ADVANCE PROGRAM

2014 INTERNATIONAL CONFERENCE ON SOLID STATE DEVICES AND MATERIALS

September 8-11, 2014

Tsukuba International Congress Center
(EPOCHAL TSUKUBA)

2014 International Conference on
Solid State Devices and Materials (SSDM 2014)

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ssdm 2014

CONTENTS

PREFACE

On behalf of the organizing committee, it is my great pleasure and honor to welcome you to Tsukuba, Japan, for the 2014 International Conference on Solid State Devices and Materials (SSDM2014), September 8-11, 2014. 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, 651 high quality abstracts were submitted to SSDM2014 from 24 countries. Great efforts by the technical program committee in selecting the abstracts have resulted in an excellent technical program consisting of 2 plenary talks, 58 invited papers, 260 contributed oral papers, 183 posters, and 35 late news papers. We hope all of the papers presented at SSDM2014 address in depth nearly all the key issues in the field and provide good stimulation and new perspectives to all participants.

Historically, from SSDM1999, the program committee has been divided into sub-committees, because the fields relating to SSDM had been diversed from the orthodox semiconductor device technologies to material science, process, manufacturing, circuit, and new technologies such as nano, organic, and bio, *etc*. The number of submitted papers and participants has been increased.

To our regret, the number of submitted papers drastically decreased compared to the previous several years; 796 in 2013, 858 in 2012, and 966 in 2011. The reason of this decrease has not been clarified at present time. One of the reasons may be originated from the change of so-called semiconductor business especially in Japan, and this has also caused the change of R&D style. We also fear the reduction of the participants from industries. The technological innovation requires the intimate contact and deep discussion among industry, academia, and government organizations. SSDM has been recognized that one of the missions is to give these opportunities of intimate contact and deep discussion. SSDM will fulfill this mission in the future.

The two plenary speakers are Dr. Kazuo Kyuma, Council for Science and Technology Policy, Cabinet Office, Government of Japan; Professor Peide D. Ye, Purdue University, USA. Dr. Kyuma, who was the organizing committee chair of SSDM 2012, will discuss strategy for science and technology innovations with emphasis of expectations to solid state devices and materials. Prof. Ye will discuss the challenges of new materials and devices beyond Si CMOS including their recent works.

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 SSDM2014. We also express our sincere gratitude for the financial support provided by MEXT-JSPS and the supporting corporations and foundations.

Your participation at SSDM2014 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 2014

Kazuya Masu
General Chair, Organizing Committee, SSDM2014
Professor, Tokyo Institute of Technology

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(in alphabetical order)

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GENERAL INFORMATION

DATE

Short Courses: **September 8, 2014 (in English)**
Technical Sessions: **September 9-11, 2014**

CONFERENCE VENUE

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2-20-3 Takezono,Tsukuba, