maekawa[1] and M. Fujisawa[1], [1]Renesas Electronics Corp. and [2]Renesas Semiconductor Engineering Corp. (Japan)*	**14:15 C-1-3** **Stretching properties of single-walled carbon nanotube film transistor** *H. Hamahata[1], Y. Nobusa[1], K. Yanagi[2], Y. Iwasa[3] and T. Takenobu[1], [1]Waseda Univ., [2]Tokyo Metropolitan Univ. and [3]Univ. of Tokyo (Japan)*	**14:20 D-1-3** **Standard CMOS Based One-Time Programmable Switches with Gate-Induced Permanent Source-Drain Path** *K. Zaitsu, K. Tatsumura, M. Matsumoto, M. Oda and S. Yasuda, Toshiba Corp. (Japan)*		**14:15 F-1-3** **Characterization of spin pumping effect in nanometer-sized lateral devices** *T. Yamamoto, T. Seki and K. Takanashi, IMR, Tohoku Univ. (Japan)*	**14:15 G-1-3** **A Chip-Based Stable Lipid Bilayers for Recording hERG Channel Activities** *A. Hirano-Iwata, A. Oshima, Y. Ishinari, Y. Kimura and M. Niwano, Tohoku Univ. (Japan)*
14:30 A-1-4 **A Novel Approach for the Understanding of the Charge Loss Paths in a SONOS Flash Memory** *J.H. Kuo, Y.H. Ho and S.S. Chung, National Chiao Tung University (Taiwan)*	**14:10 B-1-4** **Impact of Additional Pt on Channel Stress Induced by NiSi Film Formation** *M. Mizuo[1], T. Yamaguchi[2], S. Kudo[2], Y. Hirose[1,2], H. Kimura[2], J. Tsuchimoto[2] and N. Hattori[2], [1]Renesas Semiconductor Engineering Corp. and [2]Renesas Electronics Corp. (Japan)*	**14:30 C-1-4** **Carbon nanotube transparent conductive films with grid** *N. Fukaya[1], D.Y. Kim[2], S. Kishimoto[1], S. Noda[2] and Y. Ohno[1], [1]Nagoya Univ. and [2]Waseda Univ. (Japan)*	**14:40 D-1-4** **The Influence of Post-Etch InGaAs Fin Profile on Electrical Performance** *Ts. Ivanov[1,2], A. Pourghaderi[1], D. Lin[1], J.K. Yu[3], S. Tan[3], K. Mikhaylich[3], Y. Kimura[3], D. Hellin[4], J. Geypen[1], H. Bender[1], J. Vertommen[4], G. Kamarthy[3], N. Collaert[1], J. Marks[3], V. Vahedi[3], R. Arghavani[3] and A. Thean[1], [1]IMEC, [2]KULeuven, [3]Lam Res., USA and [4]Lam Res., Belgium (Belgium)*		**14:30 F-1-4** **Concept of a Bias-Field-Free Spin-Torque Oscillator Based on Two MgO-MTJs** *A. Makarov, V. Sverdlov and S. Selberherr, Tech. Univ. Wien (Austria)*	**14:30 G-1-4** **Monitoring Post-Translational Protein Sulfation on Silicon Nanowire Field Effect Transistor** *P.C. Su[1], B.H. Chen[1], Y.C. Chen[1], C.H. Lin[1], Y.H. Wu[1], M.H. Feng[1] and Y.S. Yang[1,2], [1]National Chiao Tung Univ. and [2]Natioal Nano Device Lab. (Taiwan)*
14:50 A-1-5 **A Gate-All-Around Floating-Gate Memory Device with Triangular-Shaped Poly-Si Nanowire Channels** *K.H. Lee[1], H.C. Lin[1,2] and T.Y. Huang[1], [1]National Chiao Tung Univ. and [2]National Nano Device Labs. (Taiwan)*		**14:45 C-1-5** **Approach for the Preferential Synthesis of Semiconductor Single-Walled Carbon Nanotubes for Device Application** *S. Sakurai, M. Yamada, H. Nakamura, D.N. Futaba and K. Hata, National Institute of Advanced Industrial Science and Technology (Japan)*	**15:00 D-1-5** **Carrier Mobility on (100), (110), and (551) Oriented Atomically Flattened Si Surfaces for Multi-gate MOSFETs Device Design** *R. Kuroda[1], Y. Nakao[1], A. Teramoto[2], S. Sugawa[1,2] and T. Ohmi[2], [1]Graduate School of Engineering, Tohoku Univ. and [2]New Industry Creation Hatchery Center, Tohoku Univ. (Japan)*		**14:45 F-1-5** **Gate Control of Spatial Electron Spin Distribution in Persistent Spin Helix State** *Y. Kunihashi[1], H. Sanada[1], H. Gotoh[1], K. Onomitsu[1], M. Kohda[2], J. Nitta[2] and T. Sogawa[1], [1]NTT BRL and [2]Tohoku Univ. (Japan)*	**14:45 G-1-5** **An implantable CMOS device for functional brain imaging under freely moving experiments of rats** *M. Haruta, C. Kitsumoto, Y. Sunaga, H. Takehara, T. Noda, K. Sasagawa, T. Tokuda and J. Ohta, Nara Inst. of Sci. and Tech. (Japan)*
		15:00 C-1-6 **Release of Stuck Carbon Nanotube Arm by Resonant Vibration toward Nanorelay Application** *T. Kagota[1], A. Nagataki[1,2], K. Takei[1], T. Arie[1] and S. Akita[1], [1]Osaka Prefecture Univ. and [2]KRI Inc. (Japan)*				**15:00 G-1-6** **Light-Addressable Potentiometric Sensor Treated by Nitrogen Plasma Immersion Ion Implantation for Chloride Ions Detection** *Y.R. Ye[1], Y.H. Lin[1], Y.H. Chiang[1], J.C. Wang[1], C.S. Lai[1], C.F. Ai[2], W.F. Tsai[2], C. Chang[3], A.T. Cho[3], J.J. Chang[3] and M.F. Chiang[3], [1]Department of Electronic Engineering, Chang Gung Univ., [2]Institute of Nuclear Energy Research, Atomic Energy Council and [3]Advanced Device Application Department, AU Optronics Corporation (Taiwan)*

Coffee Break

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1F KASHI

H-1: Image Sensors

14:20 H-1-3
A CMOS Image Sensor with High-speed Pixel-parallel Pipelined Readout Channels for Multi-point Fluorescence Correlation Spectroscopy
K. Kagawa[1], T. Takasawa[1], Z. Bo[1], M.W. Seo[1], K. Imai[1], J. Yamamoto[2], M. Kinjo[2], K. Yasutomi[1], S. Terakawa[3] and S. Kawahito[1], [1]Shizuoka Univ., [2]Hokkaido Univ. and [3]Hamamatsu Univ. School of Medicine (Japan)

14:40 H-1-4
A Wide Dynamic Range CMOS Image Sensor with 200-1100 nm Spectral Sensitivity and High Robustness to Ultraviolet Light Exposure
S. Nasuno, S. Kawada, Y. Koda, T. Nakazawa, K. Hanzawa, R. Kuroda and S. Sugawa, Univ. of Tohoku (Japan)

15:00 H-1-5
A High-Sensitivity Low Dark Current 1.75T/Pixel CMOS Image Sensor with Ring-Gate Shared-Pixel Design
M.W. Seo, K. Yasutomi, K. Kagawa and S. Kawahito, Shizuoka Univ. (Japan)

3F VEGA

J-1: GaN Power Devices

14:30 J-1-3
Effect of Gate Insulator Material on Dynamic On-Resistance in GaN MIS-HEMT on 6-inch Si
S. Akiyama[1], Y. Watanabe[1], T. Wakabayashi[1], K. Nukui[1], Y. Kotani[1], T. Ogino[1], T. Hosoda[1], M. Kanamura[2], K. Joshin[2] and T. Kikkawa[2], [1]Fujitsu Semiconductor Ltd. and [2]Fujitsu Labs. (Japan)

14:45 J-1-4
Au-Free Low Temperature Ohmic Contacts for AlGaN/GaN Power Devices on 200 mm Si Substrates
A. Firrincieli, B. De Jaeger, S. You, D. Wellekens, M. Van Hove and S. Decoutere, imec (Belgium)

15:00 J-1-5
A Novel GaN-on-Si Substrate Power Transistor using Air-Bridge Matrix Structure
C.W. Yang, H.C. Wang and H.C. Chiu, Univ. of Chang Gung (Taiwan)

3F RIGEL

K-1: Optical Interconnects

14:15 K-1-3
High Speed Waveguide Integrated Lateral P-I-N Ge on Si Photodiode with very Low Dark Current
L. Virot[1,2,3], L. Vivien[1], J.M. Hartmann[2], Y. Bogumilowicz[2], J.M. Fedeli[2], D. Marris Morini[1], E. Cassan[1], C. Baudot[3] and F. Boeuf[3], [1]Institut d'Electronique Fondamentale, [2]CEA-Leti and [3]STMicroelectronics (France)

14:30 K-1-4
Dark Current Reduction for GeSn p-i-n Photodetectors using Low-Temperature Si Passivation
W. Wang[1], Y. Dong[1], G. Han[1], P. Guo[1], X. Gong[1], X. Xu[1], Q. Zhou[1], L. Wang[1], Z. Xu[2], W.K. Loke[2], S.F. Yoon[2] and Y.C. Yeo[1], [1]National Uni. of Singapore and [2]Nanyang Technological Univ. (Singapore)

14:45 K-1-5
15 μm-pitch Cu/Au Interconnections Relied on Self-aligned Low-temperature Thermosonic Flip-chip Bonding Technique for Advanced Chip Stacking Applications
T.T. Bui, F. Kato, N. Watanabe, S. Nemoto, K. Kikuchi and M. Aoyagi, National Inst. of Advanced Indus. Sci. and Tech. (AIST) (Japan)

15:00 K-1-6
Self-Assembly Study to Precisely Align Dies Having Microbump Covered with Non-Conductive Film for Advanced Chip-to-Wafer 3D Integration
Y. Ito[1,2], T. Fukushima[1], K.W. Lee[1], K. Choki[2], T. Tanaka[1] and M. Koyanagi[1], [1]Tohoku Univ. and [2]Sumitomo Bakelike Co., Ltd. (Japan)

3F BOARDROOM

3F CHAPEL

N-1: Flexible Electronics and Thin-film Devices

14:15 N-1-3
Carrier Localization in Organic Transistors with Polymer Gate Insulators
H. Matsui[1,2], A.S. Mishchenko[3,4] and T. Hasegawa[2], [1]Univ. of Tokyo, [2]AIST, [3]RIKEN and [4]RRC Kurchatov Institute (Japan)

14:30 N-1-4
Evaluation of Dynamic Performance of CNT Random Network Transistors
N. Tonouchi[1,4], H. Endoh[1,4], T. Manako[1,4], F. Nihey[2], H. Numata[2], T. Yokota[3], T. Sekitani[3] and T. Someya[3,4], [1]NEC Corp., [2]Tech. Res. Association for Single Wall Carbon Nanotubes, [3]The Univ. of Tokyo and [4]Inst. for Nano Quantum Information Electronics (Japan)

14:45 N-1-5
Analyzing Effect of Traps on Carrier Transport in Pentacene FETs with Polymer Gate Insulator by Pre-Biasing Coupled with Time-Resolved Microscopic Optical Second-Harmonic Generation Measurement
J. Takeo, T. Manaka and M. Iwamoto, Tokyo Inst. of Tech. (Japan)

15:00 N-1-6
Mechanical Effect of Bending on Flexible Transistors Calculated by Finite Element Calculation
M. Sakai, T. Okamoto, Y. Yamazaki, S. Yamaguchi, J. Hayashi and K. Kudo, Chiba Univ. (Japan)

3F RAN

P-1: Growth and Characterization of Group IV Related Materials (1)

14:15 P-1-3
An Alternative Technique for GeOI Fabrication
C.T. Chung[1], G.L. Luo[2], C.W. Chen[1] and C.H. Chien[1,2], [1]National Chiao-Tung Univ. and [2]National Nano Device Labs. (Taiwan)

14:30 P-1-4
Optimization of fabrication conditions of HfO_2/SiO_2/Si(100) and Y_2O_3/SiO_2/Si(100) structures
Y. Toyoshima[1], S. Taniwaki[1], Y. Hotta[1,3], H. Yoshida[1,3], K. Arafune[1,3], A. Ogura[2,3] and S. Sato[1,3], [1]Univ. of Hyogo, [2]Univ. of Meiji and [3]JST-CREST (Japan)

14:45 P-1-5
In-Situ Monitoring of Silicon Nanocrystal Deposition with Pulsed SiH_4 Supply by Optical Emission Spectroscopy of Ar Plasma
K. Ikemoto, Y. Nakamine, Y. Kawano and S. Oda, Tokyo Tech. (Japan)

15:00 P-1-6L (Late News)
Fast fabricated the high quality Ge nanodot arrays on Si substrate
T.W. Liao, H.M. Chen and C.H. Kuan, National Taiwan Univ. (Taiwan)

Coffee Break

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1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-2: CBRAM / DRAM (15:40-17:20) Chairs: K. Hamada (Elpida Memory) T. Endoh (Tohoku Univ.)	**B-2: Ge Processes** (15:40-17:10) Chairs: T. Yamaguchi (Renesas Electronics) S. Tsujikawa (SONY)	**C-2: Nanowires** (15:40-17:25) Chairs: M. Arita (Univ. of Tokyo) K. Kawaguchi (Fujitsu Labs.)	**D-2: FinFET** (15:40-17:30) Chairs: M. Masahara (AIST) F.L. Yang (National Nano Device Lab.)	**E-2: Quantum Dots and Carrier Transport** (15:40-17:10) Chairs: T. Tanamoto (Toshiba) S. Kuroki (Hiroshima Univ.)	**F-2: Spin Orbit Interaction and Anisotropy** (15:40-17:10) Chairs: T. Nagahama (Hokkaido Univ.) H. Shimizu (TUAT)	**G-2: Optronics and Cell Manipulation** (15:40-17:25) Chairs: Y.-S. Yang (NCTU) K. Ajito (NTT Labs.)
15:40 A-2-1 **Exploring the atomic structure of copper-doped Gd2O3 for the conductive bridging RAM technology** *M. Lontsi Fomena and P. Blaise, CEA, LETI (France)*	**15:40 B-2-1 (Invited)** **Low-temperature Microwave Annealing Process for Ge MOSFETs** *Y.J. Lee[1, 6], S.S. Chuang[2], C.I. Liu[3], F.K. Hsueh[1], P.J. Sung[1], C.T. Wu[1], C.H. Lai[4], Y.M. Wan[3], M.I. Current[5] and T.Y. Tseng[2], [1]National Nano Device Lab., [2]National Chiao Tung Univ., [3]I-Shou Univ., [4]Chung Hua Univ., [5]Current Scientific and [6]National Chung Hsing Univ. (Taiwan)*	**15:40 C-2-1 (Invited)** **Formation and electronic properties of X- and T-shaped InSb nanowires and nanowire networks** *D. Car[1], M.A. Verheijen[1,2], I. van Weperen[3], S.M. Frolov[3,4], L.P. Kouwenhoven[3], E.P.A.M. Bakkers[1,3] and S.R. Plissard[1,3], [1]Eindhoven Univ. of Tech., [2]Philips Innovation Services, [3]Delft Univ. of Tech. and [4]Univ. of Pittsburgh (The Netherlands)*	**15:40 D-2-1 (Invited)** **Simulation Study on Quasi-Ballistic Heat Transfer Effect in FinFETs** *Y. Kamakura[1,2], K. Kukita[1], I.N. Adisusilo[1], S. Koba[3] and H. Tsuchiya[2,3], [1]Osaka Univ., [2]JST-CREST and [3]Kobe Univ. (Japan)*	**15:40 E-2-1** **Designer Ge QDs on Si for Enhanced Near Infrared Photodetection** *M.H. Kuo[1], C.C. Wang[1], W.T. Lai[1], T. George[2] and P.W. Li[1], [1]National Central Univ. and [2]Zyomed Corporation (Taiwan)*	**15:40 F-2-1 (Invited)** **Spin orbit induced electronic spin polarization and its future application** *M. Kohda, Tohoku Univ. (Japan)*	**15:40 G-2-1 (Invited)** **Totally Integrated Linear and Non-Linear Optics Multimodal Microscopy Platform to Understand Single Cell Processes** *C. Lenz César, UNICAMP Institute of Physics Gleb Wataghin (Brazil)*
16:00 A-2-2 **Impact of overshoot current on SET operation of Atom Switch** *T. Sakamoto, M. Tada, M. Miyamura, N. Banno, K. Okamoto, N. Iguchi and H. Hada, LEAP (Japan)*	**16:10 B-2-2** **Low NiGe Contact Resistances by Carrier Activation Enhancement (CAE) Techniques for Ge CMOSFETs** *H. Miyoshi[1], T. Ueno[1], Y. Hirota[1], J. Yamanaka[2], K. Arimoto[2], K. Nakagawa[2] and T. Kaitsuka[1], [1]Tokyo Electron Ltd. and [2]Univ. of Yamanashi (Japan)*	**16:10 C-2-2 (Invited)** **InGaN-based nanocolumn light emitters in visible wavelength range** *S. Ishizawa[1] and K. Kishino[1,2], [1]Sophia Univ. and [2]Nanotechnology Research Center, Sophia Univ. (Japan)*	**16:10 D-2-2** **Bulk FinFET Fin Height Control using Gas Cluster Ion Beam (GCIB)-Location Specific Processing (LSP)** *M.S. Kim[1], R. Ritzenthaler[1], J. Everaert[1], L. Fernandez[2], K. Devriendt[1], J.W. Lee[1], A. Redolfi[1], S. Mertens[1], E. Burke[2], N. Horiguchi[1] and A. Thean[1], [1]IMEC and [2]Tokyo Electron (Belgium)*	**15:55 E-2-2** **Characterization of Electron Transport Through Ultra High Density Array of One-dimensionally Self-Aligned Si-based Quantum Dots** *H. Niimi[1], K. Makihara[1], M. Ikeda[2] and S. Miyazaki[1], [1]Nagoya Univ. and [2]Hiroshima Univ. (Japan)*	**16:10 F-2-2** **Voltage - Induced Nonvolatile Change of Magnetic Anisotropy in TiOx/CoFeB/Ta** *J. Koba and K. Kita, Univ. of Tokyo (Japan)*	**16:10 G-2-2** **Experimental Study on Micro Optical Diffusion Sensor for Dynamic Sensing of Conformation Change** *Y. Kadota, Y. Matoba, Y. Ishii, Y. Taguchi and Y. Nagasaka, Keio Univ. (Japan)*
16:20 A-2-3 **A New Lateral Conductive Bridge Random Access Memory (L-CBRAM) by Fully CMOS Logic Compatible Process** *Y.C. Lin[1], Y.W. Chin[1], M.C. Hsieh[1], Y.D. Chih[2], K.H. Tsai[3], M.J. Tsai[3], Y.C. King[1] and C.J. Lin[1], [1]National Tsing-Hua Univ., [2] Taiwan Semiconductor Manufacturing Company and [3]Industrial Technology Research Inst. (Taiwan)*	**16:30 B-2-3** **Formation of Epitaxial Nickel Monogermanide on Ge(100) by Annealing of Ni/Sn Bilayer** *M. Koike, Y. Kamimuta, Y. Moriyama, Y. Kamata, E. Kurosawa and T. Tezuka, AIST (Japan)*	**16:40 C-2-3** **Fabrication and Characterization of Three Dimensional Semipolar {10-11} and Nonpolar {10-10} Core-shell InGaN/GaN Multi-Facet Quantum Wells Optoelectronics Devices** *K.C. Hsieh[1], J.R. Chang[1], S.P. Chang[1], Y.J. Li[1], K.P. Sou[1], H.C. Kuo[1], C.Y. Chang[1] and Y.J. Cheng[1,2], [1]National Chiao Tung Univ. and [2]Res. Center for Applied Sciences, Academia Sinica (Taiwan)*	**16:30 D-2-3** **New Observations on the Corner Effect and STI-Induced Effect in Trigate CMOS Devices** *E.R. Hsieh[1], H.M. Tsai[1], S.S. Chung[1], C.H. Tsai[2], R.M. Huang[2] and C.T. Tsai[2], [1]National Chiao Tung Univ. and [2]UMC (Taiwan)*	**16:10 E-2-3** **Size Dependence of Electrostatic Lens Effect in Vertical Pillar Type MOSFET** *M. Muraguchi[1,2] and T. Endoh[1,2], [1]Tohoku Univ. and [2]JST-CREST (Japan)*	**16:25 F-2-3** **Origin of Anisotropy of Spin Accumulation Induced by Tunneling in Si and Ge** *A. Spiesser[1], S. Sharma[1,2], H. Saito[1], S. Yuasa[1], B.J. van Wees[2] and R. Jansen[1], [1]Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST) and [2]Zernike Institute for Advanced Materials, Physics of Nanodevices, University of Groningen (Japan)*	**16:25 G-2-3** **Fabrication and Evaluation of Differential Si Ring Optical Resonator for Biosensors** *T. Taniguchi, Y. Amemiya, T. Ikeda, A. Kuroda and S. Yokoyama, Hiroshima Univ. (Japan)*
16:40 A-2-4 **Excellent Scalability Including Self-Heating Phenomena of Vertical-Channel Field-Effect-Diode (FED) Type Capacitorless One Transistor DRAM Cell** *T. Imamoto[1,2] and T. Endoh[1,2], [1]Tohoku Univ. and [2]JST-CREST (Japan)*	**16:50 B-2-4** **Epitaxial Nickel Distanogermanide [Ni($Ge_{1-x}Sn_x$)$_2$] Contact Formation using Pulsed Laser Annealing** *X. Xu, W. Wang, Y. Dong, E.Y.J. Kong, X. Gong, Q. Zhou, G. Han, P. Guo, L. Wang and Y.C. Yeo, National Univ. of Singapore (Singapore)*	**16:55 C-2-4** **High performance of silicon nanowire based biosensors using the solution-processed Al_2O_3 sensing membrane** *T.E. Bae and W.J. Cho, Univ. of Kwangwoon (Korea)*	**16:50 D-2-4** **Leakage-Delay Analysis of $In_xGa_{1-x}As$-OI FinFETs for Logic Applications** *V.P.H. Hu, H.H. Shen, M.L. Fan, P. Su and C.T. Chuang, National Chiao Tung Univ. (Taiwan)*	**16:25 E-2-4** **Dynamical Coulomb Blockade in Multi-Electron Wave Packet Dynamics in Nanostructures** *G. Fujita[1], T. Shiokawa[1], Y. Takada[2], S. Konabe[1,6], M. Muraguchi[4,6], T. Yamamoto[2], T. Endoh[3,4,6], Y. Hatsugai[1,4] and K. Shiraishi[1,5], [1]Graduate School of Pure and Applied Sciences, Univ. of Tsukuba, [2] Faculty of Engineering, Tokyo Univ. of Science, [3] Center for Spintronics Integrated Systems,Univ. of Tohoku, [4] Graduate School of Engineering, Univ. of Tohoku, [5] Graduate School of Engineering, Univ. of Nagoya and [6]CREST, Japan Science and Technology Agency (Japan)*	**16:40 F-2-4** **Thickness dependence of spin relaxation in thin MgO / Pt / GaAs layers** *J.C. Ryu, A. Sasaki, J. Shiogai, M. Kohda and J. Nitta, Tohoku Univ. (Japan)*	**16:40 G-2-4** **High-Sensitivity Multimode Interference Refractive Index Sensor using Small-Core Single-Mode Fiber for Biosensing** *T. Aiga, S. Taue and H. Fukano, Univ. of Okayama (Japan)*

Wednesday, September 25

1F KASHI

H-2: Advanced Circuits (1)
(15:40-16:55)
Chairs: H. Takao (Kagawa Univ.)
H. C. Lin (NCHU)

15:40 H-2-1
A 0-27 GHz -30 dB Isolation Tx/Rx Single Pole Double Throw (SPDT) Switch for Gaussian Monocycle Pulse Transmission
A. Azhari, K Sogo, M. Wang, A. Toya and T. Kikkawa, Hiroshima Univ. (Japan)

16:00 H-2-2
A 12b 50/70 MS/s 2.2/4.6 mW 0.03mm^2 CMOS SAR ADC for a frequency, performance, and power scalable ADC
S. Lee, H. Kawaraguchi, T. Hirato, M. Miyahara and A. Matsuzawa, Tokyo Inst. of Tech. (Japan)

16:20 H-2-3
CMOS Common-Mode Filter with Gyrator-C Network
D. Uchida[1], M. Ikebe[1], J. Motohisa[1], E. Sano[2] and A. Kondou[3], [1]Univ. of Hokkaido, [2]RCIQE of Hokkaido Univ. and [3]Japan Radio Co., Ltd. (Japan)

16:40 H-2-4L (Late News)
Analog-Assisted Digital Low Dropout Regulator (AAD-LDO) with 59% Faster Transient Response and 28% Ripple Reduction
K. Mori[1], Y. Okuma[2], X. Zhang[1], H. Fuketa[1], T. Sakurai[1] and M. Takamiya[1], [1]Univ. of Tokyo and [2]Semiconductor Tech. Academic Res. Center (STARC) (Japan)

3F VEGA

J-2: GaN Device Process
(15:40-17:25)
Chairs: N. Hara (Fujitsu Lab.)
E. Chang (NCTU)

15:40 J-2-1 (Invited)
Nanostructured GaN Transistors: Pushing the Limits of Linearity and Reliability
E. Matioli, B. Lu, D.S. Lee, F. Gao and T. Palacios, Massachusetts Inst. of Tech. (USA)

16:10 J-2-2
Application of AlTiO thin films to AlTiO/AlGaN/GaN metal-insulator-semiconductor heterojunction field-effect transistors
T.Q. Nguyen, T. Ui, M. Kudo, H.A. Shih and T. Suzuki, JAIST (Japan)

16:25 J-2-3
Improved High-Temperture Characteristics of AlGaN/GaN MISHEMTs with ZrO_2/Al_2O_3 Dual Dielectric Films
M. Hatano, Y. Taniguchi, H. Tokuda and M. Kuzuhara, Univ. of Fukui (Japan)

16:40 J-2-4
Impact of PdO Gate Interlayer on the DC Performance of GaN/AlGaN High Electron Mobility Transistor
F.C Chu[1], A. Das[1], R.M Lin[1], H.W Chuang[2], K.J Chang[2] and Y.T Gau[2], [1]Chang Gung Univ. and [2]Chung Shan Inst. of Sci. and Tech. (Taiwan)

3F RIGEL

K-2: III-V Photonic Devices
(15:40-17:25)
Chairs: Y. Tanaka (Fujitsu Lab.)
S. Iwamoto (Univ. of Tokyo)

15:40 K-2-1 (Invited)
InP based 1.55 µm quantum dot materials and lasers for ultra-narrow linewidth applications
J.P. Reithmaier[1], V. Sichkovskyi[1], V. Ivanov[1], K. Kozhuharov[1] and G. Eisenstein[2], [1]Univ. of Kassel and [2]Technion (Germany)

16:10 K-2-2
Telecom-Band InAs/GaAs Quantum Dot Lasers on Silicon Operating at 100 °C
K. Tanabe, T. Rae, K. Watanabe and Y. Arakawa, Univ. Tokyo (Japan)

16:25 K-2-3
Broadband near-infrared superluminescent diode based on stacked multi-color InAs/GaAs quantum dots
N. Ozaki[1], T. Yasuda[1], S. Ohkouchi[2], E. Watanabe[3], N. Ikeda[3], Y. Sugimoto[3] and R.A. Hogg[4], [1]Wakayama Univ., [2]NEC Corp., [3]NIMS and [4]Univ. of Sheffield (Japan)

16:40 K-2-4
A semiconductor optical amplifier consisting of highly stacked InAs quantum dots fabricated by using the strain-compensation technique
K. Akahane, N. Yamamoto, T. Umezawa, A. Kanno and T. Kawanishi, National Inst. of Info. and Com. Tech. (Japan)

3F BOARDROOM

M-2: Si Power Devices
(15:40-17:25)
Chairs: S. Shiraki (Denso)
T. Funaki (Osaka Univ.)

15:40 M-2-1
Power Device Trends for High- Power Density Operation of Power Electronics System
W. Saito, Toshiba Corp. (Japan)

15:55 M-2-2
600 V-class Trench-Filling Super Junction MOSFET for High precision processing technology
Y. Oda, T. Yamamoto, K. Eguchi and Y. Kagata, Denso Corp. (Japan)

16:10 M-2-3
Impact of Silicon on Diamond Structure for Power-Supply on Chip Applications
K. Nakagawa[1], T. Kodama[1], S. Matsumoto[1], T. Yamada[2], M. Hasegawa[2] and S. Nishizawa[2], [1]Kyushu Inst. of Tech. and [2]The National Inst. Advanced Indus. Sci. and Tech. (Japan)

16:25 M-2-4
Real Time Monitoring System for Internal Process to Failure of High Power IGBT
A. Watanabe[1], M. Tsukuda[1,2] and I. Omura[1], [1]Kyushu Inst. of Tech. and [2]The Int'l Centre for the Study of East Asian Development (Japan)

3F CHAPEL

N-2: OLED, Photonics, and Nanomaterials
(15:40-17:25)
Chairs: K. Fujita (Kyushu Univ.)
H. Okada (Toyama Univ.)

15:40 N-2-1 (Invited)
Third Generation Organic Light Emitting Diodes- Design for Molecular and Device Architectures-
C. Adachi, Kyushu Univ. (Japan)

16:10 N-2-2
Detection of pre-electrical breakdown phenomenon of IZO/α-NPD/Alq3/Al light-emitting diodes by electric-field-induced optical second-harmonic generation measurement
D. Taguchi, R. Nakamoto, T. Manaka and M. Iwamoto, Titech (Japan)

16:25 N-2-3
Injected Carrier Behavior in Single Crystalline Grains of TIPS Pentacene studied by Time-Resolved Optical Microscopic Second Harmonic Generation
T. Manaka, K. Abe, K. Matsubara, D. Taguchi and M. Iwamoto, Tokyo Tech. (Japan)

16:40 N-2-4
Improved Performance of Solution-Processed Organic Photodetectors Based on Blends of Fluorene-Type Polymer and Starburst Molecule
H. Kajii, H. Ohmori, Y. Sato and Y. Ohmori, Osaka Univ. (Japan)

3F RAN

P-2: Growth and Characterization of Group IV Related Materials (2)
(15:40-17:25)
Chairs: T. Nagata (NIMS)
K. Hara (Shizuoka Univ.)

15:40 P-2-1 (Invited)
Hybrid-Formation of Single-Crystalline Ge(Si, Sn)-on-Insulator Structures by Self-Organized Melting-Growth
M. Miyao, R. Matsumura, M. Kurosawa, K. Toko and T. Sadoh, Kyushu Univ. (Japan)

16:10 P-2-2
Segregation-Free Giant Single-Crystalline SiGe-on-Insulator by Super-Cooling-Controlled Rapid-Melting Growth
R. Matsumura, R. Kato, Y. Tojo, T. Sadoh and M. Miyao, Kyushu Univ. (Japan)

16:25 P-2-3
Tensile strained GeSn on Si by solid phase epitaxy and fabrication of high mobility FET devices
R.R. Lieten[1,2], T. Maeda[3], W. Jevasuwan[3], H. Hattori[3], N. Uchida[3], S. Miura[4], M. Tanaka[4], J.W. Seo[1] and J.P. Locquet[1], [1]KU Leuven, [2]IMEC, [3]AIST and [4]Yokohama National Univ. (Belgium)

16:40 P-2-4
Low-Temperature (~300°C) Epitaxial-Growth of SiGe(Sn) on Si-Platform by Liquid-Solid Coexisting Annealing
H. Chikita, R. Matsumura, Y. Tojo, Y. Kinoshita, T. Sadoh and M. Miyao, Kyushu Univ. (Japan)

Wednesday, September 25

1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-2: CBRAM / DRAM	**B-2: Ge Processes**	**C-2: Nanowires**	**D-2: FinFET**	**E-2: Quantum Dots and Carrier Transport**	**F-2: Spin Orbit Interaction and Anisotropy**	**G-2: Optronics and Cell Manipulation**
17:00 A-2-5 **Fluorine ion implantation optimization in Saddle-Fin array devices for sub-40-nm DRAM technology** *K.L. Chiang[1, 2], W.P. Lee[1, 2], C.C. Lee[1], C.S. Sung[1], C.K. Wei[1, 2], C.M. Yang[1, 2], J.C. Wang[2], P. Kao[1], C.Y. Lee[2], H.H. Chen[1], C.Y. Hsiao[1] and C.S. Lai[2], [1]Chang Gung Univ. and [2]Inotera Memories Inc. (Taiwan)*		**17:10 C-2-5** **Impact of Preferential Indium Nucleation on Electrical Conductivity of Indium-Tin-Oxide (ITO) Single Crystalline Nanowires** *T. Yanagida, G. Meng, K. Nagashima, M. Kanai and T. Kawai, Osaka Univ. (Japan)*	**17:10 D-2-5** **Comparison of Analog FOM for TFET and FinFET Considering Work Function Variation** *K.C. Lee, M.L. Fan and P. Su, National Chiao Tung Univ. (Taiwan)*	**16:40 E-2-5** **Reduction of Charge Noise in Dual-Gate Si/SiGe Quantum Point Contact** *J. Kamioka[1], T. Kodera[1,2,3], T. Obata[2], K. Takeda[2], W.M. Akhtar[2], S. Tarucha[2,4] and S. Oda[1], [1]Tokyo Tech., [2]Univ. of Tokyo, [3] PRESTO-JST and [4]RIKEN (Japan)*	**16:55 F-2-5** **Measurement of effective magnetic field via spin Hall effect in a Pt/Co/Pt trilayer structure** *T. Yang[1], M. Kohda[1], T. Seki[2], K. Takanashi[2] and J. Nitta[1], [1]Department of Materials Science, Tohoku Univ. and [2]Institute for Materials Research, Tohoku Univ. (Japan)*	**16:55 G-2-5** **Organic Optoelectronic Platform for Droplets Actuation and Cells Manipulation** *T.M. Yu[1], P.C. Shih[2], M.H. Liu[3], L.H. Hsu[1] and C.H. Liu[2], [1]National Chiao-Tung Univ., [2] National Tsing-Hua Univ. and [3]Sinonar Corp. (Taiwan)*
				16:55 E-2-6L (Late News) **Germanium quantum-dot single-electron Coulomb blockade thermometry** *I.H. Chen, C.C. Wang, K.H. Chen and P.W. Li, National Central Univ. (Taiwan)*		**17:10 G-2-6** **Localized Plasma Treatment for Individual Cells** *R. Shimane[1], S. Kumagai[1], M. Hori[2] and M. Sasaki[1], [1]Toyota Technological Institute and [2]Nagoya Univ. (Japan)*

Wednesday, September 25

1F KASHI	3F VEGA	3F RIGEL	3F BOARDROOM	3F CHAPEL	3F RAN
H-2: Advanced Circuits (1)	**J-2: GaN Device Process**	**K-2: III-V Photonic Devices**	**M-2: Si Power Devices**	**N-2: OLED, Photonics, and Nanomaterials**	**P-2: Growth and Characterization of Group IV Related Materials (2)**
	16:55 J-2-5 **Demonstration of Enhancement-mode Operation in AlGaN/GaN MOS-HEMT on Si by utilizing ALD Al_2O_3 layer** *J.J. Freedsman, T. Kubo and T. Egawa, Nagoya Inst. of Tech. (Japan)*	**16:55 K-2-5** **High Density and High Aspect Ratio GaAs/AlGaAs Nanopillar array Fabricated by Fusion of Bio-Template and Neutral Beam Etching** *Y. Tamura[1,6], A. Higo[2], T. KIba[3,6], W. Yunpeng[4], C. Thomas[1,6], T. Okada[1], W. Hu[1,6], A. Murayama[3,6], M. Sugiyama[5], Y. Nakano[4] and S. Samukawa[1,2,6], [1]Tohoku Univ., [2]WPI-AIMR, Tohoku Univ., [3]Hokkaido Univ., [4]RCAST, Univ. of Tokyo, [5]Univ. of Tokyo and [6]JST-CREST (Japan)*	**16:40 M-2-5** **Micro Dynamic Avalanche Phenomenon during Turn-off in Si-IGBTs** *S. Machida, K. Ito and Y. Yamashita, Toyota Central R&D Labs. Inc. (Japan)*	**16:55 N-2-5** **Fine Patterning Method for Silver Nanoparticle Electrodes Using Difference of Hydrophilic and Hydrophobic Surface Properties** *R. Sugano[1], Y. Takeda[1], Y. Kobayashi[1], K. Fukuda[1,2], D. Kumaki[1,2] and S. Tokito[1,2], [1]Yamagata Univ. and [2]Yamagata Univ., Research Center for Organic Electronics (Japan)*	**16:55 P-2-5** **Structural Characterization of Polycrystalline Ge Thin Films on Insulators Formed by Diffusion-enhanced Al-induced Layer Exchange** *R. Numata[1], K. Toko[1], N. Oya[1], N. Usami[2] and T. Suemasu[1], [1]Univ. of Tsukuba and [2]Nagoya Univ. (Japan)*
	17:10 J-2-6 **A Low Turn-On Voltage and High Breakdown Voltage AlGaN/GaN Dual Metal Schottky Barrier Diode** *T.Y. Yang[1, 2], T.F. Chang[1], T.Y. Huang[2], C.W. Chiu[2], H.D. Su[2], K.C. Chang[2] and C.F. Huang[1], [1]National Tsing Hua Univ. and [2]Richtek Tech. Corp. (Taiwan)*	**17:10 K-2-6** **Trap Analysis of InGaN-based Blue Light Emitting Diodes using Current-Transient Methodology** *G. Kim[1], E. Park[1], J.H. Kim[1], J.H. Bae[1], D.H. Kang[2] and B.G. Park[1], [1]Seoul National Univ. and [2]Samsung Electronics, Corp., Ltd. (Korea)*	**16:55 M-2-6** **1200V SC(Schottky Controlled Injection)-Diode - An Advanced Anode Concept for Low Injection Efficiency** *T. Matsudai[1], T. Ogura[1], Y. Ohino[1], S. Misu[1], T. Kobayashi[2] and K. Nakamura[1], [1]Toshiba Corp. and [2]Toshiba I.S. Corp. (Japan)*	**17:10 N-2-6L (Late News)** **Tuning pentacene polymorphs to improve OTFT stability and OPV efficiency** *M. Ando[1], M. Yoneya[2], Y. Suwa[1], M. Kawasaki[3], N. Yoshimoto[1], T. Minakata[4], T. Kehoe[5], C. Duffy[5], R. Phillips[5] and H. Sirringhaus[5], [1]Central Research Lab., Hitachi, Ltd., [2]Advanced Industrial Sci. and Tech., [3]Hitachi Research Lab., Hitachi, Ltd., [4]Asahi-Kasei Corp., R&D Centre and [5]Cavendish Lab., Univ. of Cambridge (Japan)*	**17:10 P-2-6** **Al-induced Crystallization of Amorphous-Ge Thin Films on Conducting Layer Coated Glass Substrates** *K. Nakazawa[1], K. Toko[1], N. Usami[2] and T. Suemasu[1], [1]Tsukuba Univ. and [2]Nagoya Univ. (Japan)*
			17:10 M-2-7 **Suppression of Reverse Recovery Surge Voltage of Silicon Power Diode by Adjusting Trap Energy Levels through Local Lifetime Control** *Y. Yamashita, S. Machida and T. Sugiyama, Toyota Central R&D Labs., Inc. (Japan)*		

Thursday, September 26

1F NAVIS-A

A-3: Phase Change Memory
(9:00-10:20)
Chairs: Y. Sasago (Hitachi)
M. Tada (LEAP)

9:00 A-3-1
Carrier Injection Induced Switching of Supper-lattice GeTe/Sb2Te3 Phase Change Memories
S. Kato[1], M. Araidai[1], K. Kamiya[1], T. Yamamoto[1], K. Shiraishi[1], T. Ohyanagi[2] and N. Takaura[2], [1]Univ. of Tsukuba and [2]Low-power Electronics Association & Project (Japan)

9:20 A-3-2
Chemical Vapor Deposition GeTe/Sb2Te3 Super-Lattice Phase Change Memory
M. Kitamura, T. Morikawa, T. Ohyanagi, M. Tai, M. Kinoshita, K. Akita and N. Takaura, Low-power Electronics Association and Project (Japan)

9:40 A-3-3
Investigation of Multi-Level-Cell Operation with 2-Step SET Pulse and SET Operation on Super-Lattice Phase Change Memories
T. Egami, K. Johguchi, S. Yamazaki and K. Takeuchi, Chuo Univ. (Japan)

10:00 A-3-4
A New Insight on I_{RESET} Reduction of Carbon-doped GST based PCM
Q. Hubert[1,2], C. Jahan[1], V. Sousa[1], L. Perniola[1], A. Kusiak[3], J.L. Battaglia[3], P. Noé[1], M. Bernard[4], C. Sabbione[1], M. Tessaire[1], F. Pierre[1], P. Zuliani[4], R. Annunziata[4], G. Pananakakis[2] and B. De Salvo[1], [1]CEA - LETI, Minatec Campus, [2]IMEP - LAHC, [3]Lab. I2M, Univ. de Bordeaux and [4]STMicroelectronics (France)

1F NAVIS-B

B-3: Atomic-Scale Characterization
(9:00-10:10)
Chairs: T. Tsunomura (TEL)
T. Aoyama (Toshiba)

9:00 B-3-1 (Invited)
3D dopant analysis in nano scale devices (FinFETs) by Atom Probe Tomography
A.K. Kambham[1,2], A. Kumar[1,2] and W. Vandervorst[1,2], [1]Katholieke Univ. Leuven and [2]IMEC (Belgium)

9:30 B-3-2
Deterministic placement of doping atoms on hydroxylated surfaces
L. Mathey[1,2,3], L. Veyre[1], H. Fontaine[2], V. Enyedi[2], K. Yckache[2], J. Guerrero[2], N. Chevalier[2], F. Martin[2], J.P. Barnes[2], F. Bertin[2], C. Durand[4], M. Berthe[4], B. Grandidier[4], C. Thieuleux[1] and C. Coperet[1,5], [1]C2P2, CPE Lyon, [2]CEA-LETI, [3]Osaka Univ., [4]IEMN and [5]ETH Zurich (France)

9:50 B-3-3
Size and Stress Effects in Ultraviolet Raman Spectra of Few-Nanometer-Thick SOI Nanofilms and Single Nanowires for Future CMOS Devices
V.D. Poborchii[1], T. Tada[1], Y. Morita[1], S. Migita[1], T. Kanayama[1] and P. Geshev[2], [1]National Institute of Advanced Industrial Science and Tech. and [2]Inst. of Thermophysics of the Russian Academy of Sciences (Japan)

1F NAVIS-C

C-3: Graphene Growth
(9:00-10:15)
Chairs: H. Miyazaki (Toshiba)
S. Sato (AIST)

9:00 C-3-1
Potential-Energy Surface of Graphene on Transition-Metal Surfaces
K. Toyoda, K. Nozawa, N. Matsukawa and S. Yoshii, Panasonic Corp. (Japan)

9:15 C-3-2
Laser-Irradiated Direct Synthesis of Graphene and Device Application
K. Koshida, Y. Ohno, K. Maehashi, K. Inoue and K. Matsumoto, ISIR, Osaka Univ. (Japan)

9:30 C-3-3
Transport Properties and Defects at the Intersection of CVD Graphene Domains
Y. Ogawa[1], K. Kawahara[1], M. Miyashita[1], M. Tsuji[1], K. Komatsu[2], K. Tsukagoshi[2] and H. Ago[1], [1]Kyushu Univ. and [2]National Inst. for Materials Sci. (Japan)

9:45 C-3-4L (Late News)
Relationship between Transport Properties and Raman Spectra in Graphene Field Effect Devices
H. Tomori, K. Katakura, Y. Ito, R. Hiraide, H. Tanaka, Y. Ootuka and A. Kanda, Univ. of Tsukuba (Japan)

10:00 C-3-5L (Late News)
Floating-Gated Memory Based on Carbon Nanotube Field-Effect Transistors with Si Floating Dots
K. Seike, Y. Ohno, K. Maehashi, K. Inoue and K. Matsumoto, ISIR. Osaka Univ. (Japan)

1F ARGOS-F

D-3: III-V and Ge MOSFET
(9:00-10:20)
Chairs: T. Hiramoto
(Univ. of Tokyo)
O. Weber (CEA-LETI)

9:00 D-3-1
Scalable La-silicate Gate Dielectric on InGaAs Substrate with High Thermal Stability and Low Interface State Density
D.H. Zadeh[1], H. Oomine[1], K. Kakushima[2], Y. Kataoka[2], A. Nishiyama[2], N. Sugii[2], H. Wakabayashi[2], K. Tsutsui[1], K. Natori[1] and H. Iwai[1], [1]Frontier Research Center, Tokyo Inst. of Tech. and [2]Interdisciplinary Graduate School of Science and Engineering, Tokyo Inst. of Tech. (Japan)

9:20 D-3-2
Channel Length Scaling Limits of III-V Channel MOSFETs Governed by Source-Drain Direct Tunneling
S. Koba[1], M. Ohmori[1], Y. Maegawa[1], H. Tsuchiya[1,2], Y. Kamakura[2,3], N. Mori[2,3] and M. Ogawa[1], [1]Kobe Univ., [2]JST-CREST and [3]Osaka Univ. (Japan)

9:40 D-3-3
Multi-electron Wave Packet Transport Dynamics in Nanoscale Channel
T. Shiokawa[1], G. Fujita[1], Y. Takada[2], S. Konabe[1,5], M. Muraguchi[3,5], T. Yamamoto[2], T. Endoh[3,5], Y. Hatsugai[1,3] and K. Shiraishi[1,4], [1]Univ. of Tsukuba, [2]Tokyo Univ. of Sci., [3]Tohoku Univ., [4]Nagoya Univ. and [5]CREST (Japan)

10:00 D-3-4
Effect of Alloy Scattering on Hole Mobility of sSi/sSiGe/sSOI Quantum Well pMOSFETs
W. Wu[1], W. Yu[2], Q. Zhao[3], J. Sun[1], D. Zhai[1], Y. Shi[1] and Y. Zhao[1,4], [1]Nanjing Univ., [2]State Key Lab. of Functional Materials and Informatics, [3]Peter Grünberg Inst. 9 and [4]State Key Lab. of Silicon Materials (China)

1F NIRE

E-3: Spin Related Physics and Topological Insulators
(9:00-10:15)
Chairs: T. Tanamoto (Toshiba)
H. Gotoh (NTT-BRL)

9:00 E-3-1
Quantum capacitance probing of spin and charge dynamics in a one- and two-electron double quantum dot
T. Ota[1], K. Hitachi[1], T. Fujisawa[2] and K. Muraki[1], [1]NTT Basic Research Lab. and [2]Tokyo Tech. (Japan)

9:15 E-3-2
In-plane magnetic field effect on magnetic focusing in an InGaAs two-dimensional electron gas
T. Okayasu, M. Kohda and J. Nitta, Tohoku Univ. (Japan)

9:30 E-3-3
Dynamics of Hole-Spin Superposition in GaAs/AlGaAs Quantum Wells
T. Ito[1,2], H. Gotoh[3], M. Ichida[4] and H. Ando[4], [1]Res. Inst. of Electronics, Shizuoka Univ., [2]Graduate School of Eng., Shizuoka Univ., [3]NTT Basic Res. Labs., NTT Corp. and [4]Graduate School of Natural Sci., Konan Univ. (Japan)

9:45 E-3-4 (Invited)
Phase-change non-volatile memory equipped with topological insulating properties -Fusion of PCRAM and spintronics-
J. Tominaga[1], A. Kolobov[1], P. Fons[1], T. Nakano[1], M. Hase[2] and S. Murakami[3], [1]AIST, [2]Univ. of Tsukuba and [3]Tokyo Inst. of Tech. (Japan)

1F KAEDE

1F KUSU

G-3: Microfluidic Devices and Imaging Technologies
(9:00-10:15)
Chairs: J. Ohta (NAIST)
C.-H. Liu (NTHU)

9:00 G-3-1 (Invited)
Smart Microfluidic and Analytical Devices Based on Electrochemical Principles
H. Suzuki, Univ. of Tsukuba (Japan)

9:30 G-3-2
Microfluidic Device with Accurately Aligned Optical Fibers for Measuring Transmission Spectrum Using Supercontinuum Light
H. Iimura, D. Deng, S. Kumagai, Y. Ohishi and M. Sasaki, Toyota Tech. Inst. (Japan)

9:45 G-3-3
Integrated 3D Microfluidic System for Stromal Cell Culture
P.Y Chang[1], K.W. Chang[1], T.H. Punde[1], P.C. Shih[1], Y.Y. Hsu[1], C.J. Li[2], H.Y. Huang[2] and C.H. Liu[1], [1]National Tsing Hua Univ. and [2]Chang Gung Memorial Hospital (Taiwan)

10:00 G-3-4
Light source modulated and oxygen annealing NbOx/Si-LAPS for hydrogen ion image sensor
Y.T. Yeh[1], T.W. Chiang[1], A. Das[1], Y.H. Liao[2], X.Z. Zhuang[1], C.M. Yang[2] and C.S. Lai[1], [1]Univ. of Chang Gung and [2]Univ. of Chang Gung (Taiwan)

Coffee Break

Short Presentation (10:40-11:55)

Short Presentation: Area 4
PS-4 (10:40-11:55)
Chairs: T. Endoh (Tohoku Univ.)
K. Ishihara (Sharp)

Short Presentation: Area 1&2
PS-1, PS-2 (10:40-11:55)
Chairs: T. Aoyama (Toshiba)
Y. Otsuka (Toray)

Short Presentation: Area 13
PS-13 (10:40-11:55)
Chairs: S. Sato (AIST)
S. Hara (Hokkaido Univ.)

Short Presentation: Area 3
PS-3 (10:40-11:55)
Chair: D. Hisamoto (Hitachi)

Short Presentation: Area 9
PS-9 (10:40-11:55)
Chairs: H. Gotoh (NTT-BRL)
G. Liang (NUS)

Short Presentation: Area 12
PS-12 (10:40-11:55)
Chairs: Y. Suzuki (Osaka Univ.)
H. Munekata (Tokyo Tech)

Short Presentation: Area 10
PS-10 (10:40-11:55)
Chairs: H. Kajii (Osaka Univ.)
S. Tokito (Yamagata Univ.)

Thursday, September 26

1F KASHI

H-3: Advanced Circuits (2)
(9:00-10:10)
Chairs: N. Wu (CAS)
T. Hirose (Kobe Univ.)

9:00 H-3-1 (Invited)
High Performance Multi-Core for Communication and Multimedia Applications
Z. Yu, X. Yu, S. Zhu, P. Ou, J. Zhang, M. He, S. Cui, K. You, R. Xiao, H. Quan, Z. Yu and X. Zeng, Fudan Univ. (China)

9:30 H-3-2
Digital Word-Parallel Associative Memory in 180nm CMOS for Nearest Euclidean Distance Search Based on Distance Mapping into Clock-Number Domain
T. Akazawa, S. Sasaki and M. Hans Juergen, Univ. of Hiroshima (Japan)

9:50 H-3-3
TLC/MLC NAND Flash Mix-and-Match Design with Exchangeable Storage Array
S. Hachiya[1], K. Johguchi[1], K. Miyaji[1,2] and K. Takeuchi[1], [1]Chuo Univ. and [2]Shinshu Univ. (Japan)

3F VEGA

J-3: Oxide Devices
(9:00-10:15)
Chairs: M. Kuzuhara (Fukui Univ.)
Y. Miyamoto (Tokyo Tech)

9:00 J-3-1
Scaling to 100nm Channel Length of Crystalline In-Ga-Zn-Oxide Thin Film Transistors with Extremely Low Off-State Current
Y. Kobayashi, S. Matsuda, D. Matsubayashi, H. Suzawa, M. Sakakura, K. Hanaoka, Y. Okazaki, T. Yamamoto, S. Hondo, T. Hamada, S. Sasagawa, M. Nagai, Y. Hata, T. Maruyama, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Laboratory Co., Ltd. (Japan)

9:15 J-3-2
Gate Oxide Thickness Dependence of Intrinsic Gain and Flicker Noise in InGaZnO Thin Film Transistors
T. Morooka[1], K. Fukase[1], S. Nakano[2], S. Toriyama[2], H. Momose[1] and T. Ohguro[1], [1]Toshiba Corp. Semiconductor & Strorage Products Company and [2]Toshiba Corp. (Japan)

9:30 J-3-3
Fabrication and Characterization of High-Performance ZnO Thin-Film Transistors
R.J. Lyu[1], H.C. Lin[1,2] and T.Y. Huang[1], [1]National Chiao Tung Univ. and [2]National Nano Device Labs. (Taiwan)

9:45 J-3-4
Suppression of Threshold Voltage Variation Due to Conduction Band Lowering Effect in Crystalline In-Ga-Zn-Oxide Thin Film Transistors
D. Matsubayashi[1], Y. Kobayashi[1], S. Matsuda[1], T. Obonai[2], N. Ishihara[1] and S. Yamazaki[1], [1]Semiconductor Energy Laboratory Co., Ltd. and [2]Advanced Film Device Inc. (Japan)

10:00 J-3-5L (Late News)
InGaSb/AlSb high hole mobility FETs on Si Substrate
H.W. Huang, P.C. Chiu, H.C. Ho, Y.M. Hsin and J.I. Chyi, National Central Univ. (Taiwan)

3F RIGEL

K-3: Silicon Photonics Devices
(9:00-10:15)
Chairs: H. Fukuda (NTT)
H. Isshiki (UEC)

9:00 K-3-1 (Invited)
High speed silicon modulators for integrated transceivers
G.T. Reed[1], D.J. Thomson[1], F.Y. Gardes[1], G.Z. Mashanovich[1], Y. Hu[1], K. Li[1], P.W. Wilson[1], L. Zimmermann[2], H. Porte[3], B. Goll[4], H. Zimmermann[4], D. Knoll[2], S. Lischke[2], S.W. Chen[5], S.S.H. Hsu[5], J.M. Fedeli[6], K. Debnath[7], T.F. Krauss[8], L. O'Faolain[7], [1]Univ. of Southampton, [2]IHP, [3]PHOTLINE Tech., [4]Vienna Univ. of Tech., [5]National Tsing Hua Univ., [6]CEA,LETI, [7]Univ. of St. Andrews and [8]Univ. of York (UK)

9:30 K-3-2
Mach-Zehnder Interferometer Optical ModulatorWith Cascade P/N Junctions
A.K. Sana, R. Furutani, Y. Amemiya and S. Yokoyama, Hiroshima Univ. (Japan)

9:45 K-3-3
GeSn Metal-Semiconductor-Metal Photodetectors with Suppressed Dark Current by Ammonium Sulfide Surface Passivation
Y. Dong[1], W. Wang[1], X. Xu[1], X. Gong[1], P. Guo[1], Q. Zhou[1], L. Wang[1], G. Han[1], Z. Xu[2], S.F. Yoon[2], G. Liang[1] and Y.C. Yeo[1], [1]National Univ. of Singapore and [2]Nanyang Techno. Univ. (Singapore)

10:00 K-3-4
Optical modulation based on surface plasmon resonance using metal-insulator-semiconductor structure
T. Tabei and S Yokoyama, Hiroshima Univ. (Japan)

3F BOARDROOM

M-3: Wide Gap Materials and Characterization
(9:00-10:30)
Chairs: H. Umezawa (AIST)
T. Ishikawa (Toyota Central R&D Labs.)

9:00 M-3-1 (Invited)
Research and Development on Ga_2O_3 Power Devices
M. Higashiwaki[1], K. Sasaki[2,1], M.H. Wong[1], T. Kamimura[1], D. Krishnamurthy[1], A. Kuramata[2], T. Masui[3] and S. Yamakoshi[2], [1]National Inst. of Info. and Communications Tech., [2]Tamura Corp. and [3]Koha Co., Ltd. (Japan)

9:30 M-3-2
New Concept Power Device; Diamond Vacuum Switch
S. Yamasaki[1,2,3,4], D. Takeuchi[1,2,3], S. Koizumi[2,3,5], T. Makino[1,2,3], M. Ogura[1,2,3], H. Kato[1,2,3], H. Ohashi[1,2,3] and H. Okushi[1,2,3], [1]AIST, [2]JST-ALCA, [3]JST-CREST, [4]Univ. of Tsukuba and [5]NIMS (Japan)

9:45 M-3-3
Gate Oxide Reliability on Large-Area Surface Defects in 4H-SiC Epitaxial Wafers
O. Ishiyama[1], K. Yamada[1], H. Sako[1], K. Tamura[1], M. Kitabatake[1], J. Senzaki[1,2] and H. Matsuhata[1,2], [1]R&D Partnership for Future Power Electronics Tech. and [2]AIST (Japan)

10:00 M-3-4
Characterization of a Basal-Plane Dislocation in 4H-SiC by X-Ray Three-Dimensional Topography and Transmission Electron Microscopy
R. Tanuma[1], D. Mori[2] and H. Tsuchida[1], [1]Central Res. Inst. of Electric Power Industry and [2]Fuji Electric Co., Ltd. (Japan)

10:15 M-3-5
Observation of Deep Levels and Their Hole Capture Behavior in p-type 4H-SiC Epilayers with and without Electron Irradiation
M. Kato[1], K. Yoshihara[1], M. Ichimura[1], T. Hatayama[2] and T. Ohshima[3], [1]Nagoya Inst. of Tech., [2]Nara Inst. of Sci. & Tech. and [3]Japan Atomic Energy Agency (Japan)

3F CHAPEL

N-3: OTFT and Transport Properties
(9:00-10:15)
Chairs: T. Manaka (Tokyo Tech)
M. Sakai (Chiba Univ.)

9:00 N-3-1 (Invited)
Materials and devices of high-performance organic transistors
J. Takeya[1,2,3,4], J. Soeda[1,3], M. Uno[4], Y. Kanaoka[4], K. Nakayama[1,3], T. Okamoto[1], C. Mitsui[1] and H. Matsui[1], [1]Univ. of Tokyo, [2]Pi-CRYSTAL Incorporation, [3]Osaka Univ. and [4]TRI-Osaka (Japan)

9:30 N-3-2
Prediction of Band Mobilities of Pentacene, Rubrene and C_8-BTBT from First Principle Calculations
H. Kobayashi, N. Kobayashi, S. Hosoi, N. Koshitani, D. Murakami, R. Shirasawa, Y. Kudo, D. Hobara, Y. Tokita and M. Itabashi, Sony Corp. (Japan)

9:45 N-3-3
A Study of Low-Temperature Carrier Transport in Solution-Processed Organic Field-Effect Transistors
J. Okada[1], T. Nagase[1,2], T. Kobayashi[1,2], K. Takimiya[3], M. Ikeda[4] and H. Naito[1,2], [1]Osaka Prefecture Univ., [2]The Research Institute for Molecular Electronic Devices (RIMED), [3]Hiroshima Univ. and [4]Functional Chemicals R&D Lab.,Nippon Kayaku Co. (Japan)

10:00 N-3-4
Flexible Organic Field-effect Transistors Fabricated by Thermal Lamination
S. Yamaguchi[1], Y. Yamaguchi[1], J. Hayashi[1], M. Sakai[1], S. Kuniyoshi[1], H. Yamauchi[1], K. Kudo[1], Y. Sadamitsu[2] and M. Hamada[2], [1]Chiba Univ. and [2]Nippon Kayaku Co., Ltd. (Japan)

3F RAN

P-3: Material Process and Properties of Oxides
(9:00-10:15)
Chairs: T. Kawae (Kanazawa Univ.)
T. Nagata (NIMS)

9:00 P-3-1
Ultrasonic-Assisted Mist Deposition for Green Materials and Devices
S. Fujita[1], K. Kaneko[2], S. Katori[3], T. Kawaharamura[4] and M. Furuta[4], [1,2]Kyoto Univ., [3]Tsuyama National College of Tech. and [4]Kochi Univ. Tech. (Japan)

9:15 P-3-2
Fabrication of Aluminum Oxide Thin Films by Solution-Source Non-Vacuum Process of Mist Chemical Vapor Deposition with Ozone Assistance
T. Uchida[1], T. Kawaharamura[2], M. Furuta[2] and S. Fujita[1], [1]Kyoto Univ. and [2]Kochi Univ. of Tech. (Japan)

9:30 P-3-3
Investigation of Dzyaloshinskii-Moriya Interaction in Rhombohedral and Tetragonal $BiFeO_3$/CoFe Bilayers
K. Mukaiyama, H. Naganuma, M. Oogane and Y. Ando, Tohoku Univ. (Japan)

9:45 P-3-4
High-Mobility TiO_2-Channel TFTs with Optimized Anatase Microstructures
T. Yajima, G. Oike, T. Nishimura, K. Nagashio and A. Toriumi, Univ. of Tokyo (Japan)

10:00 P-3-5
Significant Conductivity Enhancement of TiO_2 Films by Both Field Effect and Chemical Doping
G. Oike, T. Yajima, T. Nishimura, K. Nagashio and A. Toriumi, Univ. of Tokyo (Japan)

Coffee Break

Short Presentation (10:40-11:55)

Short Presentation: Area 5&11
PS-5, PS-11 (10:40-11:55)
Chairs: A. Kitagawa (Kanazawa Univ.)
M. Sasaki (Toyota Tech. Univ.)

Short Presentation: Area 6
PS-6 (10:40-11:55)
Chairs: Y. Miyamoto (Tokyo Tech)
N. Hara (Fujitsu Lab.)

Short Presentation: Area 7
PS-7 (10:40-11:55)
Chairs: H. Isshiki (UEC)
Y. Tanaka (Fujitsu Lab.)

Short Presentation: Area 14
PS-14 (10:55-11:55)
Chairs: M. Kato (Nagoya Inst. Tech.)
Y. Tanaka (AIST)

Short Presentation: Area 15
PS-15 (10:40-11:55)
Chairs: K. Ohdaira (JAIST)
T. Taima (Kanazawa Univ.)

Short Presentation: Area 8
PS-8 (10:40-11:55)
Chairs: K. Hara (Shizuoka Univ.)
T. Suemasu (Univ. of Tsukuba)

POSTER SESSION (13:00-15:00, ARGOS-C.D.E)

Area 1: Advanced LSI Processing & Materials Science

(14 Papers)

PS-1-1
Fabrication of Tri-Gated Junctionless Poly-Si Transistors with Photoresist Trimming Technique
C.I. Lin[1], K.H. Lee[1], C.L. Cheng[1], H.C. Lin[1,2] and T.Y. Huang[1], [1]National Chiao Tung Univ. and [2]National Nano Device Labs. (Taiwan)

PS-1-2
Synthesis of Perovskite Structure $SrHfO_3$ Thin Films on Si Substrates Using RF Sputtering and Rapid Thermal Anneal
S. Migita, Y. Morita, M. Masahara and H. Ota, AIST (Japan)

PS-1-3
A New Ar Desorption Peak in Thermal Desorption Spectroscopy Measurement of Sputtered HfO_2 Accompanied by its Structural Phase Transformation
T. Iwai, T. Yajima, T. Nishimura, K. Nagashio and A. Toriumi, Univ. of Tokyo (Japan)

PS-1-4
Study of the interfacial SiO_2 scavenging in HfO_2/SiO_2/Si stacks through the ultra-high vacuum annealing
X. Li, T. Yajima, T. Nishimura, K. Nagashio and A. Toriumi, Univ. of Tokyo (Japan)

PS-1-5
Observation of Scattering Effect on Carrier Mobility of MOSFET with La-incorporated-HfO_2 Gate Dielectric
S.W. You, M. Hasan, M.C. Nguyen, Y.S. Jeon, D.T. Tong, D.H. Lee, J.K. Jung and R. Choi, Inha Univ. (Korea)

PS-1-6
Mechanism of Low-Temperature Activation of B in Si by Soft X-ray Irradiation
A. Heya[1], T. Fukuoka[1], N. Matsuo[1], K. Kanda[2] and T. Noguchi[3], [1]Univ. of Hyogo, [2] LASTI, Univ. of Hyogo and [3]Univ. of the Ryukyus (Japan)

PS-1-7
Detection of Effect of Uniaxial Strain on the Valence Band of SiGe by HXPES with High Spatial Resolution
S. Yamahori[1], K. Sawano[1], E. Ikenaga[2], Y. Shiraki[1] and H. Nohira[1], [1]Univ. of Tokyo City and [2]Inst. of Japan Synchrotron Radiation Research (Japan)

PS-1-8
Dependence of Band Alignment and Interfacial Suboxide GeOx Thickness of Thermal GeO_2/Ge Stacks on GeO_2 Thickness by X-ray Photoelectron Spectroscopy
X.L. Wang[1], S.K. Wang[1], J. Zhang[2], W.W. Wang[1], H.G. Liu[1], J. Yan[1], C. Zhao[1], D.P. Chen[1] and T.C. Ye[1], [1]Inst. of Microelectronics, Chinese Academy of Sciences and [2]North China Univ. of Tech. (China)

PS-1-9
Effects of the Interface-related and Bulk-fixed Charges in Ge/GeO_2 Stack on Band Bending of Ge Studied by X-ray Photoemission Spectroscopy
W.F. Zhang[1,2], C.H. Lee[1,2], C.M. Lu[1], T. Nishimura[1,2], K. Nagashio[1,2], K. Kita[1,2] and A. Toriumi[1,2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)

PS-1-10
Ultrathin GeOx Interfacial Repairer Formed by Thermal Oxidation for Germanium MOS Devices
L. Han[1,2], S.K. Wang[1], B.Q. Xue[1], X. Zhang[2], W.R. Wu[3], H.D. Chang[1], W. Zhao[1], B. Sun[1], Y. Zhao[3], H.G. Liu[1] and Y.P. Cui[2], [1]Inst. of Microelectronics, [2] Southeast Univ. and [3]Nanjing Univ. (China)

PS-1-11
Effect of Oxygen Potential Lowering in N-doped GeO_2 on Suppression of GeO Desorption and Planarization of Ge Interface
T. Tabata[1,2], C.H. Lee[1,2], T. Nishimura[1,2], K. Nagashio[1,2] and A. Toriumi[1,2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)

PS-1-12
Novel Sn-assisted Nitridation of Ge/HfO_2 Interface and Improved Electrical Properties of This MOS Capacitor
M. Zhao, R.R. Liang, J. Wang and J. Xu, Tsinghua Univ. (China)

PS-1-13
Reduction of Schottky Barrier Height for n-type Ge Contact by using Sn Electrode
A. Suzuki[1], S. Asaba[1], J. Yokoi[1], O. Nakatsuka[1], M. Kurosawa[1,2], K. Kato[1], M. Sakashita[1], N. Taoka[1] and S. Zaima[1], [1]Nagoya Univ. and [2]JSPS (Japan)

PS-1-14 (Late News)
Residual Defects in Low-dose Arsenic Implanted Si after High-temperature Rapid Thermal Annealing: Their Behavior and Influence on CCD Image Sensors
A. Sagara[1], A. Uedono[2], N. Oshima[3], R. Suzuki[3] and S. Shibata[1], [1]Panasonic Corp., [2] Univ. of Tsukuba and [3]National Inst. of Advanced Indus. Sci. and Tech. (Japan)

Area 2: Advanced Interconnect / Interconnect Materials and Characterization

(10 Papers)

PS-2-3
Room Temperature Bonding of Heterogeneous Materials for Near-Infrared Image Sensor
T. Shuto[1], K. Iwanabe[1], M. Ogura[2], K. Nishida[2] and T. Asano[1], [1]Kyushu Univ. and [2]IRspec Corp. (Japan)

PS-2-4
Young Modulus of Si in 3D-LSIs and Reliability
M. Murugesan, J.C. Bea, T. Fukushima, K.W. Lee, T. Tanaka and M. Koyanagi, Tohoku Univ. (Japan)

PS-2-5
Self-Assembly and Electrostatic (SAE) Carrier Technology for Via-Last Backside-Via Multichip-to-Wafer 3D Integration
H. Hashiguchi, T. Fukushima, J.C. Bea, K.W. Lee, T. Tanaka and M. Koyanagi, Tohoku Univ. (Japan)

PS-2-6
Luminescence from SiO2 by Helium Ion Microscopy without any Damage Characterized by TEM-EELS
S. Ogawa[1], T. Iijima[1], R. Sugie[2], N. Kawasaki[2] and Y. Otsuka[2], [1]Advanced Industrial Science and Technology (AIST) and [2]Toray Research Center, Inc. (Japan)

PS-2-7
Stress Field and Defect Evaluation with Shallow Trench Isolation Structure after Transistor Fabrication Processing by Raman and Cathodoluminescence Spectroscopies
M. Kodera[1], N. Tsuchiya[1], S. Kakinuma[2] and N. Naka[2], [1]Toshiba Corp. and [2]Horiba, Ltd. (Japan)

PS-2-8
Effects of Sputtering Gas on Formation of Ultrathin PtHfSi Film
Y. Yoshimura and S. Ohmi, Tokyo Inst. of Tech. (Japan)

PS-2-9
On-Chip Folded Dipole Antennas for Inter-Chip UWB Signal Transmission
K. Hashimoto, T. Sugitani, S. Kubota and T. Kikkawa, Univ. of Hiroshima (Japan)

PS-2-10 (Late News)
Advanced TSV Fabrication Processes for Future Packaging
Y. Morikawa, T. Sakuihsi, T. Murayama, A. Suzuki, M. Hatanaka and K. Suu, ULVAC, Inc. (Japan)

PS-2-11 (Late News)
Low Stress C Doped WN Diffusion Barrier for Cu Interconnection
Y.T. Kim and Y.H. Kim, Korea Inst. of Sci. and Tech. (Korea)

PS-2-12 (Late News)
Analysis of Printed Ag Electrode on a-InGaZnO
Y. Ueoka[1], T. Nishibayashi[2], Y. Ishikawa[1], H. Yamazaki[1], Y. Osada[1], M. Horita[1] and Y. Uraoka[1], [1]Nara Inst. of Sci. and Tech. and [2]TOKYO ELECTRON LTD. (Japan)

Area 3: CMOS Devices / Device Physics

(24 Papers)

PS-3-1
Chemical Analysis of Multi-Step Deposited and Two-Step (Ultraviolet Ozone cum Rapid Thermal) Annealed Sub-1-nm EOT HfO_2/TiN Gate Stack for High-k Last Integration
*K.S. Yew[1], D.S. Ang[1], L.J. Tang[2] and J.S. Pan[3], [1]Nanyang Tech. Univ., [2] Inst. of Microelectronics, A*STAR and [3]Institute of Materials Research and Eng., A*STAR (Singapore)*

PS-3-2
Effects of Rutile TiO_2 Interlayer on HfO_2/Ge MOS Structure
K. Kobashi[1,2], T. Nagata[2], T. Nabatame[2], Y. Yamashita[2], A. Ogura[1] and T. Chikyow[2], [1]Meiji Univ. and [2]NIMS (Japan)

PS-3-3
Effects of HfO_2 and Lanthanum Capping Layer Thickness on the Narrow Width Behavior of Gate First High-K and Metal Gate NMOS Transistors
S.S. Naresh[1], N.R. Mohapatra[1] and P.K. Duhan[2], [1]IIT-Gandhinagar and [2]IIT-Bombay (India)

PS-3-4
Correlation between 1/f Noise Parameters and Random Telegraph Noise in 28-nm High-k/Metal Gate pMOSFETs with Embedded SiGe Source/Drain
S.C. Tsai[1], S.L. Wu[2], J.F. Chen[1], K.S. Tsai[2], T.H. Kao[1], C.W. Yang[3], C.G. Chen[3], K.Y. Lo[3], O.B. Cheng[3], Y.K. Fang[1] and S.J. Chang[1], [1]National Cheng Kung Univ., [2] Cheng Shiu Univ. and [3]United Microelectronics Corp. (Taiwan)

PS-3-5
Study of Trap Properties of High-k/Metal Gate pMOSFETs with Aluminum Ion Implantation by Random Telegraph Noise and 1/f Noise Measurements
T.H. Kao[1], S.L. Wu[2], K.S. Tsai[2], Y.K. Fang[1], B.C. Wang[1], C.M. Lai[3], C.W. Hsu[3], Y.W. Chen[3], O.B. Cheng[3] and S.J. Chang[1], [1]National Cheng Kung Univ., [2] Cheng Shiu Univ. and [3]United Microelectronics Corp. (Taiwan)

PS-3-6
Analysis and Application of Temperature Dependent Characteristics of the Random Telegraph Noise on Contact RRAM
L.S. Chang, Y.C King and C.J Lin, National Tsing-Hua Univ. (Taiwan)

PS-3-7
The Trade-off between STI Stress and Gate Resistance in RF MOSFETs Design for High Frequency Performance and RF Noise
C.Y. Ku, K.L. Yeh and J.C. Guo, National Chiao-Tung Univ. (Taiwan)

PS-3-8
Impact of Extension Induced Fluctuation in FinFETs with Gate Underlap Structure
Y.J. Wang, P. Huang, Z. Xin, X.Y. Liu, G. Du, Y. Yang and J.F. Kang, Peking Univ. (China)

PS-3-9
Shrinking Circuits Area with High-Mobility Channel MOSFETs
M. Ono and T. Tezuka, GNC, AIST (Japan)

PS-3-10
High Temperature Behavior of MR-DCIV Spectroscopy and Relationship with STI-based LDMOSFETs Reliability
Y.D. He, G.G. Zhang, Y. Yang and X. Zhang, Peking Univ. (China)

PS-3-11
Understanding HCI Variability in Deeply Scaled nMOSFETs
L.J. Ma[1], X.L. Ji[1], Z.X. Chen[2], Y.M. Liao[1], F. Yan[1], Y.L. Song[3] and Q. Guo[4], [1]Nanjing Univ., [2]SanDisk Info. Tech. Co. Ltd., [3]SMIC and [4]WXSMC (China)

PS-3-12
Effect of dynamic stress on OFF leakage of nanoscale pMOSFETs at high temperature
G.J. Kim, J.H. Seo, D. Son, S. Lee, C Kim and B. Kang, Pohang Univ. of Sci. and Tech. (Korea)

PS-3-13
Trap-Assisted Tunneling on Extended Defects in Tunnel Field-Effect Transistors
M. Reiche[1], M. Kittler[2] and H. Uebensee[3], [1]Max Planck Inst. of Microstructure Physics, [2]IHP microelectronics and [3]CIS Res. Inst. of Microsensorics and Photovoltaics (Germany)

PS-3-14
Enhanced Subthreshold Slope and On-state Current in Tunneling Thin-Film-Transistors Using Metal Induced Lateral Crystallization
Y.H. Chen, L.C. Yen, T.S. Chang, T.Y. Chiang, P.Y. Kuo and T.S. Chao, National Chiao Tung Univ. (Taiwan)

PS-3-15
Investigation of Tunneling FET Device Designs for Improving Circuit Switching Performance and Energy
Y.N. Chen, M.L. Fan, V.P.H. Hu, P. Su and C.T. Chuang, National Chiao-Tung Univ. (Taiwan)

PS-3-16
Layout Design Considering Electro-thermal Properties for CMOS Inverter Composed of Multi-pillar Vertical MOSFET
A. Wang[1,2] and T. Endoh[1,2], [1]Tohoku Univ. and [2]JST-CREST (Japan)

PS-3-17
A Quasi-2D Compact Model for Trapezoidal FinFETs with Non-uniform Dopant Profiles Using the Perturbation Method
X. Feng, W. Kang, Q. Cheng and Y. Chen, Shenzhen Graduate School, Peking Univ. (China)

PS-3-18
Negative differential conductivity in Gate-All-Around Si Nanowire FETs and its impact on Circuit Performance
K. Nayak[1], M. Bajaj[2], A. Konar[2], P.J. Oldiges[3], H. Iwai[4], K.V.R.M. Murali[2] and V.R. Rao[1], [1]IIT Bombay, [2]IBM Semiconductor Research and Development Center, India, [3]IBM Semiconductor Research and Development Center, USA and [4]Tokyo Inst. of Tech. (India)

PS-3-19
Ge N-channel Omega-Gate Field Effect Transistors with [010] Channel Direction
C.W. Chen[1], C.T. Chung[1], J.Y. Tzeng[1], G.L. Luo[2] and C.H. Chien[1,2], [1]National Chiao-Tung Univ. and [2]National Nano Device Labs. (Taiwan)

PS-3-20
Suppression of short channel effects in accumulation-type UTB-InGaAs-OI nMISFETs with raised S/D fabricated by gate-last process
M. Oda[1], T. Irisawa[1], E. Mieda[1], Y. Kurashima[2], H. Takagi[2], W. Jevasuwan[1], T. Maeda[1], O. Ichikawa[3], T. Ishihara[3], T. Osada[3], Y. Miyamoto[4] and T. Tezuka[1], [1]GNC, AIST, [2]AIST, [3]Sumitomo Chemical Co. Ltd. and [4]Tokyo Inst. of Tech. (Japan)

PS-3-21
Anisotropic Phonon-Confinement-Effects/Band-Structure-Modulation of Two-Dimensional Si Layers Fabricated on Silicon-on-Quartz Substrates
T. Mizuno[1], Y. Nagata[1], Y. Suzuki[1], Y. Nakahara[1], T. Tanaka[1], T. Aoki[1] and T. Sameshima[2], [1]Kanagawa Univ. and [2]Tokyo Univ. of Agri. and Tech. (Japan)

PS-3-22
Improvement of Color Separation Characteristics of a Side-Illuminated Color Photo Sensor
T. Ariyoshi, K. Sakamoto and Y. Arima, Kyushu Inst. of Tech. (Japan)

PS-3-23
Current-Mode Ambient Light Sensor for Ultra Low Power Applications
T.Y. Tsai, Y.C. King and C.J. Lin, National Tsing-Hua Univ. (Taiwan)

PS-3-24 (Late News)
Low-Cost and Scalable Embedded Non-Volatile Memory Using Quasi-Planar Bulk (Bulk+) Transistor with Standard CMOS Gate Stacks
K. Ota, M. Saitoh, C. Tanaka, D. Matsushita and T. Numata, Toshiba Corp. (Japan)

Area 4: Advanced Memory Technology

(6 Papers)

PS-4-1
Ultra-high LRS Nonlinearity and high speed in HfOX Based Complementary Resistive Switch with Ti electrode for Vertical RRAM
Y.S. Chen[1], P.S. Chen[2], H.Y. Lee[1], K.H. Tsai[1], T.Y. Wu[1], F. Chen[1] and M.J. Tsai[1], [1]Indus. Tech. Res. Inst. and [2]MingHsin Univ. of Sci. and Tech. (Taiwan)

PS-4-2
A Proposal of a Forming-Free Resistive Switching Memory based on Breakdown and Anodic Reoxidization of thin SiO2 on NiSi2 Electrode using CeOx Buffer Layer
M.S. Hadi, S. Kano, C. Dou, K. Kakushima, P. Ahmet, Y. Kataoka, A. Nishiyama, K. Natori, H. Wakabayashi, K. Tsutsui, H. Iwai and N. Sugii, Tokyo Inst. of Tech. (Japan)

PS-4-3
Low-Power High-Performance Flexible Sm2O3 ReRAM for SoC Applications
S. Mondal, C.H. Chueh and T.M. Pan, Chang Gung Univ. (Taiwan)

PS-4-4
A Source-Side Injection Single-Poly Split-Gate Cell Technology for Embedded Flash Memory
Y. Yamauchi, Y. Kamakura and T. Matsuoka, Univ. of Osaka (Japan)

PS-4-5
Effect with Nano Dot Type Storage Layer Structure on Channel Region in 20nm Planar NAND Flash Memory Cell
T. Sasaki[1,2], M. Muraguchi[1,2], M.S. Seo[3], S.K. Park[3] and T. Endoh[1,2], [1]Tohoku Univ., [2]JST-CREST and [3]SK hynix Inc. (Japan)

PS-4-6 (Late News)
Extraction of Trapped Charge Profile in Space and Energy in P-Channel SONOS Memory Device
Y.Y. Chiu[1], B.J. Yang[1], F.H. Li[1], R.W. Chang[1], S.F. Ng[1], W.T. Sun[2], C.J. Hsu[2], C.W. Kuo[2], C.Y. Lo[2] and R. Shirota[1], [1]National Chiao Tung Univ. and [2]eMemory Tech. Inc. (Taiwan)

Area 5: Advanced Circuits and Systems

(13 Papers)

PS-5-1
An 8-ch, 20-V Output CMOS Switching Driver with 3.3-V Power Supply for Integrated MEMS Devices Controlling
M. Takayasu[1], A. Shirane[1], S. Lee[1], D. Yamane[1], H. Ito[1], X. Mi[2], H. Inoue[2], F. Nakazawa[2], S. Ueda[2], N. Ishihara[1] and K. Masu[1], [1]Tokyo Institute of Tech. and [2]Fujitsu Labs. Ltd. (Japan)

PS-5-2
A Multi-sensor Readout Circuit Using Multiple Differential-input Operation Amplifier with Pulse Output
R.L. Wang[1], C.C. Fu[1], C. Yu[1], Y.T. Chuang[2], C.F. Lin[2], H.H. Liao[2], H.H. Tsai[2] and Y.Z. Juang[2], [1]National Kaohsiung Normal Univ. and [2]National Chip Implementation Center, National Applied Research Lab. (Taiwan)

PS-5-3
A Stabilization Technique for Intermediate Power Level in Stacked-Vdd ICs using Parallel I/O Signal Coding
T. Nishiyama, T. Koizuka, H. Okamura, T. Yamanokuchi and K. Nakamura, Kyushu Inst. of Tech. (Japan)

PS-5-4
A High-Voltage Isolated Current Sense Amplifier for Fully CMOS Compatible Non-volatile Memories
C.Y. Huang, C.Y. Wu and H. Lin, National Chung Hsing Univ. (Taiwan)

PS-5-5
Emulation of High Frequency Substrate Noise in CMOS Digital Circuits with Effects of Adjusting Clock Skew
S. Shimazaki, S. Taga, T. Makita, N. Azuma, N. Miura and M. Nagata, Kobe Univ. (Japan)

PS-5-6
High Power and High Q Spiral Inductors using TSV Processes
J.M. Yook, D.S. Kim and J.C. Kim, Korea Electronics Technology Inst. (Korea)

PS-5-7
Design Optimization Methodology for Ultra Low Power Analog Circuits using Intuitive Inversion-level and Saturation-level Parameter
T. Eimori[1], K. Anami[1], N. Yoshimatsu[1], T. Hasebe[2] and K. Murakami[1,3], [1]Institute of Systems, Information Technologies and Nanotechnologies, [2]Qualiarc Technology Solutions,Inc. and [3]Kyushu Univ. (Japan)

PS-5-8
Co-Design of Application and NAND Flash Memory for Database Storage System
K. Miyaji[1,2], C. Sun[1,3] and K. Takeuchi[1], [1]Chuo Univ., [2]Shinshu Univ. and [3]Univ. of Tokyo (Japan)

PS-5-9
Area-efficient Reconfigurable Ring Oscillator for Characterization of Static and Dynamic Variations
A.K.M.M. Islam[1] and H. Onodera[1,2], [1]Kyoto Univ. and [2]JST,CREST (Japan)

PS-5-10
Novel Dynamic Reconfigurable FPGA based on Multi-Context Scheme Using One-Time Memory with Gate-Induced Permanent Path
M. Oda, K. Zaitsu and S. Yasuda, Toshiba Corp. (Japan)

PS-5-11
FPGA Implementation of 60-FPS QVGA-to-VGA Single-Image Super-Resolution
S. Chikuda, T. Ohira, Y. Sanada, M. Igarashi, M. Ikebe, T. Asai and M. Motomura, Hokkaido Univ. (Japan)

PS-5-12
A VLSI Processor with Configurable Processing Element Array for Balanced Feature Extraction in High Resolution Images
H.B. Zhu[1] and T. Shibata[2], [1]The Univ. of Tokyo and [2]Tohoku Univ. (Japan)

PS-5-13
An Analog VLSI Implementation of One-Class Support Vector Machine
R. Zhang[1], M. Kaneko[1] and T. Shibata[2], [1]Japan Advanced Inst. of Sci. and Tech. and [2]Tohoku Univ. (Japan)

Area 6: Compound Semiconductor Electron Devices & Related Technologies

(33 Papers)

PS-6-1
Fully Recessed Schottky Barrier Diodes with a Digital Etching on AlGaN/GaN Heterostructures
N. Jeon[1], W. Choi[1], H. Ryu[1], H.Y. Cha[2] and K.S. Seo[1], [1]Seoul National Univ. and [2]Hongik Univ. (Korea)

PS-6-2
Analysis of Forward Characteristics in AlGaN/GaN SBD with Schottky Contact Lying on Mesa Edge
Y.R. Park, S.C Ko, W.Y. Jang, J.J. Kim, W.J. Jang, S.B. Bae, J.K. Mun and E.S. Nam, Electronics and Telecommunication Research Inst. (Korea)

PS-6-3
Effects of High-Temperature Annealing on Properties of Al_2O_3/InAlN Interface Formed by Atomic Layer Deposition
T. Nakano, M. Chiba and M. Akazawa, Hokkaido Univ. (Japan)

PS-6-4
A Device Performance Study of Stacked Gate Dielectrics AlGaN/GaN MOS-HEMTs by Mixed Oxide Thin Film Growth Techniques
B.Y. Chou[1], Y.S. Wu[1], E.L. Huang[1], W.F. Chen[1], H.Y. Liu[1], W.C. Hsu[1], C.S. Lee[2], W.C. Ou[1] and C.S. Ho[1], [1]Univ. of National Cheng Kung and [2]Univ. of Feng Chia (Taiwan)

PS-6-5
Suppress Current Collapse Effect by Optimizing 0.12um Gate Structure of AlGaN/GaN HEMTs on Si-substrate for Microwave Power Applications
D. Kim[1], S. Eom[1], S. Han[1], H. Cha[2] and K. Seo[1], [1]Seoul National Univ. and [2]Hongik Univ. (Korea)

PS-6-6
Improvement of process uniformity in recessed gate AlGaN/GaN HFET by selective etching of in-situ Si_xN_y on AlGaN
H.Y. Ko, J. Park, H. Lee, Y. Jo, M. Song and T. Jang, LG Electronics (Korea)

PS-6-7
Improvement of Hysteresis Behavior in AlGaN/GaN MIS-HEMTs with SiN_x Using NH_3
H. Ryu[1], W. Choi[1], N. Jeon[1], H.Y. Cha[2] and K.S. Seo[1], [1]Seoul National Univ. and [2]Hongik Univ. (Korea)

PS-6-8
Effect of SF_6 Plasma Treatment on Gate Leakage and Subthreshold Characteristics of AlGaN/GaN HEMTs
N. Lee, N. Jeon, D. Kim, M. Kim, S. Choi and K.S. Seo, Seoul National Univ. (Korea)

PS-6-9
On-wafer Nonlinear Behavior Modeling Technology for High Power GaN HEMTs Using Load-dependent X-parameters
C.S. Chiu[1], C.W. Chuang[1], B.Y. Chen[1], W.D. Liu[1], G.W. Huang[1,2], Y.C. Lin[2], Y.S. Chiu[2] and E.Y. Chang[2], [1]National Nano Device Labs. and [2]National Chiao Tung Univ. (Taiwan)

PS-6-10
Investigations on the Dynamic On-Resistance of High Voltage AlGaN/GaN HFETs
J.H. Shin, S.Y. Jang and T. Jang, LG Electronics (Korea)

PS-6-11
Wet cleaning process for GaN Surface at room temperature
Y. Tsuji[1,2], T. Katsuyama[1], A. Teramoto[2], Y. Shirai[2], S. Sugawa[2] and T. Ohmi[2], [1]Sumitomo Electric Industries, Ltd. and [2]Tohoku Univ. (Japan)

PS-6-12
Analyses of Chemical States at SiN_x/GaN Interface by HAXPES
Y. Saito[1], T. Yonemura[1], J. Iihara[1], S. Uemura[1], Y. Tateno[1], T. Kouchi[1], T. Araya[2], S. Kurachi[2], T. Komatani[2] and J. Wada[2], [1]Sumitomo Electric Industries, Ltd. and [2]Sumitomo Electric Device Innovations, Inc. (Japan)

PS-6-13
Investigation of Temperature Dependence of DIBL for InGaAs Multi-Gate n-MOSFETs Considering Quantum Confinement
S.H. Wu, Y.S. Wu and P. Su, National Chiao Tung Univ. (Taiwan)

PS-6-14
Performance scalability studies by TCAD simulation of raised source/drain versus implanted source/drain plasma-PH_3 passivated $In_{0.53}Ga_{0.47}As$ MOSFET
A.B.S. Sumarlina[1,2] and G. Samudra[1], [1]National Univ. of Singapore and [2]GLOBALFOUNDRIES (Singapore)

PS-6-15
Ultrahigh Sensitive Non-Resonant and Resonant Terahertz Detection by Asymmetric Dual-Grating Gate HEMTs
Y. Kurita[1], G. Ducournau[2], D. Coquillat[3], K. Kobayashi[1], A. Satou[1], Y.M. Meziani[4], V.V. Popov[5], W. Knap[3], T. Suemitsu[1] and T. Otsuji[1], [1]RIEC, Tohoku Univ., [2]IEMN, [3]CNRS, Univ. Montpellier 2, [4]Univ. Salamanca and [5]Kotelnikov Inst. of Radio Eng. and Electronics (Japan)

PS-6-16
Microwave Performance of $In_{0.25}Ga_{0.75}As$ MOSFET with an InGaP interfacial layer
H.D. Chang[1], G.M Liu[1], B. Sun[1], H.G Liu[1], X.L Zhou[2] and J.Q Pan[2], [1]Institute of Microelectronics Chinese Academy of Sciences and [2]Institute of Semiconductor Chinese Academy of Sciences (China)

PS-6-17
Comparison between theoretical and experimental results for energy states of two-dimensional electron gas in pseudomorphically strained InAs-HEMTs
Y. Nishio, T. Tange, N. Hirayama, T. Iida and Y. Takanashi, Tokyo Univ. of Science (Japan)

PS-6-18
On the electrical characteristics of the atomic layer deposition $Al_2O_3/In_{0.53}Ga_{0.47}As$ MOSCAPs with various annealing processes
Q.H Luc, E.Y Chang, H.D Trinh, H.Q Nguyen, B.T Tran, Y.C Lin and H.B Do, Univ. of Chiao Tung (Taiwan)

PS-6-19
Design of AlGaAs/InGaAs Heterojunction Tunneling Field-Effect Transistor for Low-Standby-Power and High-Performance Application
Y.J. Yoon[1], S. Cho[2], J.H. Seo[1], E.S. Cho[3], S.W. Kang[1], J.H. Bae[1], J.H. Lee[1], B.G Park[4], J.S. Harris[2] and I.M. Kang[1], [1]Kyungpook National Univ., [2]Stanford Univ., [3]Gachon Univ. and [4]Seoul National Univ. (Korea)

PS-6-20
High Performance Solution-deposited InGaZnO Thin Film Transistors using Microwave Annealing and Ar/O_2 Plasma Treatment at Low Process Temperature
J.G. Gu[1], K.S. Kim[1], H.M. An[2] and W.J. Cho[1], [1]Kwangwoon Univ. of Korea and [2]Osan College. of Korea (Korea)

PS-6-21
High-performance Single/Dual-layer Channel IGZO TFT Fabricated on Glass Substrates at Low-temperature
Y. Tian[1], D.D. Han[1], S.M. Zhang[1,2], F.Q. Huang[1,2], D.F. Shan[1,2], Y.Y. Cong[1], J. Cai[1,2], L.L. Wang[1,2], S.D. Zhang[1,2], X. Zhang[1] and Y. Wang[1], [1]Peking Univ. and [2]Peking Univ. (China)

PS-6-22
High performance and electrical characterization of write-once-read-many-times memory devices base on IGZO thin film with O_2 plasma treatment
P. Liu[1], T.P. Chen[1], Y.H. Zhao[1], Z. Liu[2], X.D. Li[1] and J.I. Wong[1], [1]Nanyang Technological Univ. and [2]Guangdong University of Tech. (Singapore)

PS-6-23
Improved Stability of ZnO Thin Film Transistor with Dual Gate Structure under Negative Bias Stress
H.J. Yun[1], Y.S. Kim[2], Y.M. Kim[1], S.D. Yang[1], H.D. Lee[1] and G.W. Lee[1], [1]National Univ. of Chungnam and [2]National Nanofab Center (Korea)

PS-6-24
Effects of Composition on Electrical Properties of Amorphous In-Ga-Zn-O Thin-Film Transistors Deposited Using Atmospheric Pressure Plasma Jet
C.H. Wu[1], K.M. Chang[2,3], H.Y. Hsu[2], C.Y. Chen[2], S.J. Wang[4], I.J. Hsieh[1], M.C. Hsu[1] and C.S. Chang[1], [1]Chung Hua Univ., [2]Chiao Tung Univ., [3]I-shou Univ. and [4]Cheng Kung Univ. (Taiwan)

PS-6-25
The channel layer engineering using Al_2O_3 inter-layer in ZnO based TFTs
S.H. Kim, K.S. Jeong, H.J. Yun, S.D. Yang, Y.M. Kim, J.S. Kim, Y.U. Ko, J.U. An, H.D. Lee and G.W. Lee, Chungnam National Univ. (Korea)

PS-6-26
Implementation of Multi-threshold Voltage a-IGZO TFTs with Oxygen Plasma Treatment
X. He[1], L.Y. Wang[1], S.J. Li[1], M.S. Chan[2] and S.D. Zhang[1,3], [1]Peking Univ., [2]Hong Kong Univ. of Science and Tech. and [3]Shenzhen Graduate School, Peking Univ. (China)

PS-6-27
Solution-Processed Ca-doped InZnO Oxide Semiconductor for Thin Film Transistor Applications
D. Liu[1,2], Y. Wang[1,2], Y.X. Yu[2], X. Gong[2], Y. Tian[2], Y.R. Wang[2], Z. Chen[2], D.D. Han[2], Y. Wang[2] and J.F. Kang[2], [1]Peking University Shenzhen Graduate School and [2]Peking Univ. (China)

PS-6-28 (Late News)
Normally-off AlGaN/GaN MIS-HFET using stacked NiO/Al_2O_3 Gate Structure Formed by Atomic Layer Deposition
Y. Yamada, A. Suzuki, N. Otsuka and D. Ueda, Panasonic Corp. (Japan)

PS-6-29 (Late News)
AlGaN/GaN HEMTs on Silicon with Hybrid Source-Drain for Source-Drain Scaling and Frequency Dispersion Suppression
C.W. Tsou, Y.W. Lian, J.C. Hung, Y.S. Lin and S.H. Hsu, National Tsing Hua Univ. (Taiwan)

PS-6-30 (Late News)
Electrical Characteristic of AlGaN/GaN HEMTS with AlN Spacer Layer
N.M. Shrestha, Y. Li and E.Y. Chang, National Chiao Tung Univ. (Taiwan)

PS-6-31 (Late News)
Improved Breakdown Properties in Short Gate InP-based HEMTs with Novel Tri-Layer Channel Structure
A. El Moutaouakil, H. Sugiyama and H. Matsuzaki, NTT Corp. (Japan)

PS-6-32 (Late News)
Crystal growth of InAs/AlGaSb heterostructures by molecular beam epitaxy and fabrication of InAs HFETs using Ni/Au alloy ohmic metal
K. Moriguchi, T. Maemoto, K. Ogata and S. Sasa, Osaka Institute of Technology (Japan)

PS-6-33 (Late News)
GaSb-on-insulator metal-oxide-semiconductor field-effect transistors on Si fabricated by direct wafer bonding technology
M. Yokoyama[1], H. Yokoyama[2], M. Takenaka[1] and S. Takagi[1], [1]Univ. of Tokyo and [2]NTT Photonics Labs., NTT Corp. (Japan)

Area 7: Photonic Devices and Optoelectronic Integration
(23 Papers)

PS-7-1
Efficiency Improvement of GaN-Based LEDs with Double Nano-pattern
J.K. Huang, D.W. Lin, C.Y. Lee, H.W. Huang, P.T. Lee and H.C. Kuo, National Chiao Tung Univ. (Taiwan)

PS-7-2
Enhanced Performance of GaN-Based Light-Emitting Diodes on Patterned Sapphire Substrate with a Novel Patterned SiO2/Al2O3 Passivation Layer
H. Guo[1,2], H.J. Chen[2], X. Zhang[2], P.Y. Zhang[2], H.G. Liu[1], B. Sun[1], Q.H. Liao[3], S.J. Hu[3], S.K. Wang[1] and Y.P. Cui[2], [1]Inst.of Microelectronics, [2] Univ. of Southeast and [3]Univ. of Nanchang (China)

PS-7-4
Enhancement of Light output Power of Vertical GaN-based Light-emitting Diode Using Novel Thermal Dissipation Design
F.I Lai[1], Y.Z. Lee[2] and H.C. Kuo[2], [1]Yuan-Ze Univ. and [2]National Chiao-Tung Univ. (Taiwan)

PS-7-5
Enhancement of light power for blue light-emitting diodes by graded-composition AlGaN/GaN superlattice electron-blocker layer
B.C. Lin[1], C.C. Lin[2] and H.C. Kuo[1], [1]National Chiao Tung Univ. and [2]National Chiao Tung Univ. (Taiwan)

PS-7-6
Performance Improvement of GaN Metal-Semiconductor-Metal Photodetectors with Sputtered AlN Nucleation Layer
C.C. Hung[1], C.K. Wang[1], Y.Z. Chiou[1], C.H. Yen[2], T.H. Chiang[2] and S.J. Chang[2], [1]Southern Taiwan Univ. of Sci. and Tech. and [2]National Cheng Kung Univ. (Taiwan)

PS-7-7
Interrelated Ultraviolet and Long-lived Blue luminescence bands of Oxidized Nanocrystalline Porous Silicon
B. Gelloz[1], R. Mentek[2] and N. Koshida[2], [1]Nagoya Univ. and [2]Tokyo Univ. Agr.&Tech. (Japan)

PS-7-9
High brightness red light from fluorescence polymer/InGaN hybrid light-emitting diodes
C.L. Hsieh, Y.L. Chen, C.F. Lai and C.J. Chang, Feng Chia Univ. (Taiwan)

PS-7-10
Luminescent Properties of Ce:Gd3 (Al, Ga, Mg, M)5O12 Crystal (M=Zr, Hf)
S. Kurosawa, K. Kamada, Y. Yokota and A. Yoshikawa, Tohoku Univ. (Japan)

PS-7-11
Study on the Relation Between the Air Duty Cycle and the Light Extraction Efficiency of InGaN-Based Light-Emitting Diodes by Utilizing Two Dimensional Photonic Crystals
M.L. Lee, C.J. Hsieh, V.C. Su, Y.H. You, P.H. Chen, H.C. Lin, H.B. Yang and C.H. Kuan, National Taiwan Univ. (Taiwan)

PS-7-12
Efficient Energy Transfer from 1,3,5-Tris(N-phenylbenzimidazol-2,yl) Benzene to Mn:CdS Quantum Dots
S. Cao[1], L. Jia[2], L. Wang[1], F.M. Gao[1], G.D. Wei[1], J.J. Zheng[1,2] and W.Y. Yang[1], [1]Ningbo University of Technology, School of Materials and [2]Ningbo University of Technology, School of Mechanical Eng. (China)

PS-7-13
UV and Visible range Electroluminescence from MOS Devices Fabricated by Spin-Coating of Gd/Dy Organic Compound Films on Silicon
T. Matsuda[1], S. Saito[1], H. Iwata[1] and T. Ohzone[2], [1]Toyama Prefectural Univ. and [2]Dawn Enterprise Co., Ltd. (Japan)

PS-7-14
Nonpolar GaN Two Dimensional Photonic Crystal Nanocavities
T.T. Wu, S.Y. Lo, C.W. Tsao, H.M. Huang, C.Y. Chang, Y.P. Lan, T.C. Lu, H.C. Kuo and S.C. Wang, National Chiao Tung Univ. (Taiwan)

PS-7-15
Fabrication of Silicone Grating Using a Photoimprinted Polymer Mold and Period Control by Mechanical Distortion
T. Ishihara[1], I. Yamada[1], J. Yanagisawa[1], K. Koyama[2], T. Inoue[2], J. Nishii[3] and M. Saito[2], [1]Univ. of Shiga Prefecture, [2] Ryukoku Univ. and [3]Hokkaido Univ. (Japan)

PS-7-16
The Metal Grating Design of Plasmonic Hybrid III-V/Si Evanescent Lasers
M.H. Hsu, C.C. Lin and H.C. Kuo, National Chiao Tung Univ. (Taiwan)

PS-7-17
Double wavelength infrared emission by plasmonic thermal emitter
H.H. Chen, W.L. Hunag and S.C. Lee, National Taiwan Univ. (Taiwan)

PS-7-18
Sensitivity Improvement of Optical Fiber Refractive Index Sensor with Multimode Interference Structure using Localized Surface Plasmon Resonance
H. Daitoh, S. Taue and H. Fukano, Univ. of Okayama (Japan)

PS-7-19
High-Sensitivity, Short-Length Optical Fiber Refractive-Index Sensor using a Multimode Interference Structure with an End-Face Mirror
T. Hashimoto, S. Taue and H. Fukano, Univ. of Okayama (Japan)

PS-7-20
Ta2O5 optical waveguide on silica substrate fabricated by CF4 reactive ion etching
G. Li, Y. Zhao, T. Maruyama and K. Iiyama, Univ. of Kanazawa (Japan)

PS-7-21
Transient Characteristics of Electroluminescence from Self-aligned Si-based Quantum Dots
Y. Suzuki[1], K. Makihara[1], M. Ikeda[2] and S. Miyazaki[1], [1]Nagoya Univ. and [2]Hiroshima Univ. (Japan)

PS-7-22
Modes Switching in a Semiconductor Circular Ring Laser Diode due to the Generation of Solitons Wave Guiding
M.C. Shih and Y.C. Sun, National Univ. of Kaohsiung (Taiwan)

PS-7-23
Visible Light Blinded IR Detector by a Si-based MIS Device with Multi-dielectric Layers
M.C. Shih, S.W. Fang and W.H. Lan, National Univ. of Kaohsiung (Taiwan)

PS-7-24 (Late News)
Sensitivity Enhancement of SOI Photodiode with Randomly Arranged Au Nanoparticles
A. Ono[1,2], Y. Enomoto[3], Y. Matsumura[3], H. Satoh[1,2] and H. Inokawa[1], [1]Research Institute of Electronics, Shizuoka Univ., [2] Shizuoka Univ. and [3]Nippon Steel & Sumikin Chemical Co. Ltd. (Japan)

PS-7-25 (Late News)
Long-Period Waveguide Grating on Silicon-on-Insulator (SOI) Substrate Realized by Anisotropic Wet Etching
R.W. Chuang[1,2], M.T. Hsu[1] and G.S. Wang[1], [1]National Cheng Kung Univ. and [2]National Nano Device Labs. (Taiwan)

Area 8: Advanced Material Synthesis and Crystal Growth Technology
(21 Papers)

PS-8-1
Ballistic Electro-Deposition of Thin Si, Ge, and SiGe Films
R. Suda[1], M. Ito[1], M. Yagi[1], A. Kojima[1], R. Mentek[1], N. Mori[2], J. Shirakashi[1] and N. Koshida[1], [1]Tokyo Univ. of Agri. & Tech. and [2]Osaka Univ. (Japan)

PS-8-2
Photon Energy Dependence of Low-Temperature Crystallization of a-Ge and a-$Si_{0.5}Ge_{0.5}$ Films by Soft X-ray Irradiation
F. Kusakabe, Y. Maruyama, A. Heya, N. Matsuo, K. Kanda, S. Miyamoto, S. Amano and T. Mochizuki, Univ. of Hyogo (Japan)

PS-8-3
Large grain growth of poly-GeSn on insulator by pulsed laser annealing in water
M. Kurosawa[1,2], N. Taoka[1], H. Ikenoue[3], O. Nakatsuka[1] and S. Zaima[1], [1]Nagoya Univ., [2] JSPS and [3]Kyushu Univ. (Japan)

PS-8-4
UV detection of n-type Ultrananocrystalline Diamond/Hydrogenated Amorphous Carbon Composite Films by Coaxial Arc Plasma Deposition
H. Gima, S. Al Riyami and T Yoshitake, Kyushu Univ. (Japan)

PS-8-5
Ultrananocrystalline Diamond/Hydrogenated Amorphous Carbon Composite Films for Metal-Semiconductor-Metal Photodetector
T. Hanada, S. Ohmagari and T. Yoshitake, Kyushu Univ. (Japan)

PS-8-6
Photovoltaic Characteristics of Heterojunction Diode Comprising Boron-Doped Ultrananocrystalline Diamond/Hydrogenated Amorphous Carbon Composite Film and n-Type Silicon
Y. Katamune and Y. Yoshitake, Kyushu Univ. (Japan)

PS-8-7
Optical and electrical properties of MoS_2 and Fe-doped MoS_2
S.Y. Wang[1], C.C. Huang[1], Y.S. Huang[2] and D.Y. Lin[1], [1]National Changhua Univ. of Edu. and [2]National Taiwan Univ. of Sci. and Tech. (Taiwan)

PS-8-8
Crystallinity Control of Sputtered ZnO:Al Transparent Conducting Films by Utilizing Buffer Layers Fabricated via Nitrogen Mediated Crystallization
N. Itagaki[1,2], K. Oshikawa[1], I. Suhariadi[1], K. Matsushima[1], D. Yamashita[1], H.W. Seo[1], K. Kamataki[1], G. Uchida[1], K. Koga[1] and M. Shiratani[1], [1]Kyushu Univ. and [2]JST-PRESTO (Japan)

PS-8-9
H2 Plasma Pretreatment of Seed Layer on Synthesis of ZnO Nanorods by microwave hydrothermal method
H.S. Koo, C.C. Lin, Y.J. Chen, C.H. Peng and M. Chen, Ming-Hsin Univ. of Sci. and Tech. (Taiwan)

PS-8-10
Nitridation of Zinc Oxide Film by Pulse Mode Rapid Thermal Annealing
C.W. Lin, P.C. Ho, S.J. Chang and W.W. Chen, Univ. of Tatung (Taiwan)

PS-8-11
Growth of crystalline $SrTiO_3$ thin film on Si(100) by pulsed laser deposition
A. Imanaka, T. Sasaki, Y. Hottta and S. Sato, Univ. of Hyogo (Japan)

PS-8-12
Sputtered $Pb(Zr,Ti)O_3$ piezoelectric films for MEMS application
H. Kobayashi, M. Hirose, I. Kimura and K. Suu, ULVAC Inc. (Japan)

PS-8-13
Homogeneous Deposition of Gold Nanoparticles on Rough Titanium Oxide Surfaces by Electrochemical Process
Y. Kimura, E.F.F. Mehdi, T. Miya, T. Tobe, R. Kojima and M. Niwano, Tohoku Univ. (Japan)

PS-8-15
Preferential N-H Bond Direction in GaAsN(001) Grown by Chemical Beam Epitaxy
K. Ikeda, K. Demizu, N. Kojima, Y. Ohshita and M. Yamaguchi, Toyota Technological Inst. (Japan)

PS-8-16
Development of phosphor thin films on SiN substrate for electron beam excitation assisted optical microscope
A. Miyake[1,2], S. Kanamori[1], W. Inami[1,2], H. Kominami[1], Y. Kawata[1,2] and Y. Nakanishi[1], [1]Shizuoka Univ. and [2]CREST, JST (Japan)

PS-8-17
Crystalline and Electrical Properties of Fullerene Doped GaAs pin Diodes
J. Nishinaga and Y. Horikoshi, Waseda Univ. (Japan)

PS-8-18
Heteroepitaxial Growth of InSb Thin Films on a Silicon-on-Insulator Substrate
T. Sakamoto, H. Shimoyama, Y. Yasui, M. Mori and K. Maezawa, Univ. of Toyama (Japan)

PS-8-19
Synthesis of MAX-Phase Containing Ti-Si-C Films by Sputter-Deposition Using Elemental Targets
T. Sonoda, S. Nakao and M. Ikeyama, AIST (Japan)

PS-8-20
Growth and Luminescence Properties of Ce and Ca co-doped $LiGdF_4$-LiF Eutectic Scintillator
K. Hishinuma[1], K. Kamada[2,3], S. Kurosawa[1,2], S. Suzuki[1], A. Yamaji[1], Y. Yokota[2] and A. Yoshikawa[1,2,3], [1]Tohoku Univ., [2]New Industry Creation Hatchery Center and [3]C&A Corp. (Japan)

PS-8-21
Functional possibilities of inorganic-organic hybrid scintillator
K. Kamada[1,2], S. Kurosawa[2], Y. Yokota[2], T. Yanagida[3], M. Nikl[4] and A. Yoshikawa[1,2], [1]C&A Corp., [2]Tohoku Univ., [3]Kyushu Inst. of Tech. and [4]Inst. of Phys. AS CR (Japan)

PS-8-22 (Late News)
Crystal Characteristic of GaN/ZnO Heterostructure Grown by Molecular Beam Epitaxye
C.Y. Chang[1], Y.P. Lan[1], H.M. Huang[1], T.C. Lu[1], L.W. Tu[2], W.F. Hsieh[1], H.C. Kuo[1] and S.C. Wang[1], [1]National Chiao Tung Univ. and [2]National Sun Yat-Sen Univ. (Taiwan)

Area 9: Physics and Applications of Novel Functional Devices and Materials

(19 Papers)

PS-9-1
Ballistic Transport of Massless Dirac Fermions in Graphene
Y. Sata[1], S. Masubuchi[1], M. Onuki[1], T. Yamaguchi[1], K. Watanabe[2], T. Taniguchi[2] and T. Machida[1,3], [1]Univ. of Tokyo, [2]NIMS and [3]PRESTO-JST (Japan)

PS-9-2
Molecular Beam Epitaxy Growth of Low-Density InAs Quantum Dots on InP(311)B Substrate Emitting at Telecommunication Wavelengths
K. Konishi[1], T. Takakuma[1], K. Akahane[2], I. Suemune[3] and J. Ishi-Hayase[1], [1]Keio Univ., [2]NICT and [3]Hokkaido Univ. (Japan)

PS-9-3
CMOS Temperature Sensor Using a PTAT-voltage biasing Common-source Amplifier with a Source-degeneration Polycrystalline Silicon Resistor
R.L. Wang[1], C.C. Fu[1], C. Yu[1], Y.F. Hao[1], J.L. Shi[1], C.F. Lin[2], H.H. Liao[2], H.H. Tsai[2] and Y.Z. Juang[2], [1]National Kaohsiung Normal Univ. and [2]National Chip Implementation Center, National Applied Research Lab. (Taiwan)

PS-9-4
Power Gain Characteristic of Single-Electron Transistors (SETs)
D.M. Luong and K. Honjo, Univ. of Electro-Communications (Japan)

PS-9-5
Novel Tri-State Latch Using Single-Peak Negative Differential Resistance (NDR)
S. Shin[1], I.M. Kang[2] and K.R. Kim[1], [1]Ulsan National Inst. of Sci. and Tech. and [2]Kyungpook National Univ. (Korea)

PS-9-6
Novel Oxygen sensor Using Oxygen Intercalation of Layered Semiconductor $CuFeTe_2$
M. Kozaki, N. Nagashima, Y. Ikawa, H. Kuriyaki and K. Toko, Kyushu Univ. (Japan)

PS-9-7
High Performance and Stability Fully Transparent Aluminum-doped Zinc Oxide Thin-Film Transistors
D. Shan[1,2], D. Han[1], F. Huang[1,2], Y. Tian[1], S. Zhang[1,2], L. Qi[1,2], Y. Cong[1], S. Zhang[1,2], X. Zhang[1] and Y. Wang[1], [1]Peking Univ. and [2]Peking Univ. (China)

PS-9-8
Size Effects on Phase Formation and Electrical Robustness of Nickel Silicide Nanowires
I.H. Chen[1], Y.Y. Hsiao[2], C.C. Wang[3], C.L. Hsin[5] and P.W. Li[4], [1]National Central Univ., [2]National Central Univ., [3]National Central Univ., [4]National Central Univ. and [5]National Central Univ. (Taiwan)

PS-9-9
Double Sided Fabrication Process of $Bi_2Sr_2CaCu_2O_{8+x}$ THz Oscillator Stack On-chip Coupled to THz Detector by Dilute Acid Solution
T. Nishikata[1], T. Kato[1], Y. Kotaki[1], H. Suematsu[1], K. Yasui[1] and A. Kawakami[2], [1]Nagaoka Univ. of Tech. and [2]Kobe Advanced ICT Res. Center, National Inst. of Info. and Communications Tech. (Japan)

PS-9-10
Pn-Diode-Structured p-CuOx/SiOx/n-SiC/n-Si Resistive Nonvolatile Memory
A. Yamashita, Y. Sato, T. Tsukamoto and Y. Suda, Tokyo Univ. of Agric. and Tech. (Japan)

PS-9-11
Uniformity Improvement of Resistance State by Using Novel Electrical Operation for the Flexible AlN Unipolar Resistive RAM (RRAM)
C.L. Lin[1], C.M. Wu[1], Y.H. Yang[1], C.H. Soh[1], W.Y. Chang[1], Y.L. Huang[1] and P.C. Juan[2], [1]Feng Chia Univ. and [2]Mingchi Univ. of Tech. (Taiwan)

PS-9-12
Photoresponse Enhancement of Plasmonic Terahertz Wave Detector Based on Asymmetric Silicon MOSFETs with Antenna Integration
M.W. Ryu[1], J.S. Lee[1], K. Park[1], W.K. Park[2], S.T. Han[2] and K.R. Kim[1], [1]Ulsan National Inst. of Sci. and Tech. and [2]Korea Electrotech. Res. Inst. (Korea)

PS-9-13
Filament Analysis Utilizing Tiny Resistive Random Access Memory with Removable Bottom Electrode
S.G. Koh[1], K. Kinoshita[1,2], Y. Sawai[1] and S. Kishida[1,2], [1]Tottori Univ. and [2]Tottori Univ. Electronic Display Research Center (Japan)

PS-9-14
The Influence of Water on Memory Characteristics of NiO-ReRAM
R. Ogata[1], K. Kinoshita[1,2], M. Yoshihara[1], N. Murayama[1] and S. Kishida[1,2], [1]Tottori Univ. and [2]Tottori Univ. Electronic Display Research Center (Japan)

PS-9-15
Enhancement of Resistive Switching in Cu/HfO_2/Pt Structures by Providing Water
S. Hasegawa[1], K. Kinoshita[1,2] and S. Kishida[1,2], [1]Tottori Univ. and [2]Tottori Univ. Electronic Display Research Center (Japan)

PS-9-16
Flexible Dual-layer Channel Gallium-doped ZnO Thin-film Transistors Fabricated on Plastic Substrates at Room Temperature
F. Huang[1,2], D. Han[1], D. Shan[1,2], S. Zhang[1,2], Y. Tian[1], Y. Cong[1], J. Cai[1,2], L. Wang[1,2], S. Zhang[1,2], X. Zhang[1] and Y. Wang[1], [1]Peking Univ. and [2]Peking Univ. (China)

PS-9-17
Integration of epitaxial PZT thin film infrared detector array with JFET compatible CMOS process
K. Oishi[1], D. Akai[2] and M. Ishida[1, 2], [1]Toyohashi Univ. of Tech. and [2]Electronics-Inspired Interdisciplinary Res. Inst. (EIIRIS) (Japan)

PS-9-18 (Late News)
Effects of Performance Improvement on InGaZnO Thin Film using by Micro-wave Irradiation for both ReRAM and TFT Applications
Y.H. Hwang[1], H.M. An[2] and W.J. Cho[1], [1]Kwangwoon Univ. and [2]Osan College (Korea)

PS-9-19 (Late News)
Single-Electron Counting Statistics with a Finite Frequency Bandwidth
N. Watase, M. Hashisaka and T. Fujisawa, Tokyo Inst. Tech. (Japan)

Area 10: Organic Materials Science, Device Physics, and Applications
(11 Papers)

PS-10-1
The Numerical Model Fitting and Transient Luminescence Analysis for Understanding Degradation Mechanism in Phosphorescent Blue Organic Light Emitting Diodes (OLEDs)
T. Hirai, K. Weber, J. O'Connell, M. Bown and K. Ueno, CSIRO (Australia)

PS-10-2
Electrostatic discharge robustness on organic ring oscillator.
K. Kuribara[1], W.L. Liu[2], J.J. Liou[2], T. Yokota[1], T. Sekitani[1], J. Chung[3], Y.H. Jeong[4], Z. Wang[2], C.L. Lin[5] and T. Someya[1,6], [1]Department of School of Engineering, Univ. of Tokyo, [2] the Department of Electrical Engineering and Computer Science, Univ. of Central Florida, [3] the National Center for Nanomaterials Technology, Inha Univ., [4] the National Center for Nanomaterials Technology, Pohang Univ. of Sci. and Tech., [5] Department of Electronic Engineering, Feng Chia Univ. and [6]Exploratory Research for Advanced Technology (ERATO), Japan Science and Technology Agency (JST) (Japan)

PS-10-3
Thermal Stability of Short Channel, High-Mobility Organic Thin-Film Transistors having Bottom-Contact Configuration
M. Kitamura[1,2] and Y. Arakawa[2], [1]Kobe Univ. and [2]Univ. of Tokyo (Japan)

PS-10-4
Device performance of top-gate organic transistors with embedded electrodes:Effects of thin and planar C_8-BTBT layer on FET characteristics
Y. Kimura[1], T. Nagase[1,2], T. Kobayashi[1,2], K. Takimiya[3], M. Ikeda[4] and H. Naito[1,2], [1]Univ. of Osaka Prefecture, [2] The Res. Inst. for Molecular Electronic Devices (RIMED),Osaka Prefecture University, [3] Univ. of Hiroshima and [4]Nippon Kayaku Co., Ltd. (Japan)

PS-10-5
Preparation of a Hole-Transport Layer Tethered to ITO Surface via a Self-Assembled Monolayer Having Reactive Terminal Group
Y. Hagihara[1], S.H. Kim[1], K. Tanaka[1], R.C. Advincula[2] and H. Usui[1], [1]Tokyo Univ. Agricul. & Technol. and [2]Case Western Univ. (Japan)

PS-10-6
Anti-Stiction Technique Using Elastomer Contact Structure in Woven Electronic Textiles
T. Yamashita, S. Takamatsu, K. Miyake and T. Itoh, National Inst. of Advanced Indus. Sci. and Tech. (Japan)

PS-10-7
Organic resistive memories composed of Au nanoparticle/polystyrene with embedded nanoparticle on the electrode
A. Fukushima[1] and K. Fujita[1,2], [1]Kyushu Univ. and [2]IMCE, Kyushu Univ. (Japan)

PS-10-8
Surface Modification of Self-Assembled Monolayers for Organic Transistors
S. Ito[1,2], S.W. Lee[1,2], T. Yokota[1,2], T. Tokuhara[1,2], H. Klauk[3], U. Zschieschang[3], T. Sekitani[1,2] and T. Someya[1,2], [1]Univ. of Tokyo, [2] JST ERATO and [3]Max Planck Inst. for Solid State Research (Japan)

PS-10-9
Heteroacene-based organic single crystal transistors under high pressure
K. Sakai[1], Y. Okada[1], S. Kitaoka[1], J. Tsurumi[2], Y. Ohishi[3], A. Fujiwara[3], H. Sato[4], A. Yamano[4], M. Yamagishi[1], C. Mitsui[1], T. Okamoto[1], K. Takimiya[5] and J. Takeya[1], [1]Univ. Tokyo, [2] Osaka Univ., [3] JASRI, [4] Rigaku and [5]RIKEN (Japan)

PS-10-10
Effects of Poly(3-hexylthiophene) Concentration on Performance of Extended-Gate Field-Effect Transistor for Silver Ion Detection
E.L. Huang[1], W.F. Chen[1], W.C. Hsu[2], J.C. Chou[1], C.S. Ho[1], E.P. Yao[1], H.W. Liu and Y.C. Kao, [1]National Cheng Kung Univ. and [2]National Yunlin Univ. of Sci. and Tech. (Taiwan)

PS-10-11 (Late News)
Characterization of Light-Extraction Efficiency for WOLEDs with Light-Out-Coupling Layer
M. Harada[1], H. Wakana[2], S. Ishihara[1], S. Nobuki[1], H. Sakuma[1], M. Kawasaki[1] and S. Aratani[1], [1]Hitachi Research Lab., Hitachi, Ltd. and [2]Central Research Lab., Hitachi, Ltd. (Japan)

Area 11: Devices and Materials for Biology and Medicine
(11 Papers)

PS-11-1
Fabrication of an Integrated Square Wave Voltammetry (SWV)-Redox Sensor
B. Lim[1], M. Futagawa[2], S. Takahashi[1], F. Dasai[1,3], M. Ishida[1,4] and K. Sawada[1,3,4], [1]Toyohashi Univ. of Tech., [2] Head Office for "Tailor-Made and Baton-Zone" Graduate Course, Toyohashi Univ. of Tech., [3] Core Res. for Evolutional Sci. and Tech., Japan Sci. and Tech. Agency and [4]Electronics-Inspired Interdisciplinary Res. Inst. (EIIRIS), Toyohashi Univ. of Tech. (Japan)

PS-11-2
A Label-Free and Rapid Molecular Biosensor Based on the Combination of the Extended Gate field Effect Transistor and AC Electrokinetics
E.L. Huang[1], I.F. Cheng[2], W.C. Hsu[1] and T.Y. Chen[2], [1]National Cheng Kung Univ. and [2]National Nano Device Lab. (Taiwan)

PS-11-3
Direct observation of the enzymatically-released pyrophosphates using phenylboronic acid group-immobilized gold electrode by FET
H. Nishida[1], K. Takahashi[2], Y. Tabuse[3], A. Matsumoto[4], Y. Miyahara[4], H. Kambara[1] and T. Sakata[3], [1]Hitachi, Ltd., [2] Waseda Univ., [3] Univ. of Tokyo and [4]Tokyo Med. Dent. Univ. (Japan)

PS-11-4
Device-level Simulation of the Light-addressable Potentiometric Sensor for High-speed and High-resolution Chemical Imaging
Y. Guo[1], K. Miyamoto[1], T. Wagner[2], M.J. Schöning[2] and T. Yoshinobu[1], [1]Tohoku Univ. and [2]Aechen Univ. of Applied Sciences (Japan)

PS-11-5
Low Temperature Ta2O5/X-doped Al2O3/SiO2/Si for pH Sensing Membrane by Spray Pyrolysis Doped System
Y.T. Lin[1], C.M. Yang[2], T.J. Wang[3], W.C. Sun[3], M.Y. Shih[1], C.A. Kao[1] and C.S. Lai[1], [1]Univ. of Chang Gung, [2] Univ. of Chang Gung and [3]Indus. (Taiwan)

PS-11-6
An Enzymatic Amperometric Glucose Sensor on CMOS Chip using Carbon Ink Electrode and Chromatography Paper.
M. Miki, S. Iwahara and S. Uno, Ritsumeikan Univ. (Japan)

PS-11-7
Electrochemical Impedance Spectroscopy of Aqueous Solution in Chromatography Paper and Its Application to Immunochromatography
S. Iwahara, M. Miki and S. Uno, Univ. of Ritsumeikan (Japan)

PS-11-8
An Implantable Wireless Medical System with a High-Gain On-chip Antenna Using Sapphire Substrate
K. Okabe[1], I. Akita[1] and M. Ishida[1,2], [1]Toyohashi Univ. of Tech. and [2]Electronics-Inspired Interdisciplinary Res. Inst. (EIIRIS) (Japan)

PS-11-9
A Thermocouple Device Fabricated on Trench Sidewall for Measuring Accurate Temperature of Microfluid
T. Yamaguchi, S. Kumagai and M. Sasaki, Toyota Technological Institute (Japan)

PS-11-10
Ultralow Power Operation of 3-D Stacked Retinal Prosthesis Chip with Edge Enhancement Function
H. Naganuma[1], T. Tani[1], H. Kino[1], K. Kiyoyama[2] and T. Tanaka[1], [1]Tohoku Univ. and [2]Nagasaki Inst. of Applied Sci. (Japan)

PS-11-11
Moving Single Cells Into Low Shear Stress PEG-Based C-Shape Microwells By OET Force
L.Y. Ke, Y.S. Chen, C.C. Hu and C.H. Liu, Univ. of Tsing Hua (Taiwan)

Area 12: Spintronics Materials and Devices
(16 Papers)

PS-12-1
Resident electrons spin formation and spin dephasing in a single CdTe quantum well
L.P. Yan[1], W.T. Hsu[2] and S. Adachi[1], [1]Hokkaido Univ. and [2]National Chiao Tung Univ. (Japan)

PS-12-2
Correlation between the intensities of differential conductance curves and the spin accumulation signals in Si for CoFe/MgO/SOI devices
M. Ishikawa[1], H. Sugiyama[1], T. Inokuchi[1], T. Tanamoto[1], K. Hamaya[2], N. Tezuka[3] and Y. Saito[1], [1]Corporate Research & Development Center, Toshiba Corp., [2] Kyushu Univ. and [3]Tohoku Univ. (Japan)

PS-12-3
Fabrication of Half-metallic Co_2MnSi/diamond Schottky Junctions
K. Ueda, M. Nishiwaki, T. Soumiya, K. Kawamoto and H. Asano, Nagoya Univ. (Japan)

PS-12-4
Preparation and Characterization of Ordered Double Perovskite $SrLaVMoO_6$ Thin Films
T. Shinno, K. Sanbou, T. Miyawaki, K. Ueda and H. Asano, Nagoya Univ. (Japan)

PS-12-5
Design of a Three-Terminal MTJ-Based Nonvolatile Logic Element with a 2-ns 64-Bit-Parallel Reconfiguration Capability
D. Suzuki, M. Natsui, A. Mochizuki and T. Hanyu, Tohoku Univ. (Japan)

PS-12-6
Theoretical study on Topological Insulator based Spintronic Tristable Multivibrator
G. Gupta, A. Nurbawono, M. Zeng, M.B.A. Jalil and G. Liang, National Univ. of Singapore (Singapore)

PS-12-7
Epitaxial Growth of Ferromagnetic Semiconductor $Ga_{1-x}Mn_xAs$ Film on Ge(001) Substrate
Y. Sato[1,2], A. Spiesser[1], H. Saito[1], S. Yuasa[1], K. Ando[1] and N. Miura[2], [1]National Inst. of Adv. Indus. Sci. and Tech. and [2]Meiji Univ. (Japan)

PS-12-9
Structural and transport properties in epitaxial $Fe_2CrSi/MgAl_2O_x/Fe_2CrSi$ structures
K. Inagaki, N. Fukatani, H. Tanaka, T. Miyawaki, K. Ueda and H. Asano, Nagoya Univ. (Japan)

PS-12-10
Lateral spin-valve devices with two different epitaxial Heusler-alloy electrodes
S. Oki[1], K. Yamasaki[1], K. Tanikawa[1], S. Yamada[1], M. Miyao[1,2] and K. Hamaya[1], [1]Kyushu Univ. and [2]CREST-JST (Japan)

PS-12-11
Properties of perpendicular-anisotropy magnetic tunnel junctions prepared by different MTJ etching process
S. Miura[1], H. Honjo[1], K. Tokutome[1], N. Kasai[2], S. Ikeda[2,3], T. Endoh[2,3,4] and H. Ohno[2,3], [1]NEC Corp., [2] CSIS Tohoku Univ., [3] Tohoku Univ. and [4]Tohoku Univ. (Japan)

PS-12-12
Magnetic moment in Diluted Magnetic Semiconductor GaGdAs measured by Magnetic Circular Dichroism
N. Funaki[1], Y. Uda[1], S. Matsumoto[1], H. Miyagawa[1], S. Koshiba[1], N. Takahashi[2], M. Misuzaki[3], N. Kawamura[3] and M. Suzuki[3], [1]Univ. of Kagawa, [2] Univ. of Kagawa and [3]Japan Synchrotron Research Inst. (Japan)

PS-12-13
Epitaxial growth and properties of n-type magnetic semiconductor (In,Co)As
T.T. Nguyen, D.A. Le, N.H. Pham and M. Tanaka, Univ. of Tokyo (Japan)

PS-12-14
A Design of Optical Isolator Utilizing Surface Plasmons in Co / Al_2O_3 / AlGaAs Waveguides for Integration into Photonic Integrated Circuits
T. Kaihara[1], H. Shimizu[1], V. Zayets[2], H. Saito[2], K. Ando[2] and S. Yuasa[2], [1]Tokyo Univ. Agri. & Tech. and [2]National Inst. Advanced Indus. Sci. and Tech. (Japan)

PS-12-15
Oxidized titanium nitride thin films in situ grown by pulsed laser deposition for diluted magnetic semiconductor
S.C. Chen[2], K.H. Wu[2], J.Y. Juang[2], T. Kobayashi[2] and H.C. Kuo[1], [1]Chiao-Tung Univ. and [2]Chiao-Tung Univ. (Taiwan)

PS-12-16
Zinc defect enhanced saturation magnetization in Mn-doped ZnO thin films
S.S. Li[1,2], Y.K. Su[1,2,3], H.H. Tang[1,2] and Y.M. Hu[4], [1]Inst. of Electro-Optical Sci. and Eng., National Cheng Kung Univ., [2] Advanced Optoelectronic Tech. Center, National Cheng Kung Univ., [3] Inst. of Microelectronics, National Cheng Kung Univ. and [4]Department of Applied Physics, National Univ. of Kaohsiung (Taiwan)

PS-12-17
Strutural and Magnetic Properties of Ternary Transition-metal Chalcogenide CrFeTe Grown by MBE
K. Yamawaki, N. Sekita, K. Kanazawa and S. Kuroda, Graduate School Pure & Applied of Sciences, Univ. of Tsukuba (Japan)

Area 13: Applications of Nanotubes, Nanowires, and Graphene
(21 Papers)

PS-13-1
Comparative Study of Schottky Barrier Germanium Nanowire Transistors Modulated with Dopant-Segregated Regions
Y.B. Zhang, L. Sun, H. Xu, Y.Q. Xia, Y. Wang and S.D. Zhang, Peking Univ. (China)

PS-13-2
A Gold Nanoparticle/Polyaniline Nanofiber Sensor for Detecting H_2S Impurity in Hydrogen Fuel
C.J. Liu and K. Hayashi, Kyushu Univ. (Japan)

PS-13-3
Monte Carlo Simulation of Phonon Transport in Silicon Nanowires Including Realistic Dispersion Relation
K. Kukita[1], I.N. Adisusilo[1] and Y. Kamakura[1,2], [1]Osaka Univ. and [2]JST CREST (Japan)

PS-13-4
Flexible Thermoelectric Textiles Made from Shape-controlled Bi_2Te_3 Nanowires
Y. Nonoguchi, K. Ashiba and T. Kawai, Nara Inst. Sci. Tech. (Japan)

PS-13-5
InP Nanowires on Graphene-Covered Micron Fe Wires
K. Tateno, G. Zhang and H. Gotoh, NTT Basic research Labs. (Japan)

PS-13-6
Fabrication and Structural Characterization of Vertical Free-Standing InAs Nanowires Hybridized with Ferromagnetic MnAs Nanoclusters
H. Fujimagari, S. Sakita and S. Hara, Hokkaido Univ. (Japan)

PS-13-7
Performance Projections of III-V Channel Nanowire nMOSFETs in the Ballistic Transport Limit
K. Shimoida[1], H. Tsuchiya[1,2], Y. Kamakura[2,3], N. Mori[2,3] and M. Ogawa[1], [1]Univ. of Kobe, [2] JST CREST and [3]Univ. of Osaka (Japan)

PS-13-8
Aluminum Doped Core-shell type ZnO/ZnS Nanowires: Structural and Photoluminescence Studies
S. Dhara[1], K. Imakita[1], P.K. Giri[1,2], M. Mizuhata[3] and M. Fujii[1], [1]Kobe Univ., [2] Indian Institute of Technology Guwahati and [3]Kobe Univ. (Japan)

PS-13-9
Local Transport Study of Quantum Dots Formed in SWNT Network FET by Scanning Gate Microscopy
M. Matsunaga[1], X. Wei[1], T. Yahagi[1], K. Maeda[1], J.P. Bird[2], K. Ishibashi[3], Y. Ochiai[1] and N. Aoki[1], [1]Chiba univ., [2] Univ. at Buffalo and [3]RIKEN (Japan)

PS-13-10
Chemically-Doped n-type Carbon Nanotube Thin-Film Transistors: Doping Concentration Dependence and Influence of Ambient Air
T. Yasunishi, S. Kishimoto and Y. Ohno, Univ. of Nagoya (Japan)

PS-13-11
Strain Effect on Electronic Properties Tuning of Bilayer WS_2
Z. Xin[1,2], L. Zeng[1], K. Wei[1], G. Du[1], J. Kang[1] and X. Liu[1], [1]Peking Univ. and [2]Peking Univ. (China)

PS-13-12
Epitaxial CVD graphene growth on Cu/mica for gate stack research
J.L. Qi[1,2], K. Nagashio[1], W. Liu[1], T. Nishimura[1] and A. Toriumi[1], [1]The Univ. of Tokyo and [2]Harbin Institute of Technology (Japan)

PS-13-13
Theoretical Investigation of Electrical Properties of MoS_2 FETs with Strained Channel Layer
N. Harada, S. Sato and N. Yokoyama, National Inst. of Advanced Indus. Sci. and Tech. (Japan)

PS-13-14
Nonequilibrium Green Function Simulations of Graphene-Nanoribbon Resonant-Tunneling Transistors
N. Mori[1,2], T. Edagawa[1], Y. Kamakura[1,2] and L. Eaves[3], [1]Osaka Univ,, [2] CREST, JST and [3]Univ. of Nottingham (Japan)

PS-13-15
Epitaxial Growth and Electronic Properties of Large Hexagonal Graphene Domains on Cu(111) Thin Film
H. Ago[1], K. Kawahara[1], Y. Ogawa[1], S. Tanoue[1], M.A. Bissett[1], M. Tsuji[1], H. Sakaguchi[1], R.J. Koch[2], F. Fromm[2], T. Seyller[2], K. Komatsu[3] and K. Tsukagoshi[3], [1]Kyushu Univ., [2] Technische Universität Chemnitz and [3]National Inst. for Materials Sci. (Japan)

PS-13-16
Energy Harvesting Capability of PVDF/rGO Composite
H. Ning, L. Wu, A. Li and N. Hu, Chiba Univ. (Japan)

PS-13-17
Room Ambient condition graphene based THz detection
A. Mahjoub[1], S. Suzuki[1], Y. Iso[1], T. Ouchi[1], N. Aoki[1], K. Miyamoto[1], T. Yamaguchi[2], T. Omatsu[1], J.P. Bird[3], D.K. Ferry[4], K. Ishibashi[2] and Y. Ochiai[1], [1]Chiba Univ., [2]Advance Device Labs (RIKEN), [3]Univ. at Buffalo and [4]Arizona State Univ. (Japan)

PS-13-18
Fabrication and Radio Frequency Characterization of Graphene Interconnect
K. Heo[1], S.Y. Lee[2], K.S. Cho[3], S.S. Kim[1], Y.H. Lee[2] and S.W. Hwang[3], [1]Korea Univ., [2] Sungkyunkwan Univ. and [3]Samsung Advanced Inst. Tech. (Korea)

PS-13-19
Ab Initio Calculations of Polycyclic Aromatic Hydrocarbons Adsobed on Graphite Edge for Molecular-Scale Surface Coatings of Lithium-Ion Battery Anodes
T. Kawai, [1]NEC Corp. and [2]Univ. of Tsukuba (Japan)

PS-13-20
Metal-Insulating transition in disordered graphene nanoribbons controlled by helium ion irradiation
Z. Moktadir[1], S. Hang[1], K. Higashimine[2], M. Manoharan[2], H. Mizuta[1,2] and J. Reynolds[1], [1]Faculty of applied Physical Sciences, Electronics and Computer Science, Univ. of Southampton, U. K. and [2]School of Materials Sci., JAIST (UK)

PS-13-21 (Late News)
Fabrication of graphene devices using resist-free process
M. Nakamura, Y. Ohno, K. Maehashi, K. Inoue and K. Matsumoto, ISIR, Osaka Univ. (Japan)

Area 14: Power Devices and Materials
(16 Papers)

PS-14-1
Investigation of Via Degradation Behavior under Thermal Cycling Stress on Power Device
M. Zhang[1], Y. Yoshihisa[1], K. Furuya[2], Y. Imai[1], K. Hatasako[1] and S. Maegawa[1], [1]Renesas Electronics Corp. and [2]Renesas Semiconductor Engineering Corp. (Japan)

PS-14-2
Hot carrier effect of a scaled thin-film SOI power MOSFET under constant drain electric field
T. Takasugi and S. Matsumoto, Kyushu Inst. of Tech. (Japan)

PS-14-3
Floating Field Plate HV-MOSFET by 28nm High-k Metal Gate Process
J.M. Wang, P.C. Peng, T.L. Lee, Y.C. King and C.J. Lin, National Tsing Hua Univ. (Taiwan)

PS-14-4
An Explicit Compact Model for High-Voltage LDMOS
H. Zhou[1], X. Zhou[1] and F. Benistant[2], [1]Nanyang Technological Univ. and [2]GLOBALFOUNDRIES Singapore Pte. Ltd. (Singapore)

PS-14-5
Role of Carrier Response Delay on Switching Performance of Injection-Enhanced IGBT
T. Yamamoto[1], M. Miyake[2], H. Kato[1], U. Feldmann[2], H.J. Mattausch[2] and M. Miura-Mattausch[2], [1]DENSO Corp. and [2]Hiroshima Univ. (Japan)

PS-14-6
Fabrication and Characterization of 1mm Size Diamond SBD
H. Umezawa[1], S. Shikata[1] and T. Funaki[2], [1]AIST and [2]Osaka Univ. (Japan)

PS-14-7
Leakage Current Analysis of Diamond SBDs Operated at High Temperature
H. Umezawa and S. Shikata, AIST (Japan)

PS-14-8
High-temperature characteristics of diamond Schottky diodes using various Schottky metals
K. Kawamoto, K. Ueda, M. Nishiwaki and H. Asano, Nagoya Univ. (Japan)

PS-14-9
Schottky Barrier Height Modulation of the Metal/4H-SiC Contact by Ultra-Thin Dielectric Insertion Technique
B.Y. Tsui[1], J.C. Cheng[1], L.S. Lee[2], C.Y. Lee[2] and M.J. Tsai[2], [1]National Chiao Tung Univ. and [2]Industrial Technology Research Institute (Taiwan)

PS-14-10
Suppressing Al Memory-Effect on CVD growth of 4H-SiC Epilayers by adding Hydrogen Chloride Gas
S. Ji[1], K. Kojima[1], Y. Ishida[1], S. Saito[1], S. Yoshida[1], H. Tsuchida[2] and H. Okumura[1], [1]AIST and [2]Central Res. Inst. of Electric Power Industry (Japan)

PS-14-11
As and Al Activation in SiC Wafer by Atmospheric Thermal Plasma Jet Annealing
H. Hanafusa, R. Ashihara, K. Maruyama, S. Koyanagi, S. Hayashi, H. Murakami and S. Higashi, Hiroshima Univ. (Japan)

PS-14-12
The XPS Study on Depth Profile of N Atom in Oxynitride Film Formed on 4H-SiC by Radical Nitridation
H. Okada[1], A. Takashima[2], T. Muro[2] and H. Nohira[1], [1]Tokyo City Univ. and [2]Japan Synchrotron Radiation Res. Inst. (Japan)

PS-14-13
Evaluating the cryogenic performance of SiC PiN diodes
P.M. Gammon[1], C.A. Fisher[1], V.A. Shah[1], M.R. Jennings[1], A. Pérez-Tomás[2], S.E. Burrows[1], M. Myronov[1], D.R. Leadley[1] and P.A. Mawby[1], [1]Univ. of Warwick and [2]IMB-CNM-CSIC (UK)

PS-14-14 (Late News)
4H-SiC Screw Dislocations and Their Electronic Structures
T. Yamasaki[1,5], H. Koyama[1,5], J. Nara[1,5], J. Koga[2], T. Uda[2,5], A. Kuroda[3], K. Minami[3] and T. Ohno[1,4,5], [1]National Institute for Materials Science, [2]ASMS, Co. Ltd., [3]RIKEN AICS, [4]IIS, Univ. of Tokyo and [5]MARCEED (Japan)

PS-14-15 (Late News)
Heavy Ribbon Wire Bonding for Advanced Power Module Packages
S.M. Park, S. Nagao, T. Sugahara and K. Suganuma, Osaka Univ. (Japan)

PS-14-16 (Late News)
Cell Pitch Design Limitation for Electrical and Thermal Characteristics in Super Junction MOSFET
J.M. Geum[1], S.S. Kyoung[1], E.S. Jung[2], Y.T. Kim[3] and M.Y. Sung[1], [1]Korea Univ., [2]Maple Semiconductor Inc. and [3]Korea Inst. of Sci. & Tech.(KIST) (Korea)

Area 15: Photovoltaic Materials and Devices

(20 Papers)

PS-15-1
Activation of Silicon Implanted with Dopant Atoms by Microwave Heating
T. Sameshima[1], T. Nakamura[1], S. Yoshidomi[1], M. Hasumi[1], T. Ishii[1], Y. Inouchi[2], M. Naito[2] and T. Mizuno[3], [1]Tokyo Univ. of Agr. and Tech., [2]Nissin Ion Equipment Co., Ltd. and [3]Kanagawa Univ. (Japan)

PS-15-2
Influence of Post-Deposition Annealing on the Passivation Quality of Room Temperature Atomic Layer Deposited Aluminum Oxide
H. Lee[1,4], T. Nagata[3], N. Ikeno[1], K. Arafune[2,4], H. Yoshida[2,4], S. Satoh[2,4], T. Chikyow[3] and A. Ogura[1,4], [1]Meiji Univ., [2]Univ. of Hyogo, [3]National Inst. of Materials Sci. and [4]JST-CREST (Japan)

PS-15-3
Worldwide Performance Estimation of Silicon-based Photovoltaic Modules Using Meteorological Data
A. Kamei, S. Yoshida, N. Kataoka, S. Ueno and T. Minemoto, Ritsumeikan Univ. (Japan)

PS-15-4
Theoretical Analysis of Optimum Bandgap Profile of $Cu(In,Ga)Se_2$ Solar Cells with Optical and Defect Properties
M. Murata[1], J. Chantana[2], D. Hironiwa[2], K. Aoyagi[2], N. Kataoka[1] and T. Minemoto[1], [1]Ritsumeikan Univ. and [2]Ritsumeikan Global Innovation Res. Organization (Japan)

PS-15-5
Crystallographic and Optical Properties of $Cu_2ZnSn_{1-x}Ge_xSe_4$ Solid Solution
M. Morihama, F. Gao, T. Maeda and T. Wada, Ryukoku Univ. (Japan)

PS-15-6
Effect of Surface Morphology on the Density of Energy States in GaAsN Grown by Chemical Beam Epitaxy
B. Bouzazi, N. Kojima, Y. Ohshita and M. Yamaguchi, Toyota Tech. Inst. (Japan)

PS-15-7
Improved characteristics of P3HT:PCBM photodetectors with indium-tin-oxide electrodes modified by self-assembled monolayers
Y. Sato[1], H. Kajii[1], T. Morimune[2] and Y. Ohmori[1], [1]Osaka Univ. and [2]Kagawa National College of Tech. (Japan)

PS-15-8
Structural and Electrical Properties of Fluorinated Copper Phthalocyanine for Organic Photovoltaics
Y. Kuzumoto[1,2], H. Matsuyama[1] and M. Kitamura[1,3], [1]Kobe Univ., [2]SHARP Corp. and [3]The Univ. of Tokyo (Japan)

PS-15-9
Study of Electron Extraction Layers in Inverted Organic Photovoltaic Cells Using Small Molecules
K. Yamamoto[1], Y. Zhou[1], T. Kuwabara[1], K. Takahashi[1] and T. Taima[1,2], [1]Kanazawa Univ. and [2]JST-PRESTO (Japan)

PS-15-10
Impedance analysis of the multilayered organic solar cells with and without hole buffer layer
E. Itoh and S. Nakagoshi, Shinshu Univ. (Japan)

PS-15-11
Organic Solar Cells Using Fullerene Introducing Polymer as Cathode Buffer Layer
Y. Kimoto[1], T. Akiyama[2] and K Fujita[1], [1]Kyushu Univ. and [2]The Univ. of Shiga Prefecture (Japan)

PS-15-12
Efficiency Improvement of Polymeric Bulk-Heterojunction Solar Cells Using PEDOT:PSS Buffer Layers Doped with Alcohol Derivatives
D.Y. Kim, M.J. Han, K.D. Seong, J.H. Kim and S. Seo, Gachon Univ. (Korea)

PS-15-13
Quantum Processes of Exciton Dissociation at Organic Semiconductor Interfaces
K. Sato and T. Nakayama, Chiba Univ. (Japan)

PS-15-14
Effects of Boron-doped Photoanode on Dye-sensitized Solar Cell Using Mixed Phase of Nanoparticles TiO_2
C.Y. Ho, A. Subramanian, J.K. Lin, C. Yang and H.W. Wang, Chung Yuan Christian Univ. (Taiwan)

PS-15-15
Enhanced Efficiency of Dye Sensitized Solar Cells Using Thin Lanthanum Oxide Barrier Layers
S.K. Liu[1], Y.H. Tsai[1], C.H. Chen[2], Y.W. Wang[1] and G.Y. Wang[1], [1]National Kaohsiung Univ. of Applied Sciences and [2]Cheng Shiu Univ. (Taiwan)

PS-15-16
Fabrication and Characterization of $BaSi_2$ Epitaxial Films over 1.5 μm on Si(111)
R. Takabe[1], K. Nakamura[1], M. Baba[1], W. Du[1], M.A. Khan[1], K. Toko[1], M. Sasase[2], K. Hara[3], N. Usami[3,4] and T. Suemasu[1,4], [1]Univ. of Tsukuba, [2]The Wakasa Wan Energy Research Center, [3]Nagoya Univ. and [4]JST-CREST (Japan)

PS-15-17
Direct Formation of Polycrystalline $BaSi_2$ Films on Glass Substrate by RF Sputtering
N.A.A. Latiff[1], T. Yoneyama[1], T. Shibutami[2], K. Matsumaru[2], K. Toko[1] and T. Suemasu[1,3], [1]Univ. of Tsukuba, [2]Tosoh Corp. and [3]JST-CREST (Japan)

PS-15-18
Conversion Efficiency Enhancement of InGaN/GaN MQW Solar Cells with Inserting Grading InGaN Barrier Layer
C.C. Hsieh[1], F.I. Lai[1], H.W. Wang[2], H.C. Kuo[2] and S.H. Lin[2], [1]Yuan-Ze Univ. and [2]National Chiao-Tung Univ. (Taiwan)

PS-15-19
Enhanced Light Harvesting of Nitride-Based Nano-Pillars Covered with ZnO Using Indium-Tin-Oxide Nano-Whiskers
L.H. Hsu[1], C.C. Lin[1], H.Y. Lee[2], P.C. Yu[1], J.K. Huang[1] and H.C. Kuo[1], [1]National Chiao-Tung Univ. and [2]National Cheng-Kung Univ. (Taiwan)

PS-15-20 (Late News)
Organometal halide/mesoporous TiO_2 heterojunction for self-powered visible-light photodetection
Y. Zhang[1], X. Dai[1], X. Deng[2], J. Li[1,2] and H. Lin[1], [1]Tsinghua Univ. and [2]Hainan Univ. (China)

Thursday, September 26

1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-4: Flash Memory (2) (15:25-16:45) Chairs: Y. Sasago (Hitachi) Y.C. Chen (Macronix)	**B-4: Oxidation and Interface Characterization** (15:25-16:25) Chairs: H. Nohira (Tokyo City Univ.) K. Kita (Univ. of Tokyo)	**C-4: Graphene Properties** (15:25-16:40) Chairs: T. Kawai (NEC) K. Maehashi (Osaka Univ.)	**D-4: Reliability (1)** (15:25-16:45) Chairs: Y. Nishida (Renesas Electronics) N. Mori (Osaka Univ.)	**E-4: Quantum Circuits and Computing** (15:25-16:40) Chairs: T. Machida (Univ. of Tokyo) T. Nakaoka (Sophia Univ.)		**G-4: CMOS-MEMS Sensors & Biomedical Applications** (15:25-16:40) Chairs: Y. Mita (Univ. of Tokyo) H. Suzuki (Hiroshima Univ.)
15:25 A-4-1 **A Novel High-Density Embedded AND-type Spilt Gate Flash Memory** *W.C. Shen[1], H.W. Pan[1], Z.S. Yang[1], Y.D. Chih[2], T.L. Lee[1], C.W. Lien[1], Y.C. King[1] and C.J. Lin[1], [1]National Tsing Hua Univ. and [2]Taiwan Semiconductor Manufacturing Company (Taiwan)*	**15:25 B-4-1** **Detection of oxidation-induced compressive stress in Si(100) substrate near the SiO_2/Si interface with atomic-scale resolution** *T. Suwa[1], K. Nagata[2], H. Nohira[3], K. Nakajima[4], A. Teramoto[1], A. Ogura[2], K. Kimura[4], T. Muro[5], T. Kinoshita[5], S. Sugawa[1], T. Hattori[1] and T. Ohmi[1], [1]Tohoku Univ., [2]Meiji Univ., [3]Tokyo City Univ., [4]Kyoto Univ. and [5]JASRI (Japan)*	**15:25 C-4-1** **Performance Comparison of Graphene Nanoribbon, Si Nanowire and InAs Nanowire FETs in the Ballistic Transport Limit** *N. Hasegawa[1], K. Shimoida[1], H. Tsuchiya[1,2], Y. Kamakura[2,3], N. Mori[2,3] and M. Ogawa[1], [1]Univ. of Kobe, [2]JST CREST and [3]Univ. of Osaka (Japan)*	**15:25 D-4-1** **Extraction of Time Constants Ratio over Nine Orders of Magnitude for Understanding Random Telegraph Noise in MOSFETs** *T. Obara, A. Yonezawa, A. Teramoto, R. Kuroda, S. Sugawa and T. Ohmi, Tohoku Univ. (Japan)*	**15:25 E-4-1** **Sub-k_BT Bit-Energy Operation of Superconducting Logic Devices using Adiabatic Quantum Flux Parametron** *N. Yoshikawa, N. Takeuchi, K. Inoue and Y. Yamanashi, Yokohama National Univ. (Japan)*		**15:25 G-4-1 (Invited)** **Smart Infrared Detector** *M. Denoual, [1]Eng. ENSICAEN and [2]Inst. CNRS (France)*
15:45 A-4-2 **A Logic CMOS Process Compatible Two-Bit MTP SONOS Nonvolatile Memory** *C.T. Tsai[1], H.T. Wang[1], C.H. Chou[1], Y.H. Ho[1], S.S. Chung[1], W. Chang[2], S.D. Wang[2] and C.H. Chen[2], [1]National Chiao Tung University and [2]UMC (Taiwan)*	**15:45 B-4-2** **Layer-by-Layer GeO_2 Formation in the Self-Limited Oxidation Regime of Ge** *C.H. Lee[1,2], T. Nishimura[1,2], T. Tabata[1,2], K. Nagashio[1,2] and A. Toriumi[1,2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)*	**15:40 C-4-2** **First-Principles Simulations Applied to Graphene Nanoribbon Transistors** *M. Ohfuchi, Fujitsu Labs. (Japan)*	**15:45 D-4-2** **Understandings on Surface Orientation Impacts on Random Telegraph Signal Noise Related Carriers Trapping Time Constants and Current Fluctuations** *J. Chen, I. Hirano and Y. Mitani, Toshiba Corp. (Japan)*	**15:40 E-4-2** **Sub-Milliwatt, 30-GHz Microprocessor Based on Low-Voltage Rapid Single-Flux-Quantum Circuit Technology** *M. Tanaka, Y. Hayakawa, K. Takata and A. Fujimaki, Nagoya Univ. (Japan)*		**15:55 G-4-2** **Novel Sensor Circuits Design Using Multi-physics Simulation for CMOS-MEMS Technology** *T. Konishi[1], D. Yamane[2], T. Matsushima[1], S. Maruyama[3], K. Kagaya[2], H. Ito[2], N. Ishihara[2], H. Toshiyoshi[3], K. Machida[1,2] and K. Masu[2], [1]NTT Advanced Tech. Corp., [2]Tokyo Tech. and [3]Univ. of Tokyo (Japan)*
16:05 A-4-3 **Experimental Study of 3D Fin-Channel Charge Trapping Flash Memories with TiN Metal and Poly-Si Gates** *Y.X. Liu, T. Matsukawa, K. Endo, S. O'uchi, J. Tsukada, H. Yamauchi, Y. Ishikawa, W. Mizubayashi, Y. Morita, S. Migita, H. Ota and M. Masahara, AIST (Japan)*	**16:05 B-4-3** **Modified Deal-Grove model for the thermal oxidation of Ge and Al_2O_3 capped Ge** *S.K. Wang[1], X.L. Wang[1], L. Han[1,2], W. Zhao[1], B. Sun[1], W.W. Wang.[1], C. Zhao[1] and H.G. Liu[1], [1]Inst. of Microelectronics, Chinese Academy of Sciences and [2]Southeast University (China)*	**15:55 C-4-3** **Ultra-low Damage Fabrication of Graphene Nanoribbons by Neutral Beam Etching** *T. Okada[1], C.Y. Su[2], C.H. Huang[2], K. Igarashi[1], A. Wada[1], L.J. Li[3], K.I. Ho[2], P.W. Li[4], I.H. Chen[4], C.S. Lai[2] and S. Samukawa[1,5], [1]Tohoku Univ., [2]Chang Gung Univ., [3]Academia Sinica, [4]National Central Univ. and [5]WPI-AIMR, Tohoku Univ. (Japan)*	**16:05 D-4-3** **Analyzing the Reliability of High-k Dielectric Metal Gate MOSFETs by Using Random Telegraph Signal** *D.C. Huang[1], J. Gong[2] and C.F. Huang[1], [1]National Tsing Hua Univ. and [2]Tunghai Univ. (Taiwan)*	**15:55 E-4-3** **Peak Position Control of Coulomb Oscillations in Silicon Single-Electron Transistors with Floating Gate Operating at Room Temperature** *Y. Tanahashi[1,2], R. Suzuki[1], T. Saraya[1] and T. Hiramoto[1], [1]Univ. of Tokyo and [2]Chuo Univ. (Japan)*		**16:10 G-4-3** **Amperometric Electrochemical Sensor Array for On-Chip Simultaneous Imaging** *T. Kuno, K. Niitsu and K. Nakazato, Univ. of Nagoya (Japan)*
16:25 A-4-4 **Investigation of Random Grain-Boundary Induced Variability for Stackable NAND Flash Using 3D Voronoi Grain Patterns** *C.W. Yang and P. Su, National Chiao Tung Univ. (Taiwan)*		**16:10 C-4-4** **Experimental Study on SET/RESET Conditions for Graphene ReRAM** *A. Shindome[1,2], T. Takahashi[2], S. Oda[1] and K. Uchida[1,2], [1]Tokyo Inst. Tech. and [2]Keio Univ. (Japan)*	**16:25 D-4-4** **A method to determine the lateral trap position in ultra-scaled MOSFETs** *Y.Y. Illarionov[1,2], S.E. Tyaginov[1,2], M. Bina[1] and T. Grasser[1], [1]Inst. for Microelectronics, TU Vienna and [2]Ioffe Physical-Technical Inst. (Austria)*	**16:10 E-4-4 (Invited)** **Semiconductor Isotope Engineering of Silicon and Diamond for Quantum Computation and Sensing** *K.M. Itoh[1], J. Ishi-Hayase[1], H. Watanabe[2] and S. Shikata[2], [1]Keio Univ. and [2]AIST (Japan)*		**16:25 G-4-4** **A CMOS Image Sensor Having Stacked Photodiodes for Lensless Observation System of Digital Enzyme-linked Immunosorbent Assay (ELISA)** *H. Takehara[1], K. Miyazawa[1], T. Noda[1,3], K. Sasagawa[1,3], T. Tokuda[1,3], S.H. Kim[2,3], R. Iino[2,3], H. Noji[2,3] and J. Ohta[1,3], [1]Nara Inst. of Sci. and Tech., [2]Univ. of Tokyo and [3]JST-CREST (Japan)*
		16:25 C-4-5 **Wideband high frequency response graphene-FET on flexible substrate** *C.H. Yeh, Y.W. Lian, C.H. Liao, S. Hsu and P.W. Chiu, National Tsing Hua Univ. (Taiwan)*				

Coffee Break

Thursday, September 26

1F KASHI	3F VEGA	3F RIGEL	3F BOARDROOM	3F CHAPEL	3F RAN
	J-4: Wide Gap Power Devices (1) (15:25-16:40) Chairs: H.-Y. Cha (Hongik Univ.) N. Hara (Fujitsu Lab.)	**K-4: Microcavities and Their Applications** (15:25-16:40) Chairs: S. Iwamoto (Univ. of Tokyo) Y. Ishikawa (Univ. of Tokyo)	**M-4: Spins in Semiconductors** (15:25-16:40) Chairs: R. Jansen (AIST) Y. Saito (Toshiba)	**N-4: Organic Photovoltaics** (15:25-16:40) Chairs: M. Ikegami (Toin Univ. of Yokohama) S. Tokito (Yamagata Univ.)	**P-4: Nitrides : from Growth to Applications** (15:25-16:40) Chairs: T. Iwai (Fujitsu Lab.) T. Kawae (Kanazawa Univ.)
	15:25 J-4-1 (Invited) **Progress in SiC and GaN High Voltage Power Devices** *T.P. Chow, Rensselaer Poly. Inst. (USA)*	**15:25 K-4-1 (Invited)** **A qubit-photon controlled-NOT gate using a quantum dot strongly coupled to a cavity** *H. Kim[1], R. Bose[1], G.S. Solomon[2] and E. Waks[1], [1]Univ. of Maryland and [2]Joint Quantum Insitute, NIST (USA)*	**15:25 M-4-1 (Invited)** **A graphene solution to conductivity mismatch: spin injection from ferromagnetic metal/graphene tunnel contacts into silicon** *O.M.J. van 't Erve, C.H. Li, A. Friedman, E. Cobas, J. Robinson, A.T. Hanbicki and B.T. Jonker, Naval Research Lab. (USA)*	**15:25 N-4-1 (Invited)** **Hybrid Perovskite Solar Cells** *M.M. Lee, J. Teuscher, T. Miyasaka, T.N. Murakami and H.J. Snaith, Univ. of Oxford (UK)*	**15:25 P-4-1 (Invited)** **InN/InGaN Quantum Dots: A Surprise for Highly Sensitive and Fast Potentiometric Biosensors** *N.H. Alvi and R. Nötzel, Univ. Politécnica de Madrid (Spain)*
	15:55 J-4-2 **Effects of p-GaN Capping Layer on the Current Collapse Behaviors in Normally-off p-GaN Gate AlGaN/GaN HFETs** *M.K. Eo[1], H.S. Choi[1], S.Y. Jang[2], W.S. Kim[2], J.H. Shin[2], T.H. Jang[2] and H.I. Kwon[1], [1]Univ. of Chung-Ang and [2]System IC R&D Lab., LG Electronics (Korea)*	**15:55 K-4-2** **Introduction of Tensile-Strained Dilute Nitride Quantum Wells For Its Application to Dielectric-Rod Type Photonic Crystals** *F. Ishikawa[1,2], H. Goto[2] and M. Morifuji[2], [1]Ehime Univ. and [2]Osaka Univ. (Japan)*	**15:55 M-4-2** **Mapping of photoexcited local spins in a modulation-doped GaAs/AlGaAs wires** *J. Ishihara[1], Y. Ohno[2] and H. Ohno[1,3], [1]RIEC, Tohoku Univ., [2]Univ. of Tsukuba and [3]WPI-AIMR, Tohoku Univ. (Japan)*	**15:55 N-4-2** **Solar Cell and Transistor Applications of Naphthodithiophene-Based Polymers** *V.T. Tran[1,2], T.T. Dao[1,3], V. Vohra[1] and H. Murata[1], [1]JAIST, [2]Ho Chi Minh City Univ. of Tech. and [3]Univ. of Transport and Communications (Japan)*	**15:55 P-4-2** **Lasing Action in a Micro Optical Cavity with Wurzite/Zinc-Blende GaN Crystal Phase Nano Hetero-Structures** *T. Kouno[1], M. Sakai[2], K. Kishino[3] and K. Hara[1], [1]Shizuoka Univ., [2]Univ. of Yamanashi and [3]Sophia Univ. (Japan)*
	16:10 J-4-3 **Effect of multiple carbon-doped/undoped GaN buffer layer on current collapse in AlGaN/GaN HEMTs** *H.S. Kang[1], C.H. Won[1], D.S. Kim[1], S.M. Jeon[1], Y.J. Kim[1], Y.M. Kwon[1], S. Vodapally[1], J.H. Kim[1], J.H. Lee[2], Y.S. Lee[1] and J.H. Lee[1], [1]Kyungpook National Univ. and [2]Samsung Electronics Corp. Ltd. (Korea)*	**16:10 K-4-3** **Long Photon Lifetime from Microdisk Cavity Laser with Type II GaSb/GaAs Quantum Dots** *K.S. Hsu[1,2], P.P. Chen[1,2], C.C. Chang[1,2], W.H. Lin[1], C.T. Lin[2], S.Y. Lin[1,2] and M.H. Shih[1,2], [1]Res. Center for Applied Sciences and [2]Univ. of Chiao Tung (Taiwan)*	**16:10 M-4-3** **Thermal Spin Injection and Accumulation in CoFe/MgO/n-type Ge Contacts** *K.R. Jeon[1,2], B.C. Min[3], S.Y. Park[4], K.D. Lee[2], H.S. Song[2], Y.H. Park[3], Y.H. Jo[4], S.C. Shin[2,5], H. Saito[1], S. Yuasa[1] and R. Jansen[1], [1]AIST, [2]KAIST, [3]KIST, [4]KBSI and [5]DGIST (Japan)*	**16:10 N-4-3** **Evaluation of Carrier Collection Efficiency of Ordered Bulk-hetero Junction Solar Cells with a Liquid Crystalline Organic Semiconductor** *K. Nakano, T. Usui, Y. Takayashiki, H. Iino and J. Hanna, Tokyo Tech (Japan)*	**16:10 P-4-3** **Study on AlGaN/GaN growth on carbonized Si substrate** *T. Sakamoto[1,2], S. Wakabayashi[1,2], T. Takahashi[2], T. Ide[2], M. Shimizu[2] and Y. Takanashi[1], [1]Tokyo Univ. of Sci. and [2]AIST (Japan)*
	16:25 J-4-4 **Improved Current Collapse Phenomenon in AlGaN/GaN-on-Si HFETs Using Sacrificial GaO_x Process** *J.G. Lee[1], S.W. Han[1], B.R. Park[1], K.S Seo[2], H. Kim[1] and H.Y Cha[1], [1]Hongik Univ. and [2]Seoul National Univ. (Korea)*	**16:25 K-4-4** **GaAs/AlAs Coupled Multilayer Cavity by Wafer-Bonding for Two-Color Emission Devices** *C. Harayama[1], S. Katoh[1], Y. Nakagawa[1,2], K. Morita[1], T. Kitada[1] and T. Isu[1], [1]Univ. of Tokushima and [2]NICHIA Corp. (Japan)*	**16:25 M-4-4** **Effects of interface electric field on the magnetresitance in spin transistors** *T. Tanamoto, M. Ishikawa, T. Inokuchi, H. Sugiyama and Y. Saito, Toshiba Corp. (Japan)*	**16:25 N-4-4** **Interfacial carrier relaxation in the organic solar cell with inverted structure: the influence of conductivity degradation** *X. Chen, D. Taguchi, T. Manaka and M. Iwamoto, Tokyo Tech (Japan)*	**16:25 P-4-4** **Performance Improvement of GaN-based MSM Photodiodes Grown on Si(111) Substrate by Thermal Cycle Annealing Process** *J.H. Lin[1], S.J. Huang[1], Y.K. Su[2] and C.H. Lai[1], [1]National Cheng Kung Univ and [2]Kun-Shan Univ (Taiwan)*

Coffee Break

Thursday, September 26

1F NAVIS-A

A-5: Ferroelectric Memory and Others
(17:05-18:05)
Chairs: H. Saito (Fujitsu Semicon.)
S. Shuto (Toshiba)

17:05 A-5-1
Optimum Crystal Orientation in Rhombohedral PZT Films for FeRAM Application
H. Funakubo[1], Y. Ehara[1], T. Oikawa[1], T. Yamada[2,3] and S. Utsugi[1], [1]Tokyo Inst. Tech., [2]Nagoya Univ. and [3]JST (Japan)

17:25 A-5-2
Organic ferroelectric gate FET memory using high-mobility rubrene thin film
T. Kanashima[1], Y. Katsura[1] and M. Okuyama[2], [1]Osaka Univ. and [2]Osaka Univ. (Japan)

17:45 A-5-3
A New 28nm HKMG CMOS Logic OTP Cell
W.Y. Hsiao[1], C.Y. Mei[1], W.C. Shen[1], Y.D. Chih[2], Y.C. King[1] and C.J. Lin[1], [1]National Tsing-Hua Univ. and [2]Taiwan Semiconductor Manufacturing Company (Taiwan)

1F NAVIS-B

B-5: Ge Science
(17:05-18:05)
Chairs: T. Nakayama (Chiba Univ.)
O. Nakatsuka (Nagoya Univ.)

17:05 B-5-1
Thermodynamic consideration and experimental demonstration for solving the problems of GeO_2 solubility in H_2O and GeO desorption from GeO_2/Ge
C. Lu[1,2], C.H. Lee[1,2], W.F. Zhang[1,2], T. Nishimura[1,2], K. Nagashio[1,2] and A. Toriumi[1,2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)

17:25 B-5-2
Charge neutrality level shift in the Bardeen limit of Fermi-level pinning at atomically flat Ge/metal interface
T. Nishimura[1,2], T. Nakamura[1], T. Yajima[1,2], K. Nagashil[1,2] and A. Toriumi[1,2], [1]The Univ. of Tokyo and [2]JST-CREST (Japan)

17:45 B-5-3
Interaction of Sn atoms with Defects Introduced by Ion Implantation in Ge Substrate
T. Arahira, M. Fukudome, N. Taoka, W. Takeuchi, M. Sakashita, O. Nakatsuka and S. Zaima, Nagoya Univ. (Japan)

1F NAVIS-C

C-5: Carbon Interconnects
(17:05-18:20)
Chairs: S. Akita (Osaka Pref. Univ.)
M. van der Veen (IMEC)

17:05 C-5-1 (Invited)
Carbon Nano-materials as VLSI Interconnects
J. Robertson, H. Sugime, S. Esconjaurequi, G. Zhong, C. Zhang, R. Xie and B. Chen, Cambridge Univ. (UK)

17:35 C-5-2
Intercalated Multi-layer Graphene Wire and Metal/Multi-layer Graphene Hybrid Wire Obtained by Annealing Sputtered Amorphous Carbon
M. Sato[1], M. Takahashi[1], H. Nakano[1], Y. Takakuwa[2], M. Nihei[1], S. Sato[1] and N. Yokoyama[1], [1]AIST and [2]Tohoku Univ. (Japan)

17:50 C-5-3
Width Dependent Transport in Multilayer Graphene Interconnects: Exploring Ways to Reduce Resistance
H. Miyazaki[1], M. Katagiri[1], Y. Yamazaki[1], M. Suzuki[1], N. Sakuma[1], R. Kosugi[2], K. Imazeki[2], K. Ueno[2], A. Kajita[1] and T. Sakai[1], [1]Low-power Electronics Association and Project and [2]Shibaura Inst. of Tech. (Japan)

18:05 C-5-4
Multi-layer graphene interconnects grown by CVD for future LSI
D. Kondo[1], H. Nakano[1], B. Zhou[1], I. Kubota[1], K. Hayashi[1], J. Yamaguchi[1], T. Ohkochi[2], M. Kotsugi[2], S. Sato[1] and N. Yokoyama[1], [1]AIST and [2]SPring-8 (Japan)

1F ARGOS-F

D-5: Reliability (2)
(17:05-18:05)
Chairs: K. Sukegawa (Fujitsu Semicon.)
D. Hisamoto (Hitachi)

17:05 D-5-1
Experimental proof of direct correlation between hydrogen migrated to SiO_2/Si interface and MOSFET characteristics using high energy $^{15}N^{2+}$ ion beam
M. Suzuki[1], R. Takaishi[1], Y. Higashi[1], M. Tomita[1], Y. Mitani[1], M. Matsumoto[2] and K. Fukutani[2], [1]Toshiba Corp. and [2]Univ. of Tokyo (Japan)

17:25 D-5-2
A New Atomic Defect Model for Positive-Bias Temperature Instability in the High-k Gate n-MOSFET
C.J. Gu and D.S. Ang, Nanyang Tech. Univ. (Singapore)

17:45 D-5-3
Recovery and universality in NBTI from the viewpoint of traps
Y. Yonamoto, Hitachi, Ltd., Yokohama Research Laboratory (Japan)

1F NIRE

E-5: Quantum Transport in Nanostructures
(17:05-18:20)
Chairs: T. Nakaoka (Sophia Univ.)
A. Kanda (Univ. of Tsukuba)

17:05 E-5-1 (Invited)
Resistively Detected NMR Study of Correlated Electrons in a GaAs Quantum Well: Fractional Quantum Hall States and More
K. Muraki, [1]NTT Basic Res. Labs, NTT Corporation and [2]ERATO Nuclear Spin Electronics Project, JST (Japan)

17:35 E-5-2
Pseudo-symmetric bias and correct estimation of Coulomb/confinement energy for an unintentional quantum dot in MOSFET channel
K. Ono[1], T. Tanamoto[2] and T. Ohguro[2], [1]Riken, and [2]Corporate R&D center, Toshiba Corp. (Japan)

17:50 E-5-3
Landau Level Crossing and Anti-crossing of Bilayer Two-dimensional Hole Gas in Ge/SiGe Quantum Well
R. Moriya[1], Y. Hoshi[2,3], K. Sawano[2], Y. Shiraki[2], N. Usami[3], S. Masubuchi[1,4] and T. Machida[1,4], [1]IIS Univ. of Tokyo, [2]ARL Tokyo City Univ., [3]Nagoya Univ. and [4]INQIE Univ. of Tokyo (Japan)

18:05 E-5-4
Dopant-Atom-based SOI-Transistors by Selective Nanoscale Doping
A. Samanta[1], D. Moraru[1], Y. Kuzuya[1], K. Tyszka[1,2], L.T. Anh[3], T. Mizuno[1], R. Jablonski[2], H. Mizuta[3,4] and M. Tabe[1], [1]Shizuoka Univ., [2]Warsaw Univ. of Tech., [3]Japan Advanced Inst. of Sci. and Tech. and [4]Univ. of Southampton (Japan)

1F KAEDE

1F KUSU

Thursday, September 26

1F KASHI

H-5: Wireless Circuits (1)
(17:05-18:05)
Chairs: H. Morimura (NTT Labs.)
K. Okada (Tokyo Tech)

17:05 H-5-1
A Sub-threshold Region Operating Ultra-low Power 2.4GHz VCO and Frequency Divider
Y. Miyahara, K. Ishikawa and T. Kuroda, Univ. of Keio (Japan)

17:25 H-5-2
A Low Power Low Phase Noise PLL Quadrature Frequency Synthesizer with Optional Fast Lock-in Mode for 2.4GHz Applications
X.D. Liu, W.Y. Liu, P. Feng, L.Y. Liu and N.J. Wu, Institute of Semiconductors, Chinese Academy of Sciences (China)

17:45 H-5-3
Crossing Transmission Line Modeling Using Two-port Measurements
K.K. Tokgoz, L. Kimsrun, S. Kawai, K. Okada and A. Matsuzawa, Tokyo Inst. of Tech. (Japan)

3F VEGA

J-5: Wide Gap Power Devices (2)
(17:05-18:35)
Chairs: H. Tsuchida (CRIEPI)
R. Hattori (Mitsubishi Electric)

17:05 J-5-1 (Invited)
Performance Characteristics and Applications for Second Generation SiC Power MOSFETs
J.W. Palmour, B. Hull, D. Gajewski, L. Cheng, J. Liu and S.T. Allen, Cree, Inc. (USA)

17:35 J-5-2
Electrical Characteristics of 21-kV SiC BJTs with Space-Modulated Junction Termination Extension
T. Okuda, H. Miyake, T. Kimoto and J. Suda, Kyoto Univ. (Japan)

17:50 J-5-3
OCVD Characteristics of 4H-SiC PiN Diode with Carbon Implantation
A. Tanaka[1], K. Nakayama[1], K. Asano[1], T. Miyazawa[2] and H. Tsuchida[2], [1]Kansai Electric Power Co., Inc. and [2]Central Res. Inst. of Electric Power Industry (Japan)

18:05 J-5-4
Neutron Induced Single-Event Burnout in SiC Power Diode
T. Shoji[1,3], S. Nishida[2], K. Hamada[2] and H. Tadano[3], [1]Toyota Central R&D Labs., Inc., [2]Toyota Motor Corp. and [3]Univ. of Tsukuba (Japan)

18:20 J-5-5L (Late News)
Evaluation of Fully Implanted Lightly Doped Drain (LDD) GaN-MISFET for Low Voltage and High Frequency Application
I. Kume, A. Tanabe, H. Takeda, S. Saito, N. Furutake and T. Hase, Renesas Electronics Corp. (Japan)

3F RIGEL

K-5: Photonic Crystal and Plasmonics
(17:05-18:20)
Chairs: T. Isu (Univ. of Tokushima)
S. Iwamoto (Univ. of Tokyo)

17:05 K-5-1
Tunable Bandwidth of Flexible Far-Infrared Filter using Metamaterial based Split-Ring Resonators
H. Jung and H. Lee, Soongsil Univ. (Korea)

17:20 K-5-2
Observation of enhanced exciton decay rate of single InAs quantum dots in nanoscale metal-semiconductor-metal plasmonic structures
T. Yamamoto[1], Y. Ota[1], E. Harbord[1], S. Ishida[2], N. Kumagai[1], S. Iwamoto[1,3] and Y. Arakawa[1,3], [1]Inst. Nano Quantum Info.Electronics, Univ. Tokyo, [2]Res. Center for Advanced Sci. and Tech., Univ. Tokyo and [3]Inst. Indus. Sci., Univ. Tokyo (Japan)

17:35 K-5-3
Four-Wave Mixing in a GaAs/AlAs Triple-Coupled Multilayer Cavity for Novel Ultrafast Wavelength Conversion Devices
T. Kitada[1], Y. Yasunaga[1], Y. Nakagawa[1,2], K. Morita[1] and T. Isu[1], [1]Univ. of Tokushima and [2]NICHIA Corp. (Japan)

17:50 K-5-4
Air-Band Optical Cavity in Si Photonic Crystal Waveguides for Biosensing Applications
K. Hirai[1], T. Araki[1], J. Cai[1], K. Wada[1], Y. Ishikawa[1], K. Hayashi[2], T. Horiuchi[2], Y. Iwasaki[2], Y. Ueno[2] and E. Tamechika[3], [1]Univ. of Tokyo, [2]Labs. of NTT MI and [3]Corp. of NTT AT (Japan)

18:05 K-5-5
Design of a three-dimensional photonic crystal nanocavity based on a <110>-layered diamond structure
T. Tajiri[1], S. Takahashi[2], A. Tandaechanurat[2], S. Iwamoto[1,2] and Y. Arakawa[1,2], [1]Institute of Industrial Science and [2]Institute of Nano Quantum Information Electronics (Japan)

3F BOARDROOM

M-5: Spin Tunneling Materials
(17:05-18:20)
Chairs: Y. Saito (Toshiba)
R. Jansen (AIST)

17:05 M-5-1
Efficient spin injection in GaAs-based spin-LEDs through crystalline aluminum oxide layers
N. Nishizawa and H. Munekata, Tokyo Inst. Of Tech. (Japan)

17:20 M-5-2
Marked difference in structural stability between Co_2FeSi/Si(111) and Co_2FeAl/Si(111) heterointerfaces in post-growth annealing conditions
S. Yamada[1], K. Tanikawa[1], S. Oki[1], M. Kawano[1], M. Miyao[1,2] and K. Hamaya[1], [1]Kyushu Univ. and [2]CREST-JST (Japan)

17:35 M-5-3
Co/Pt Multilayer Based Reference Layer in Magnetic Tunnel Junctions for Nonvolatile Spintronics VLSIs
H. Sato[1], S. Ikeda[1,2], S. Fukami[1], S. Ishikawa[2], M. Yamanouchi[1,2], K. Mizunuma[2], F. Matsukura[1,2,3] and H. Ohno[1,2,3], [1]Center for Spintronics Integrated Systems, Tohoku Univ., [2]Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku Univ. and [3]WPI Advanced Institute for Materials Research (WPI-AIMR), Tohoku Univ. (Japan)

17:50 M-5-4
Fabrication of Magnetic Tunnel Junctions with Amorphous CoFeSiB Free Layer for Highly Sensitive Magnetic Sensor Devices
K. Fujiwara[1], D. Kato[1], M. Oogane[1], T. Nishikawa[2], H. Naganuma[1] and Y. Ando[1], [1]Tohoku Univ. and [2]KONICA MINOLTA (Japan)

18:05 M-5-5
Anti-ferromagnetic Exchange Coupling in L10-MnGa/Co Bilayer Films
R. Ranjbar[1,2], S. Mizukami[1], A. Sugihara[1], Q.L. Ma[1], S. Iihama[2], Y. Ando[2] and T. Miyazaki[1], [1]WPI Advanced Inst., Univ. of Tohoku and [2]Univ. of Tohoku (Japan)

3F CHAPEL

N-5: Compound Semiconductor Photovoltaics
(17:05-18:20)
Chairs: N. Kojima (Toyota Tech. Inst.)
K. Nishioka (Univ. of Miyazaki)

17:05 N-5-1 (Invited)
Overview of CZTS-Based Thin Film Solar Cells
H. Katagiri[1,2], T. Washio[1,2] and K. Jimbo[1], [1]Nagaoka National College of Tech. and [2]JST-CREST (Japan)

17:35 N-5-2
Investigation of Selenization Temperature on High Efficient CZTSe-Based Solar Cells by Sputter Technique
S.Y. Kuo[1], D.H. Hsieh[2], J.F. Yang[1,3], F.I. Lai[3] and H.C. Kuo[2], [1]Chang Gung Univ., [2]National Chiao-Tung Univ. and [3]Yuan Ze Univ. (Taiwan)

17:50 N-5-3
$Cu_2ZnSn(S,Se)_4$-Type Thin Film Solar Cells Using Printing and High-Pressure Sintering Process
F. Gao, T. Maeda and T. Wada, Ryukoku Univ. (Japan)

18:05 N-5-4
Gold-Free Fully Cu-Metallized InGaP/InGaAs/Ge Multi-Junction Solar Cell
C.H. Hsu, H.J. Chang, H.W. Yu, H.Q Nguyen and E.Y. Chang, National Chiao-Tung Univ. (Taiwan)

3F RAN

P-5: Nano-scale Growth for Optical Applications
(17:05-18:20)
Chairs: T. Suemasu (Univ. of Tsukuba)
T. Iwai (Fujitsu Lab.)

17:05 P-5-1 (Invited)
Quantum Dots Sensitized ZnO Nanowires-array Photoelectrodes for Water Splitting
R.S. Liu, National Taiwan Univ. (Taiwan)

17:35 P-5-2
Growth of InGaAs single-junction solar cell on GaAs/Ge/Si heterostructure using graded-temperature arsenic technique
H.W. Yu[1], Y. Yamamoto[2], B. Tillack[2,3], H.Q. Nguyen[1] and E.Y. Chang[1], [1]National Chiao Tung Univ., [2]Innovations for high performance microelectronics and [3]Technische Univ. Berlin (Taiwan)

17:50 P-5-3
Room Temperature Electroluminescence from InAs/GaAs Quantum Dots Grown on Ge/Si Substrate by Metal Organic Chemical Vapor Deposition
R. Mohan[1], K. Tanabe[1], S. Kako[1], K. Kawaguchi[2], M. Nishioka[1] and Y. Arakawa[1], [1]Univ. of Tokyo and [2]Fujitsu Labs. Ltd. (Japan)

18:05 P-5-4L (Late News)
Direct Synthesis of Graphene films via Alcohol CVD for Transparent Electrode
M. Mizoguchi, C. Sakai, A. Nakamura and J. Temmyo, Shizuoka Univ. (Japan)

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1F NAVIS-A

A-6: ReRAM (1)
(9:00-10:30)
Chairs: Y.C. Chen (Macronix)
K. Ishihara (Sharp)

9:00 A-6-1 (Invited)
Modeling of Transition Metal Oxide Based RRAM Devices
J.F. Kang, B. Gao, B. Chen, P. Huang and X.Y. Liu, Peking Univ. (China)

9:30 A-6-2
Conducting filament engineering by triple-layer RRAM for uniform resistive switching
D. Lee[1], J. Park[1], S. Park[2], J. Woo[1], E. Cha[1], S. Lee[1], Y. Koo[1], K. Moon[1], J. Song[1] and H. Hwang[1], [1]Pohang Univ. of Sci. and Tech. and [2]Gwangju Inst. of Sci. and Tech. (Korea)

9:50 A-6-3
Improvement of Cycling Disturbance and Yield Enhancement of ReRAM using Susceptibility-Aware Write
S.Y. Kim[1,2], J.M. Baek[1], D.J. Seo[1], J.K. Park[1], J.H. Chun[1] and K.W. Kwon[1], [1]Sungkyunkwan Univ. and [2]Memory Division, Samsung Electronics Corp. Ltd. (Korea)

10:10 A-6-4
Mb-Class Array Level Investigation of Program Verify Methods for AL_xO_y ReRAM
S.Y. Ning[1,2], T.O. Iwasaki[1] and K. Takeuchi[1], [1]Chuo Univ. and [2]Univ. of Tokyo (Japan)

1F NAVIS-B

B-6: Beyond CMOS
(9:00-11:00)
Chairs: S. Migita (AIST)
H. Morioka (Fujitsu Semicon.)

9:00 B-6-1 (Invited)
Germanium-Tin Tunneling Field-Effect Transistor: Device Design and Experimental Realization
Y. Yang, P. Guo, W. Wang, X. Gong, L. Wang, K.L. Low, G. Han and Y.C. Yeo, National Univ. of Singapore (Singapore)

9:30 B-6-2
Electrical Characteristics of Ge/Si Hetero-Junction Tunnel Field-Effect Transistors and their Post Annealing Effects
M. Kim, Y. Wakabayashi, R. Nakane, M. Yokoyama, M. Takenaka and S. Takagi, The Univ. of Tokyo (Japan)

9:50 B-6-3
Demonstration of High Electron Mobility in Germanium n-channel Junctionless FETs
S. Kabuyanagi[1,2], T. Nishimura[1,2], K. Nagashio[1,2] and A. Toriumi[1,2], [1]The University of Tokyo and [2]JST-CREST (Japan)

10:10 B-6-4
Very Low EOT and High Mobility Ge pMOSFETs by ALD-formed HfON and in-situ H_2O Plasma Grown GeO_2
L.J. Liu, K.S. Chang Liao, C.H. Fu, T.C. Chen, C.C. Li, J.W. Cheng, C.C. Lu, T.M. Lee, L.T. Chen, S.H. Yi, S.K. Chen and T.K. Wang, National Tsing Hua University (Taiwan)

10:30 B-6-5 (Invited)
Strain engineering for FinFETs
A. Nainani, Applied Materials (USA)

1F NAVIS-C

C-6: Graphene Devices
(9:00-10:45)
Chairs: K. Nagashio (Univ. of Tokyo)
A. Kanda (Univ. of Tsukuba)

9:00 C-6-1 (Invited)
Transistors on Nano-sheets Beyond Graphene
J. Ye[1,2], Y. Zhang[1], M. Yoshida[1], Y. Saito[1] and Y. Iwasa[1,2], [1]Department of Applied Physics, Univ. of Tokyo and [2]Center for Emergent Matter Science, RIKEN (Japan)

9:30 C-6-2
Reliability Characteristics of MoS_2 FETs
W. Park[1], Y.G. Lee[1], J.J Kim[2], S.K. Lee[1], C.G. Kang[1], C. Cho[2], S.K. Lim[2], U. Jung[1], W.K. Hong[3] and B.H. Lee[1,2], [1]Gwangju Inst. of Sci. and Tech., [2]Gwangju Inst. of Sci. and Tech. and [3]Korea Basic Sci. Inst. (Korea)

9:45 C-6-3
Photovoltaic Infrared Photoresponse of Graphene Quantum Hall Systems due to Cyclotron Resonance
R. Kashiwagi[1], S. Masubuchi[1], M. Onuki[1], M. Arai[1], K. Watanabe[2], T. Taniguchi[2] and T. Machida[1,3], [1]Univ. of Tokyo, [2]National Inst. for Material Sci. and [3]PRESTO-JST (Japan)

10:00 C-6-4
Asymmetry of Conduction and Valence Bands in Bilayer Graphene Estimated by The Quantum Capacitance Measurement
K. Kanayama, K. Nagashio, T. Nishimura and A. Toriumi, Univ. of Tokyo (Japan)

10:15 C-6-5
Effect of hydrogen annealing on electronic transport properties of quasi-free-standing monolayer graphene
S. Tanabe, M. Takamura, Y. Harada, H. Kageshima and H. Hibino, NTT Basic Res. Labs. (Japan)

1F ARGOS-F

D-6: Variability
(9:00-10:45)
Chairs: Y. Fukuzaki (SONY)
G. Tsutsui (IBM)

9:00 D-6-1 (Invited)
Ultralow-Voltage Operation SOTB Technology toward Energy Efficient Electronics
N. Sugii[1], T. Iwamatsu[1], Y. Yamamoto[1], H. Makiyama[1], H. Shinohara[1], H. Oda[1], S. Kamohara[1], Y. Yamaguchi[1], T. Mizutani[2], K. Ishibashi[3] and T. Hiramoto[2], [1]Low-power Electronics Association & Project (LEAP), [2]Univ. of Tokyo and [3]The Univ. of Electro-Communications (Japan)

9:30 D-6-2
Speed Enhancement at V_{dd} = 0.4 V and Randam τ_{pd} Variability Reduction of Silicon on Thin Buried Oxide (SOTB)
H. Makiyama[1], Y. Yamamoto[1], H. Shinohara[1], T. Iwamatsu[1], H. Oda[1], N. Sugii[1], K. Ishibashi[2] and Y. Yamaguchi[1], [1]Low-power Electronics Association & Project (LEAP) and [2]The Univ. of Electro-Communications (Japan)

9:50 D-6-3
Influence of work function variation in a metal gate on fluctuation of current-onset voltage for undoped-channel FinFETs
T. Matsukawa, Y.X. Liu, K. Endo, J. Tsukada, H. Yamauchi, Y. Ishikawa, S. O'uchi, W. Mizubayashi, H. Ota, S. Migita, Y. Morita and M. Masahara, AIST (Japan)

10:10 D-6-4
Comparison of Minimum Operation Voltage (Vmin) in Fully Depleted Silicon-on-Thin-BOX (SOTB) and Bulk SRAM Cells
T. Mizutani[1], Y. Yamamoto[2], H. Makiyama[2], H. Shinohara[2], T. Iwamatsu[2], H. Oda[2], N. Sugii[2] and T. Hiramoto[1], [1]Univ. of Tokyo and [2]Low-power Electronics Association & Project (LEAP) (Japan)

10:30 D-6-5L (Late News)
Sb-diffused Source/Drain Ultra-thin Body Ge-On Insulator nMOSFETs Fabricated by Ge Condensation
W.K. Kim[1], Y. Kin[1], Y.H. Kim[1], S.H. Kim[1], T. Osada[2], M. Hata[2], M. Takenka[1] and S. Takagi[1], [1]Univ. of Tokyo and [2]Sumitomo Chemical Co. Ltd. (Japan)

1F NIRE

1F KAEDE

1F KUSU

G-6: Advanced Interconnects
(9:00-10:50)
Chairs: M. Ueki (Renesas Electronics)
M. Kodera (Toshiba)

9:00 G-6-1 (Invited)
BEOL-Transistor Technology with InGaZnO Channel for High/Low Voltage Bridging I/Os
K. Kaneko, N. Inoue, H. Sunamura, S. Saito, N. Furutake, M. Narihiro, J. Kawahara, M. Hane and Y. Hayashi, Renesas Electronics Corp. (Japan)

9:30 G-6-2
Impact of Plasma Nitridation on Reliability Performance of MIM Capacitors Based on $ZrLaO_x/ZrTiO_x/ZrLaO_x$ Laminate Insulator
C.C. Lin, R.S. Jiang, Y.B. Lin, M.T. Yu, C.E. Sun and Y.H. Wu, National Tsing Hua Univ. (Taiwan)

9:50 G-6-3
Polarity Dependence on Electrical Properties of Low-k Dielectric in Copper Interconnect Structures
M. Lin, J. Liang, A. Juan and K.C. Su, United Microelectronics Corp. (Taiwan)

10:10 G-6-4
Ultra Low-k Non-Porous SiOCH Film (k < 2.2) Formed by Ultra Precise Molecular Control in Polymerization Synthesis by Using Large-Radius Neutral- Beam-Enhanced CVD
Y. Kikuchi[1,3] and S. Samukawa[1,2], [1]Tohoku Univ., [2]WPI-AIMR, Tohoku Univ. and [3]Tokyo Electron Limited (Japan)

10:30 G-6-5
Low-k Mesoporous Pure Silica Zeolite Synthesis with Centrifugation Process of Zeolite Precursor
T. Sato[1], S. Kuroki[1], Y. Kayaba[2] and T. Kikkawa[1], [1]Hiroshima Univ. and [2]Mitsui Chemicals, Inc. (Japan)

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1F KASHI	3F VEGA	3F RIGEL	3F BOARDROOM	3F CHAPEL	3F RAN
H-6: Wireless Circuits (2) (9:00-10:00) Chairs: K. Okada (Tokyo Tech) N. Wu (CAS)	**J-6: GaN Devices and Characterization** (9:00-10:45) Chairs: T. Hashizume (Hokkaido Univ.) T. Suzuki (JAIST)	**K-6: Intergrated Silicon Photonics and Future Lightsources** (9:00-10:45) Chairs: N. Iizuka (Toshiba) H. Fukuda (NTT)	**M-6: Nonvolatile Device with New Materials** (9:00-10:30) Chairs: H. Munekata (Tokyo Tech) M. Ikebe (Hokkaido Univ.)	**N-6: Silicon Photovoltaics** (9:00-10:45) Chairs: M. Isomura (Tokai Univ.) K. Ohdaira (JAIST)	
9:00 H-6-1 **Low power and Ultra-low Voltage UWB CMOS LNA Design using Forward Body Biases** *C.S. Chang and J.C. Guo, National Chiao-Tung Univ. (Taiwan)*	**9:00 J-6-1 (Invited)** **Recent developments in GaN HEMTs and MMICs for high power electronics** *P. Waltereit, W. Bronner, P. Brückner, M. Dammann, R. Reiner, S. Müller, J. Kühn, M. Mußer, R. Quay, M. Mikulla and O. Ambacher, Fraunhofer Inst. for Applied Solid State Physics (Germany)*	**9:00 K-6-1 (Invited)** **A figure of merit based transmitter link penalty calculation for plasma-dispersion electro-optic Mach-Zehnder modulators** *D.M. Gill[1], W..M.J. Green[1], S. Assefa[1], J.C. Rosenberg[1], T. Barwicz[1], S.M. Shank[2] and Y.A. Vlasov[1], [1]IBM T. J. Watson Res. Center and [2]IBM Systems & Tech. Group, Microelectronics Division (USA)*	**9:00 M-6-1 (Invited)** **Electric field control of ferromagnetism in transition metals** *D. Chiba, Univ. of Tokyo (Japan)*	**9:00 N-6-1 (Invited)** **Panasonic's R&D on Photovoltaic Technologies** *A. Terakawa, H. Murayama, A. Fukushima, H. Katayama, T. Sekimoto, M. Matsumoto, S. Yata, M. Hishida, W. Shinohara, Y. Aya, M. Taguchi and M. Tanaka, Panasonic Corp. (Japan)*	
9:20 H-6-2 **A Low-Power Capacitor-Less LDO Regulator with Adjustable Charge Injection Technique for OOK Transmitter** *I. Akita[1], S. Asai[1] and M. Ishida[1,2], [1]Toyohashi Univ. of Tech. and [2]Electronics-Inspired Interdisciplinary Res. Inst. (EIIRIS) (Japan)*	**9:30 J-6-2** **Electroluminescence under the gate region using AlGaN/GaN HEMT with a transparent gate electrode** *T. Narita, Y. Fujimoto, A. Wakejima and T. Egawa, Nagoya Inst. of Tech. (Japan)*	**9:30 K-6-2** **Low-Tuning-Power, Wavelength-Selectable Silicon Hybrid Laser for WDM Transmitter** *S. Tanaka[1,2,3], S.H. Jeong[1,3], T. Akiyama[1,2,3], S. Sekiguchi[1,2,3], T. Kurahashi[1,2,3], Y. Tanaka[1,2,3] and K. Morito[1,2,3], [1]PETRA, [2]Fujitsu Laboratories Ltd. and [3]Fujitsu Ltd. (Japan)*	**9:30 M-6-2** **Spin-transistor characteristics of pseudo-spin-MOSFETs monolithically-integrated by utilizing a multi-project-wafer CMOS chip** *R. Nakane[1,5], Y. Shuto[2,3,5], H. Sukegawa[4,5], Z.C. Wen[4,5], S. Yamamoto[2,5], S. Mitani[4,5], M. Tanaka[1,5], K. Inomata[4,5] and S. Sugahara[2,5], [1]Univ. of Tokyo, [2]Tokyo Institute of Technology, [3]Kanagawa Academy of Science and Technology, [4]National Institute for Materials Science and [5]CREST, Japan Science and Technology Agency (Japan)*	**9:30 N-6-2** **Impurities distribution and recombination activity in as-grown and annealed multicrystalline silicon** *T. Kojima[1], T. Tachibana[1], N. Kojima[1], Y. Ohshita[1], K. Arafune[2], A. Ogura[3] and M. Yamaguchi[1], [1]Toyota Tech. Inst., [2]Univ. Hyogo and [3]Meiji Univ. (Japan)*	
9:40 H-6-3 **Envelope Tracking CMOS Power Amplifier with High-speed CMOS Envelope Amplifier for Mobile Handsets** *E. Yoshida[1], Y. Sakai[1], K. Oishi[1], H. Yamazaki[1], T. Mori[1], S. Yamaura[2] and K. Suto[2], [1]Fujitsu Lab. Ltd. and [2]Fujitsu Semiconductor Ltd. (Japan)*	**9:45 J-6-3** **Analysis on trade-off between drain resistance and drain-source capacitance of source field plate GaN HEMT** *Y. Yamaguchi[1], K. Hayashi[1], T. Oishi[1], H. Otsuka[1], K. Yamanaka[1] and Y. Miyamoto[2], [1]Mitsubishi Electric Corp. and [2]Tokyo Tech (Japan)*	**9:45 K-6-3** **Enhanced Electroluminescence from Germanium Waveguides by Local Tensile Strain with Silicon Nitride Stressors** *K. Tani[1,2,3], K. Oda[1,2,3], T. Okumura[1,2,3], T. Takezaki[3], J. Kasai[1,2,3], T. Mine[3] and T. Ido[1,2,3], [1]Photonics Electronics Tech. Res. Association, [2]Inst. for Photonics-Electronics Convergence System Tech. and [3]Hitachi, Ltd. (Japan)*	**9:50 M-6-3** **A 4x4 Nonvolatile Multiplier Using Novel MTJ-CMOS Hybrid Latch and Flip-Flop** *T. Ohsawa[1], S. Miura[2], H. Honjo[2], K. Kinoshita[1], S. Ikeda[1], T. Hanyu[1], H. Ohno[1] and T. Endoh[1], [1]Tohoku Univ. and [2]NEC Corp. (Japan)*	**9:45 N-6-3** **Novel Silicon Surface Passivation by Al_2O_3/ZnO/Al_2O_3 Films Prepared by Atomic Layer Deposition** *K.S. Jeong[1], S.H. Kim[1], H.R. Lee[1], K.M. Han[2], H.Y. Park[2], H.D. Lee[1] and G.W. Lee[1], [1]Chung-nam National Univ. and [2]Solar team, DMS (Korea)*	
	10:00 J-6-4 **GaN Schottky Barrier Diodes with TiN Electrode for High Efficiency Microwave Power Rectification** *A. Kishi[1], Y. Itai[1], T. Shiraishi[1], K. Fukui[1], Q. Liu[1], Y. Ohno[2], L. Li[1] and J. Ao[1], [1]The Univ. of Tokushima and [2]e-Device Inc. (Japan)*	**10:00 K-6-4** **Resonant Photoluminescence from Microdisk Based on N-Doped, Tensile-Strained Ge on Si** *X. Xu, K. Nishida, K. Sawano, T. Maruizumi and Y. Shiraki, Tokyo City Univ. (Japan)*	**10:10 M-6-4** **Zero Area Overhead State Retention Flip Flop Utilizing Crystalline In-Ga-Zn Oxide Thin Film Transistor with Simple Power Control Implemented in a 32-bit CPU** *N. Sjokvist[1,2], T. Ohmaru[1], K. Furutani[1], A. Isobe[1], N. Tsutsui[1], H. Tamura[1], W. Uesugi[1], T. Ishizu[1], T. Onuki[1], K. Ohshima[1], T. Matsuzaki[1], H. Mimura[1], A. Hirose[1], Y. Suzuki[1], Y. Ieda[1], T. Atsumi[1], Y. Shionoiri[1], K. Kato[1], G. Goto[1], J. Koyama[1], M. Fujita[3] and S. Yamazaki[1], [1]Semiconductor Energy Laboratory Co., Ltd., [2]Linkoping Univ. and [3]Univ. of Tokyo (Japan)*	**10:00 N-6-4** **Passivation Effect of Amorphous Silicon Oxide Thin Films Studied by Hydrogen Evolution** *K. Nakada[1], S. Miyajima[1] and M. Konagai[1,2], [1]Tokyo Tech and [2]MEXT/JST FUTURE-PV Innovation Res. (Japan)*	
	10:15 J-6-5 **GaN/AlN Resonant Tunneling Diode with High Peak-to-Valley Current Ratio Grown by Metal-Organic Vapor Phase Epitaxy** *M. Nagase, T. Takahashi and M. Shimizu, AIST (Japan)*	**10:15 K-6-5** **Si-V luminescent center formation in nanocrystal diamond by atomic Si induced diamond nucleation** *H. Isshiki, Y. Souma, T. Shigeeda, S. Takigawa and K. Matsushima, Univ. of Electro-communications (Japan)*		**10:15 N-6-5** **Rear-side resistance and contact coverage analysis for low surface recombination velocities in local back contact crystalline silicon solar cells** *C.M. Park[1], K.Y. Ryu[1], S.H. Lee[1], J.M. Kim[1], N. Balaji[1], M.K. Ju[1], Y.J. Lee[1], H.J. Lee[2] and J. Yi[1], [1]Sungkyunkwan Univ. and [2]Sangmyung Univ. (Korea)*	

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1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-6: ReRAM (1)	**B-6: Beyond CMOS**	**C-6: Graphene Devices**	**D-6: Variability**			**G-6: Advanced Interconnects**
		10:30 C-6-6 **Reducing Carrier Density Pinning at Graphene/ Metal Interfaces Using Multi-layer Graphene** *K. Katakura, S. Nihei, H. Tomori, Y. Ito, Y. Ootuka and A. Kanda, Univ. of Tsukuba (Japan)*				
			Coffee Break			
A-7: ReRAM (2) (11:10-12:40) Chairs: M.-J. Tsai (ITRI) M. Tada (LEAP)			**D-7: Tunnel FETs** (11:10-12:30) Chairs: M. Hane (Renesas Electronics) E. Chang (NCTU)			**G-7: 3D/TSV Interconnects (1)** (11:10-12:20) Chairs: K.N. Chen (NCTU) T. Fukushima (Tohoku Univ.)
11:10 A-7-1 (Invited) **Physics in Charge Injection Induced On-Off Switching Mechanism of Oxide-Based Resistive Random Access Memory (ReRAM) and Superlattice GeTe/Sb2Te3 Phase Change Memory (PCM)** *K. Shiraishi[1,2], M.Y. Yang[1], S. Kato[1], M. Araidai[3], K. Kamiya[1], T. Yamamoto[1], T. Ohyanagi[4], N. Takaura[4], M. Niwa[5], B.M. Kope[6] and Y. Nishi[6], [1]Univ. of Tsukuba, [2]Nagoya Univ., [3]Univ. of Tsukuba, [4]Low-power Electronics Association & Project, [5]Tohoku Univ. and [6]Stanford Univ. (Japan)*			**11:10 D-7-1** **The Demonstration of Complementary Tunnel FET with Vertical Tunneling Junction Structure Compatible with Si CMOS Platform** *Y. Kondo, M. Goto, K. Miyano, A. Hokazono, T. Miyata, E. Sugizaki, K. Adachi, T. Ohguro, S. Kawanaka and Y. Toyoshima, Semiconductor & Storage Products Company, Toshiba Corp. (Japan)*			**11:10 G-7-1 (Invited)** **3D Heterogeneous Integration for Nanosensor Systems – the EU-Project e-BRAINS** *M. Fernández–Bolaños[1], P. Ramm[2], R. Pufall[3], E. Buitrago[1], C. Zilch[4], H. Guerin[1], H. Le Poche[5], R. Pohle[6], A. Popescu[6] and A.M. Ionescu[1], [1]École Polytechnique Fédérale de Lausanne (EPFL), [2]Fraunhofer Research Institution for Modular Solid State Technologies EMFT, [3]Infineon Technologies AG, [4]Magna Diagnostics GmbH, [5]LITEN/DTNM/LCH, Commissariat à l'énergie atomique et aux énergies alternatives and [6]SIEMENS AG Corporate Research Munich (Switzerland)*
11:40 A-7-2 **A Novel Self-rectifying WSixOy Device in a Double-density Architecture for 3D ReRAM** *D.Y. Lee[1], E.K. Lai[1,2], W.C. Chien[1], M.H. Lee[1], F.M. Lee[1], Y.C. Chen[1], S.F. Horng[2], J. Gong[2], Y.K. Huang[1], H.H. Hsu[1], Y.T. Huang[1], C.C. Yu[1], H.L. Lung[1], K.Y. Hsieh[1] and C.Y. Lu[1], [1]Macronix Int'l Corp., Ltd. and [2]National Tsing Hua Univ. (Taiwan)*			**11:30 D-7-2** **CMOS-Compatible Mesa-Etched Ultrathin Epitaxial Channel Tunnel Field-Effect Transistors** *Y. Morita, T. Mori, S. Migita, W. Mizubayashi, A. Tanabe, K. Fukuda, T. Matsukawa, K. Endo, S. O'uchi, Y.X. Liu, M. Masahara and H. Ota, GNC, AIST (Japan)*			**11:40 G-7-2** **Local Bending Stress Reduction with Room-Temperature Curing Adhesive for Decrease in Keep-out-Zone (KOZ) of 3D IC** *H. Kino, T. Fukushima, K.W. Lee, M. Koyanagi and T. Tanaka, Tohoku Univ. (Japan)*
12:00 A-7-3 **Study on nano-scale threshold switching behavior of NbOx film for ReRAM selector application** *Y.M. Koo, Y.H. Choi, E.J. Cha, D.S. Lee, J.Y. Woo, J.H. Song, K.B. Moon, J.S. Park, S.H. Lee and H.S. Hwang, Pohang Univ. of Sci. and Tech. (Korea)*			**11:50 D-7-3** **Dependence of The Carrier Concentration in InGaAs/InP Superlattice-based FETs with a Steep Subthreshold Slope** *M. Kashiwano, A. Yukimachi and Y. Miyamoto, Tokyo Tech. (Japan)*			**12:00 G-7-3** **Micro-Texture Dependence of Mechanical Properties of Fine Metallic Bumps Used for Three-Dimensional Electronic Packaging** *K. Suzuki, R. Furuya, F. Endo and H. Miura, Tohoku Univ. (Japan)*

Friday, September 27

1F KASHI	3F VEGA	3F RIGEL	3F BOARDROOM	3F CHAPEL	3F RAN
H-6: Wireless Circuits (2)	**J-6: GaN Devices and Characterization**	**K-6: Intergrated Silicon Photonics and Future Lightsources**	**M-6: Nonvolatile Device with New Materials**	**N-6: Silicon Photovoltaics**	
	10:30 J-6-6 **Temperature-dependent Characteristics of AlGaN-GaN-on-Si Heterojunction Field Effect Transistors (HFETs) under reverse gate bias stress** *D.M. Keum, S.H. Choi, Y.J. Kang, J.G. Lee, H.Y. Cha and H.T. Kim, Univ. of Hongik (Korea)*	**10:30 K-6-6L (Late News)** **Highly-stabilized Operation of Si Photonics Wavelength Tunable Laser Diode** *T. Kita, K. Nemoto and H. Yamada, Tohoku Univ. (Japan)*		**10:30 N-6-6** **Imaging of Photoexcited Carrier Responses in a Solar Cell with a Dynamic Terahertz Emission Microscope** *H. Nakanishi[1], A. Ito[1], K. Takayama[2], I. Kawayama[2], H. Murakami[2] and M. Tonouchi[2], [1]Dainippon Screen Mfg. and [2]Osaka Univ. (Japan)*	
			Coffee Break		
			M-7: Nonvolatile Memory with New Materials (10:55-12:25) Chairs: T. Endoh (Tohoku Univ.) H. Munekata (Tokyo Tech)	**N-7: New Concepts (1)** (11:10-12:25) Chairs: K. Nishioka (Univ. of Miyazaki) M. Ikegami (Toin Univ. of Yokohama)	
			10:55 M-7-1 (Invited) **Strategy of STT-MRAM Cell Design and Its Power Gating Technique for Low-Voltage and Low-Power Cache Memories** *T. Ohsawa, S. Ikeda, T. Hanyu, H. Ohno and T. Endoh, Tohoku Univ. (Japan)*	**11:10 N-7-1** **High-efficiency Thin and Compact Concentrator Photovoltaics Using Micro-solar Cells with Via-holes Sandwiched between Thin Lens-array and Circuit Board** *A. Itou[1], T. Asano[1], D. Inoue[1], H. Arase[1], A. Matsushita[1], N. Hayashi[1], R. Futakuchi[1], K. Inoue[1], M. Yamamoto[1], E. Fujii[1], T. Nakagawa[1], Y. Anda[1], H. Ishida[1], T. Ueda[1], O. Fidaner[2], M. Wiemer[2] and D. Ueda[1], [1]Panasonic Corp. and [2]Solar Junction Corp. (Japan)*	
			11:25 M-7-2 **Normally-off type Nonvolatile SRAM with perpendicular STT-MRAM cells and smallest number of transistors** *C. Tanaka, K. Abe, H. Noguchi, K. Nomura, K. Ikegami and S. Fujita, Toshiba Corporation (Japan)*	**11:25 N-7-2** **Development of an acid moisture detection method in photovoltaic modules** *T. Asaka[1], K. Iwami[1], A. Taguchi[1], N. Umeda[1] and A. Masuda[2], [1]Tokyo Univ. of Agr. & Tech. and [2]AIST (Japan)*	
			11:45 M-7-3 **Wide Operational Margin Capability of 1kbit STT-MRAM Array Chip with 1-PMOS and 1-Bottom-Pin-MTJ Type Cell** *H. Koike[1], T. Ohsawa[1], S. Miura[2], H. Honjo[2], S. Ikeda[1], T. Hanyu[1], H. Ohno[1] and T. Endoh[1], [1]Tohoku Univ. and [2]NEC Corp. (Japan)*	**11:40 N-7-3** **Evaluation of the Junction Interface of the Crystalline Germanium Hetero-junction Solar Cells** *S. Nakano[1], Y. Takeuchi[1], T. Kaneko[2] and M. Kondo[2], [1]Mitsubishi Heavy Industries, Ltd. and [2]AIST (Japan)*	

Friday, September 27

1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-7: ReRAM (2)			**D-7: Tunnel FETs**			**G-7: 3D/TSV Interconnects (1)**
12:20 A-7-4 **Excellent Reliability and Switching Uniformity of RRAM by Optimizing SET/RESET Pulse Shape to Minimize Current Overshoot** *J.H. Song, D.S. Lee, J.Y. Woo, Y.M. Koo, E.J. Cha, S.H. Lee, J.S. Park, K.B. Moon and H.S. Hwang, Pohang Univ. of Sci. and Tech. (Korea)*			**12:10 D-7-4** **$In_{0.53}Ga_{0.47}As$ Diodes for Band-to-Band Tunneling Calibration and n- and p-LineTFET performance prediction** *Q. Smets[1,2], A.S. Verhulst[1], R. Rooyackers[1], C. Merckling[1], D. Lin[1], E. Simoen[1], A. Alian[1], M. Cantoro[1], A. Pourghaderi[1], K.H. Kao[1,2], D. Verreck[1,2], K. De Meyer[1,2], N. Collaert[1], V.Y. Thean[1] and M.M. Heyns[1,2], [1]IMEC and [2]KULeuven (Belgium)*			

Lunch

A-8: ReRAM (3) (13:40-14:55) Chairs: P.-W. Li (National Central Univ.) Y. Ishikawa (NAIST)						**G-8: 3D/TSV Interconnects (2)** (13:40-14:40) Chairs: T. Fukushima (Tohoku Univ.) M. Fujino (Univ. of Tokyo)
13:40 A-8-1 (Invited) **Metal Oxide RRAM For Next Generation Mass Storage: 3D Vertical Architecture and Electrode/Oxide Interface Engineering** *H.Y. Chen[1], S. Yu[1], B. Gao[2], Y. Deng[2], P. Huang[2], H. Tian[3], Z. Jiang[1], Y. Wu[1], T. Ren[3], J.F. Kang[2] and H.S.P. Wong[1], [1]Stanford Univ., [2]Peking Univ. and [3]Tsinghua Univ. (USA)*						**13:40 G-8-1** **Low-Temperature and High-Step-Coverage Polyimide TSV Liner Formation by Vapor Deposition Polymerization** *T. Fukushima, M. Murugesan, J. Bea, K.W. Lee and M. Koyanagi, Tohoku Univ. (Japan)*
14:10 A-8-2 **The Impact of Bending and Light Exposure on the Resistive Switching Characteristics of Transparent Flexible ITO/ZnO/ITO Resistive RAM (RRAM)** *C.L. Lin[1], Y.H. Yang[1], C.M. Wu[1], P.C. Juan[2], C.H. Soh[1], Y.L. Huang[1] and W.Y. Chang[1], [1]Feng Chia Univ. and [2]Mingchi Univ. of Tech. (Taiwan)*						**14:00 G-8-2** **Electromigration Effect on Mechanical Shock Behavior of Sn-Ag-Bi-In + Co Solder Joints for Surface-Mounted Chip Components** *Y. Kim, S. Nagao, T. Sugahara and K. Suganuma, Osaka Univ. (Japan)*
14:25 A-8-3 **High Performance Oxide Diode** *I..P. Radu[1, 2], B. Govoreanu[1], M.R. Ikram[1,2], A.P. Peter[1], K. Martens[1,2], H. Hody[1], W. Kim[1], M. Toeller[3], V. Paraschiv[1], P. Favia[1], S. Clima[1], S. De Gendt[1, 2], M. Heyns[1, 2], A. Stesmans[2] and M. Jurczak[1], [1]imec, [2] Univ. of Leuven and [3]Tokyo Electron Ltd. (Belgium)*						**14:20 G-8-3** **Evaluation of Power Dissipation and Delay for New TSV Design Based on Cu/Sn to BCB Hybrid Bonding** *Y.J. Chang[1], C.T. Ko[1,2], Z.C. Hsiao[2], H.C. Fu[2], T.H. Yu[1], W.C. Lo[2] and K.N. Chen[1], [1]Department of Electronics Engineering, National Chiao Tung Univ. and [2]Electronics and Optoelectronics Research Laboratories, ITRI (Taiwan)*

Friday, September 27

1F KASHI	3F VEGA	3F RIGEL	3F BOARDROOM	3F CHAPEL	3F RAN
			M-7: Nonvolatile Memory with New Materials	**N-7: New Concepts (1)**	
			12:05 M-7-4 **Crystalline In-Ga-Zn-O FET-based Configuration Memory for Multi-Context Field-Programmable Gate Array Realizing Fine-Grained Power Gating** *M. Kozuma[1], Y. Okamoto[1], T. Nakagawa[1], T. Aoki[1], M. Ikeda[1], T. Osada[1], Y. Kurokawa[1], T. Ikeda[1], N. Yamade[1], Y. Okazaki[1], H. Miyairi[1], M. Fujita[2], J. Koyama[1] and S. Yamazaki[1], [1]Semiconductor Energy Laboratory Co., Ltd. and [2]Univ. of Tokyo (Japan)*	**11:55 N-7-4** **Engineering of Energy Band Structure with Epitaxial $Ge_{1-x-y}Si_xSn_y$/n-Ge Hetero Junctions for Solar Cell Applications** *S. Asaba[1], T. Yamaha[1], M. Kurosawa[1,2], M. Sakashita[1], N. Taoka[1], O. Nakatsuka[1] and S. Zaima[1], [1]Nagoya Univ. and [2]JSPS (Japan)*	
				12:10 N-7-5 **Application of Ga_2O_3 as a substrate of GaN photo-electrode for CO_2 reduction** *M. Deguchi[1], S. Yotsuhashi[1], Y. Yamashita[2], S. Yamakoshi[2], K. Ohkawa[3] and Y. Yamada[1], [1]Panasonic Corp., [2] Tamura Corp. and [3]Tokyo Univ. of Science (Japan)*	

Lunch

	J-8: Advanced III-V Devices (13:40-14:55) Chairs: Y. Miyamoto (Tokyo Tech) K. Maezawa (Univ. of Toyama)		**M-8: Nonvolatile Logic with New Materials** (13:40-15:10) Chairs: M. Ikebe (Hokkaido Univ.) T. Endoh (Tohoku Univ.)	**N-8: New Concepts (2)** (13:40-14:55) Chairs: A. Masuda (AIST) Y. Kurokawa (Tokyo Tech)	
	13:40 J-8-1 (Invited) **High-Frequency Characteristics of InGaAs Quantum-Well MOSFETs** *D.H. Kim[1, 2], T.W. Kim[1], R. Hill[1], C.Y. Kang[1], C. Hobbs[1], P.D. Kirsch[1], W. Maszara[2] and J.A. del Alamo[3], [1]SEMATECH, [2] GLOBALFOUNDRIES and [3]MIT (USA)*		**13:40 M-8-1 (Invited)** **Properties and Application of Crystalline In-Ga-Zn-Oxide Semiconductor** *S. Yamazaki, Semiconductor Energy Lab. Co., Ltd. (Japan)*	**13:40 N-8-1** **Photocarrier generation in quantum-dot sensitized solar cells using Ge nanoparticle films** *G. Uchida[1], D. Ichida[1], H. Seo[1], K. Kamataki[1], N. Itagaki[1,2], K. Koga[1] and M. Shiratani[1], [1]Kyushu Univ. and [2]Presto, JST (Japan)*	
	14:10 J-8-2 **$P_2S_5/(NH_4)_2S_x$-Based Sulfur Mono-Layer Doping Technique to form Sub-10 nm Ultra-Shallow Junctions for Advanced III-V Logic Devices** *S. Subramanian[1,2], E.Y.J. Kong[1], D.S. Li[3], S. Wicaksono[3], S.F. Yoon[3] and Y.C. Yeo[1,2], [1]National Univ. of Singapore, [2] NUS Graduate School for Integrative Sci. and Eng. and [3]Nanyang Technological Univ. (Singapore)*		**14:10 M-8-2** **A Normally Off Microcontroller Unit with an 84% Power Overhead Reduction Based On Crystalline In-Ga-Zn-Oxide Thin Film Transistors** *K. Ohshima, H. Kobayashi, T. Nishijima, S. Yoneda, H. Tomatsu, K. Tsukida, K. Takahashi, T. Sato, K. Watanabe, R. Yamamoto, M. Kouzuma, T. Aoki, N. Yamade, Y. Ieda, H. Miyairi, T. Atsumi, Y. Shionoiri, K. Kato, Y. Maehashi, J. Koyama and S. Yamazaki, Semiconductor Energy Laboratory Corp. Ltd. (Japan)*	**13:55 N-8-2** **Large open-circuit-voltage photovoltaic effect in nanocrystalline silicon layers** *R. Mentek[1], B. Gelloz[2], D. Hippo[1] and N. Koshida[1], [1]Tokyo Univ. of Agr. & Tech. and [2]Nagoya Univ. (Japan)*	
	14:25 J-8-3 **Effective AlN-passivation for Improving ALD-Al_2O_3/GaAs Interface in MOS Structures Using MOCVD** *T. Aoki, N. Fukuhara, T. Osada, H. Sazawa, M. Hata and T. Inoue, Sumitomo Chemical Co., Ltd. (Japan)*		**14:30 M-8-3** **Demonstration of a Nonvolatile Processor Core Chip with Software-Controlled Three-Terminal MRAM Cells for Standby-Power Critical Applications** *R. Nebashi[1], Y. Tsuji[1], H. Honjo[1], N. Sakimura[1,2], A. Morioka[1], K. Tokutome[1], S. Miura[1], S. Fukami[2], M. Yamanouchi[2], K. Kinoshita[2], T. Hanyu[2], T. Endoh[2], N. Kasai[2], H. Ohno[2] and T. Sugibayashi[1], [1]NEC Corp. and [2]Tohoku Univ. (Japan)*	**14:10 N-8-3** **Effect of Annealing on the Vertical Structural Distribution of Solution-Processed a-Si:H Films** *Y. Sakuma[1], K. Ohdaira[1,2], T. Masuda[1,3], H. Takagishi[1,2], Z. Shen[1,2] and T. Shimoda[1,2,3], [1]JAIST, [2] JST-ALCA and [3]JST-ERATO (Japan)*	

Friday, September 27

1F NAVIS-A	1F NAVIS-B	1F NAVIS-C	1F ARGOS-F	1F NIRE	1F KAEDE	1F KUSU
A-8: ReRAM (3)						
14:40 A-8-4 **Pulsed Operation of Resistance Switching Memory of Si/CaF_2/CdF_2 Resonant-tunneling Quantum-well Structures** *J. Denda, K. Suda, Y. Kuwata and M. Watanabe, Tokyo Inst. of Tech. (Japan)*						

Friday, September 27

1F KASHI	3F VEGA	3F RIGEL	3F BOARDROOM	3F CHAPEL	3F RAN
	J-8: Advanced III-V Devices		**M-8: Nonvolatile Logic with New Materials**	**N-8: New Concepts (2)**	
	14:40 J-8-4 **Fabrication and Characterization of Micromachined Cantilever Loaded with a Resonant Tunneling Diode for Delta-Sigma Type Strain Sensor Applications** *Y. Kakutani, D. Wu, J. Pan, J. Nakano, M. Mori and K. Maezawa, Univ. Toyama (Japan)*		**14:50 M-8-4** **Studies on Selective Devices for Spin-Transfer-Torque Magnetic Tunnel Junctions** *T. Ohsawa, S. Ikeda, T. Hanyu, H. Ohno and T. Endoh, Tohoku Univ. (Japan)*	**14:25 N-8-4** **Diffusion Coefficients of Impurity Atoms in $BaSi_2$ Epitaxial Films Grown by Molecular Beam Epitaxy** *N, Zhang[1], K. Nakamura[1], M. Baba[1], K. Toko[1] and T. Suemasu[1,2], [1]Univ. of Tsukuba and [2]CREST-JST (Japan)* **14:40 N-8-5L (Late News)** **Surface-Activated-Bonding Based InGaP-on-Si Double Junction Cells** *N. Shigekawa[1,2], M. Morimoto[1], S. Nishida[1] and J. Liang[1,2], [1]Osaka City Univ. and [2]JST-CREST (Japan)*	

RUMP SESSION A (NAVIS-A):

"How can we enhance LSI functionality through Material/Device/Architecture Innovations?"

The scaling of device sizes is now facing formidable obstacles. A number of researchers are working on a wide variety of technologies of devices, materials, and architectures. From the device side, 3-dimensional device structures such as FinFETs and nanowire FETs have been focused technologies to extend the roadmap for the future. From the material side, nano carbon materials, such as graphene and CNTs, and 2D materials other than graphene such as transition metal dichalcogenides have been pursued as possible channel/interconnect materials. As for the III-V & Ge devices, many material and device researches have been collaborated toward the realization of electronic devices showing higher performance than Si devices. These efforts have gone to enhance LSI functionality by increasing the number and/or speed of devices. On the other hand, functionality of LSIs may be increased by LSI architects and sensor designers. Bio-inspired systems show some promises for the pattern matching application and so on. In these areas, we are not quite sure whether conventional electronic devices are most useful or not. New ReRAM- or PCM-type devices have shown some potential in this area. In this panel, we will be brainstorming possible solutions for enhancing the LSI functionality towards 2030 by collaborating with prominent panelists and audience.

Organizer: Shinichi Takagi (The University of Tokyo)
Moderator: Ken Uchida (Keio University)
Panelists: Aaron Franklin (IBM), Tsuyoshi Hasegawa (NIMS)
Takashi Morie (Kyushu Institute of Technology), Aneesh Nainani (Applied Materials)
Masumi Saitoh (Toshiba), Jianting Ye (The University of Tokyo)

RUMP SESSION B (NAVIS-C):

"Future lighting technologies: Mehr Licht!"

Since the commercialization of GaN-based blue LEDs in 1993, lighting technology has shown marked evolution begging from traffic signals and full-color displays. White LEDs were developed in 1996, and then solid-state lighting has overridden the traditional lighting technology. One of the most up-to-date technologies revealed the power efficiency of 200 lm/W, which was twice of that of fluorescent lamps for general lighting. However, we still need innovative technologies for future lighting, without which we may not keep the sustainable society on our planet. In this rump session, we will be frankly exchanging knowledge and opinions on prospective technologies for future lighting. The main discussion subjects may include (a) breakthroughs for overcoming "green gap" and "UV threshold", (b) novel device structures, (c) issues for super bright LEDs, and (d) ways for future general lighting. It should be noted that together with the science we cannot escape from the discussion of cost-performance, for which we will emphasize materials, growth, process, and substrate issues in LEDs. In order for frank and informal discussions in this rump session, participation of not only researchers in this field but also those who wish to save our planet from the ecology in lighting technology is sincerely acknowledged.

Organizer: Shizuo Fujita (Kyoto University)
Moderator: Kazuyuki Tadatomo (Yamaguchi University)
Panelists: Yoshinobu Aoyagi (Ritsumeikan University), Koichi Okamoto (Kyushu University)

One or more panelists, including overseas participants, will be added.

Short Course A (NAVIS-A): Fundamentals on Advanced CMOS/Memory Technologies
Organizer: Shinichi Takagi (The University of Tokyo)

13:00-14:30 "Present Status and Future Trend of CMOS Scaling"
Prof. Toshiro Hiramoto (The University of Tokyo)

14:30-16:00 "High Mobility Channel CMOS Technology"
Prof. Shinichi Takagi (The University of Tokyo)

Break (15 min.)

16:15-17:45 "Impact of 3D structured Memory and Spintronics based NV-Memory for High Performance & Low Power Systems"
Prof. Tetsuo Endoh (Tohoku University)

Short Course B (NAVIS-B): Fundamentals and Applications of Spintronics Frontier
Organizer: Akira Fujiwara (NTT Corporation)

13:00-13:55 "Advanced Spintronic Materials: for Generation and Control of Spin Current"
Prof. Koki Takanashi (Tohoku University)

13:55-14:50 "Spin Caloritronics - more than spin-dependent thermoelectrics"
Prof. Gerrit E.W. Bauer (Tohoku University)

Break (15 min.)

15:05-16:00 "MTJ-based Spintronics"
Prof. Yasuo Ando (Tohoku University)

16:00-16:55 "Group-IV Spintronics"
Prof. Masashi Shiraishi (Osaka University)

16:55-17:40 "Light and Spintronics"
Prof. Hiro Munekata (Tokyo Institute of Technology)

Short Course C (NAVIS-C): Trends for Future Power Devices
Organizer: Shizuo Fujita (Kyoto University)

13:00-14:00 "Technologies and Trends Related to Si Power Module"
Dr. Katsumi Satoh (Mitsubishi Electric Corp.)

14:00-15:00 "Recent Advances in Si, SiC and GaN High-Voltage Power Devices"
Prof. T. Paul Chow (Rensselaer Polytechnic Institute)

Break (15 min.)

15:15-16:15 "Power Electronics Innovation by Widegap Semiconductor Power Devices"
Dr. Hajime Okumura (AIST)

16:15-16:55 "Diamond-Based Power Devices"
Dr. Hitoshi Umezawa (AIST)

16:55-17:35 "Gallium Oxide-Based Power Devices"
Dr. Masataka Higashiwaki (NICT)

INSTRUCTION FOR PRESENTERS

Oral Presentation:

Time Schedule

	Total session time	Presentation time	Discussion time
Invited	30 min.	25 min.	5 min.
Regular-1: Area1-5	20 min.	15 min.	5 min.
Regular-2: Area 6-15	15 min.	10 min.	5 min.
Late News	15 min.	10 min.	5 min.

BELL: First: Warning, Second: End of speech, Third: End of the discussion.

Audio-Visual Equipment

The following equipments are ready at each session room during SSDM2013:
* LCD projector
* PC (laptop computer), Windows XP, PowerPoint 2003-2013 and PDF
* Projection laser pointer

Uploading Your Presentation

The most important action for presenting authors is to upload their presentation file to the PC in each session room, using their own USB thumb drive. The use of personal PCs is prohibited. It is the presenter's responsibility to **upload his/her presentation file as soon as possible in each session room at any break** well in advance to the session of presentation. If the session chair cannot find your presentation file at the beginning of the session, your presentation will be withdrawn. The file must be compatible with Microsoft PowerPoint or Adobe Acrobat on Microsoft Windows.

Poster Presentation:

Presenting Your Poster

Poster sessions are scheduled for Thursday, September 26 from 13:00 to 15:00 at ARGOS-C.D.E on the 1st floor. Poster boards will be available with identifying labels from 10:00 on September 26. Authors are requested to prepare and set-up their posters by 13:00 on September 26. After the session, authors must immediately remove their posters by 15:10 on September 26. Please note that after 15:40 all remaining posters will be destroyed. Each poster board is 1,500mm wide and 2,100mm high. Pushpins will be available. The identifying label gives only paper session number. Therefore, please display the paper title, author names and affiliations on the poster. Authors are requested to stay near by their posters during the poster session for discussions.

Short Oral Presentation for Poster Presenters

All poster presenters must give short oral presentation on September 26. The presentation time should be less than 3 minutes, including the time needed to move on to the next presenter. To ensure smooth progress of the session, while one presenter is giving his/her presentation, next presenter should wait nearby in line for their turn. Only a PC projector will be made available.
Rooms for the short oral presentations can be found in the FLOOR GUIDE.

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SILVACO Japan Co., Ltd.
TNS Systems LLC
The Japan Society of Applied Physics

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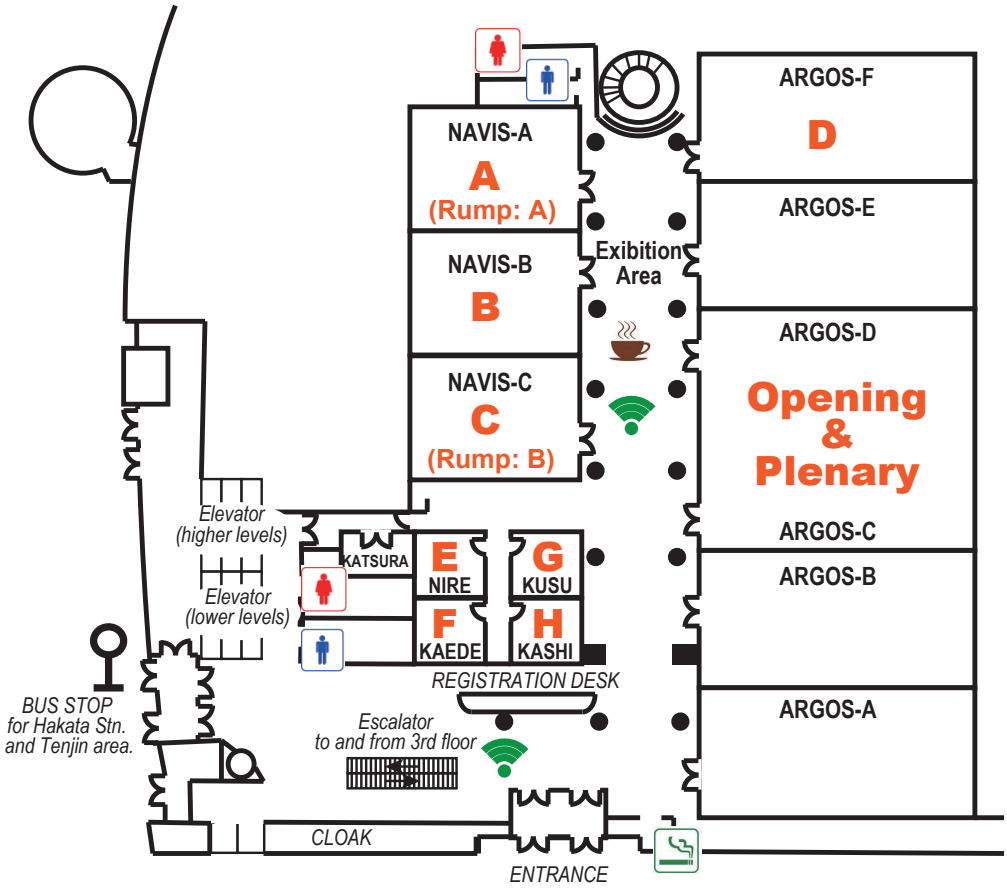
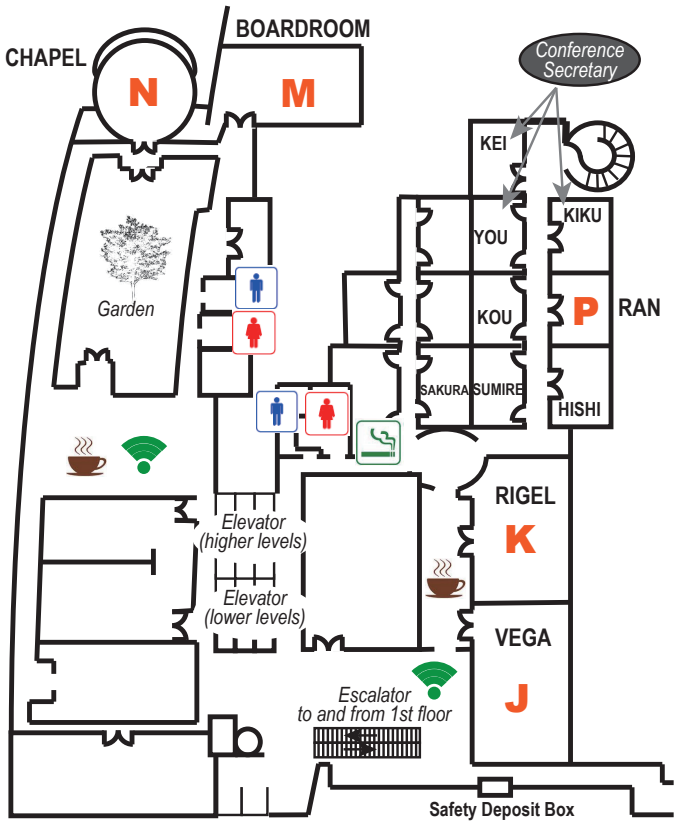
Z

Floor Map ---Oral Sessions---

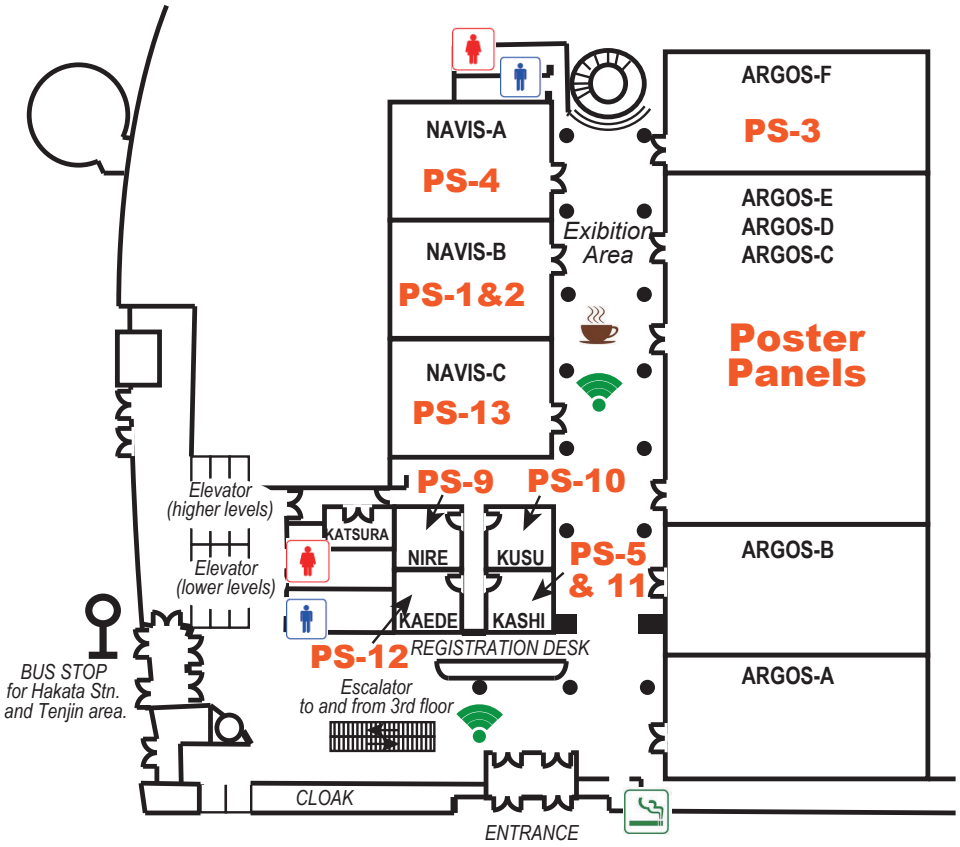


1st Floor

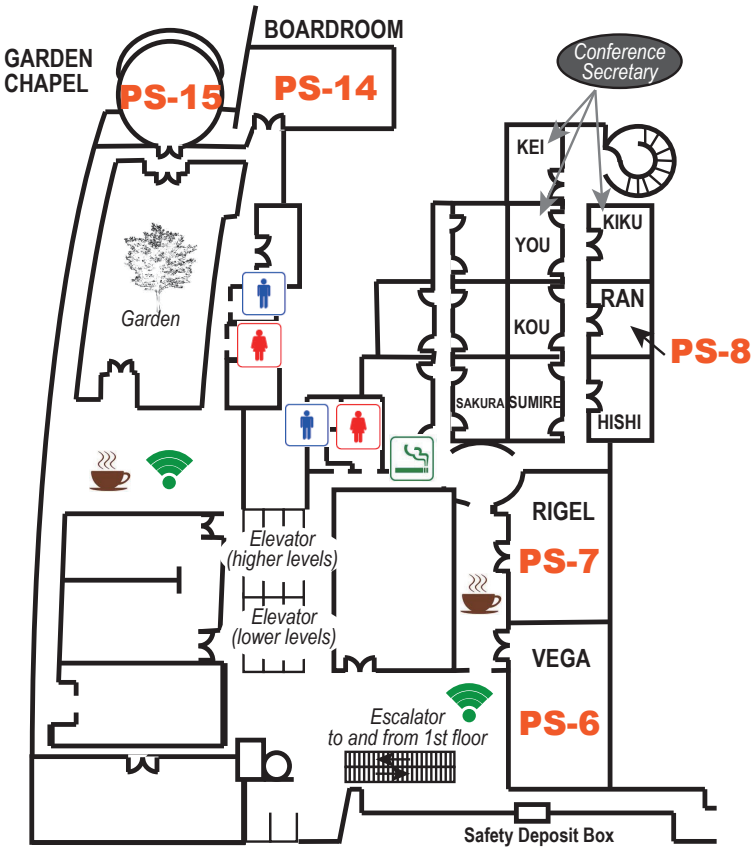


3rd Floor

Floor Map ---Short Presentation and Poster Session ---



1st Floor



3rd Floor

PROGRAM TIME TABLE

Wednesday, September 25						
9:05-12:15 Plenary (ARGOS-C.D)						
Lunch						
1F NAVIS-A	**1F NAVIS-B**	**1F NAVIS-C**	**1F ARGOS-F**	**1F KUSU**	**1F KASHI**	**1F NIRE**
13:30-15:10 A-1:Flash Memory (1)	**13:30-14:30** B-1:FinFET and Strain Engineering	**13:30-15:15** C-1:Carbon Nanotubes	**13:30-15:20** D-1:Advanced CMOS	**13:30-15:15** G-1:Lab-on-a-Chip and Medical Applications	**13:30-15:20** H-1:Image Sensors	
Coffee Break						
15:40-17:20 A-2:CBRAM / DRAM	**15:40-17:10** B-2:Ge Processes	**15:40-17:25** C-2:Nanowires	**15:40-17:30** D-2:FinFET	**15:40-17:25** G-2:Optronics and Cell Manipulation	**15:40-16:55** H-2:Advanced Circuits (1)	**15:40-17:10** E-2:Quantum Dots and Carrier Transport
18:30-20:30 Banquet / Young Researcher Award (34F)						
Thursday, September 26						
1F NAVIS-A	**1F NAVIS-B**	**1F NAVIS-C**	**1F ARGOS-F**	**1F KUSU**	**1F KASHI**	**1F NIRE**
9:00-10:20 A-3:Phase Change Memory	**9:00-10:10** B-3:Atomic-Scale Characterization	**9:00-10:15** C-3:Graphene Growth	**9:00-10:20** D-3:III-V and Ge MOSFET	**9:00-10:15** G-3:Microfluidic Devices and Imaging Technologies	**9:00-10:10** H-3:Advanced Circuits (2)	**9:00-10:15** **Area9&12** E-3:Spin Related Physics and Topological Insulators
Coffee Break						
10:40-11:55 **Short Presentation** Area4	**10:40-11:55** **Short Presentation** Area1 **Short Presentation** Area2	**10:40-11:55** **Short Presentation** Area13	**10:40-11:55** **Short Presentation** Area3	**10:40-11:55** **Short Presentation** Area10	**10:40-11:55** **Short Presentation** Area5 **Short Presentation** Area11	**10:40-11:55** **Short Presentation** Area9
Lunch						
13:00-15:00 Poster Session (ARGOS-C.D.E)						
1F NAVIS-A	**1F NAVIS-B**	**1F NAVIS-C**	**1F ARGOS-F**	**1F KUSU**	**1F KASHI**	**1F NIRE**
15:25-16:45 A-4:Flash Memory (2)	**15:25-16:25** B-4:Oxidation and Interface Characterization	**15:25-16:40** C-4:Graphene Properties	**15:25-16:45** D-4:Reliability (1)	**15:25-16:40** **Area5&11** G-4:CMOS-MEMS Sensors & Biomedical Applications		**15:25-16:40** E-4:Quantum Circuits and Computing
Coffee Break						
17:05-18:05 A-5:Ferroelectric Memory and Others	**17:05-18:05** B-5:Ge Science	**17:05-18:20** **Area2&13** C-5:Carbon Interconnects	**17:05-18:05** D-5:Reliability (2)		**17:05-18:05** H-5:Wireless Circuits (1)	**17:05-18:20** E-5:Quantum Transport in Nanostructures
19:00-20:30 Rump Sessions (NAVIS-A.C)						
Friday, September 27						
1F NAVIS-A	**1F NAVIS-B**	**1F NAVIS-C**	**1F ARGOS-F**	**1F KUSU**	**1F KASHI**	**1F NIRE**
9:00-10:30 A-6:ReRAM (1)	**9:00-11:00** B-6:Beyond CMOS	**9:00-10:45** **Area8&9&13** C-6:Graphene Devices	**9:00-10:45** D-6:Variability	**9:00-10:50** G-6:Advanced Interconnects	**9:00-10:00** H-6:Wireless Circuits (2)	
Coffee Break						
11:10-12:40 A-7:ReRAM (2)			**11:10-12:30** **Area3&6** D-7:Tunnel FETs	**11:10-12:20** G-7:3D/TSV Interconnects (1)		
Lunch						
13:40-14:55 **Area4&9** A-8:ReRAM (3)				**13:40-14:40** G-8:3D/TSV Interconnects (2)		

Area Scope

Area 1: Advanced LSI Processing & Materials Science
Area 2: Advanced Interconnect / Interconnect Materials and Characterization
Area 3: CMOS Devices / Device Physics
Area 4: Advanced Memory Technology
Area 5: Advanced Circuits and Systems
Area 6: Compound Semiconductor Electron Devices & Related Technologies
Area 7: Photonic Devices and Optoelectronic Integration
Area 8: Advanced Material Synthesis and Crystal Growth Technology

PROGRAM TIME TABLE

Wednesday, September 25					
9:05-12:15 Plenary (ARGOS-C.D)					
Lunch					
1F KAEDE	3F RIGEL	3F VEGA	3F BOARDROOM	3F CHAPEL	3F RAN
13:30-15:00 F-1:Spin Dynamics	13:30-15:15 Area2&7 K-1:Optical Interconnects	13:30-15:15 Area6&14 J-1:GaN Power Devices		13:30-15:15 N-1:Flexible Electronics and Thin-film Devices	13:30-15:15 P-1:Growth and Characterization of Group IV Related Materials (1)
Coffee Break					
15:40-17:10 F-2:Spin Orbit Interaction and Anisotropy	15:40-17:25 K-2:III-V Photonic Devices	15:40-17:25 J-2:GaN Device Process	15:40-17:25 M-2:Si Power Devices	15:40-17:25 N-2:OLED, Photonics, and Nanomaterials	15:40-17:25 P-2:Growth and Characterization of Group IV Related Materials (2)
18:30-20:30 Banquet / Young Researcher Award (34F)					
Thursday, September 26					
1F KAEDE	3F RIGEL	3F VEGA	3F BOARDROOM	3F CHAPEL	3F RAN
	9:00-10:15 K-3:Silicon Photonics Devices	9:00-10:15 J-3:Oxide Devices	9:00-10:30 M-3:Wide Gap Materials and Characterization	9:00-10:15 N-3:OTFT and Transport Properties	9:00-10:15 P-3:Material Process and Properties of Oxides
Coffee Break					
10:40-11:55 **Short Presentation** Area12	10:40-11:55 **Short Presentation** Area7	10:40-11:55 **Short Presentation** Area6	10:55-11:55 **Short Presentation** Area14	10:40-11:55 **Short Presentation** Area15	10:40-11:55 **Short Presentation** Area8
Lunch					
13:00-15:00 Poster Session (ARGOS-C.D.E)					
1F KAEDE	3F RIGEL	3F VEGA	3F BOARDROOM	3F CHAPEL	3F RAN
	15:25-16:40 K-4:Microcavities and Their Applications	15:25-16:40 Area6&14 J-4:Wide Gap Power Devices (1)	15:25-16:40 M-4:Spins in Semiconductors	15:25-16:40 Area10&15 N-4:Organic Photovoltaics	15:25-16:40 P-4:Nitrides : from Growth to Applications
Coffee Break					
	17:05-18:20 K-5:Photonic Crystal and Plasmonics	17:05-18:35 Area6&14 J-5:Wide Gap Power Devices (2)	17:05-18:20 M-5:Spin Tunneling Materials	17:05-18:20 N-5:Compound Semiconductor Photovoltaics	17:05-18:20 P-5:Nano-scale Growth for Optical Applications
19:00-20:30 Rump Sessions (NAVIS-A.C)					
Friday, September 27					
1F KAEDE	3F RIGEL	3F VEGA	3F BOARDROOM	3F CHAPEL	3F RAN
	9:00-10:45 K-6:Intergrated Silicon Photonics and Future Lightsources	9:00-10:45 J-6:GaN Devices and Characterization	9:00-10:30 Area4&5&12 M-6:Nonvolatile Device with New Materials	9:00-10:45 N-6:Silicon Photovoltaics	
Coffee Break					
			10:55-12:25 Area4&5&12 M-7:Nonvolatile Memory with New Materials	11:10-12:25 N-7:New Concepts (1)	
Lunch					
		13:40-14:55 J-8:Advanced III-V Devices	13:40-15:10 Area4&5&12 M-8:Nonvolatile Logic with New Materials	13:40-14:55 N-8:New Concepts (2)	

Area Scope

Area 9: Physics and Applications of Novel Functional Devices and Materials
Area 10: Organic Materials Science, Device Physics, and Applications
Area 11: Devices and Materials for Biology and Medicine
Area 12: Spintronics Materials and Devices
Area 13: Applications of Nanotubes, Nanowires, and Graphene
Area 14: Power Devices and Materials
Area 15: Photovoltaic Materials and Devices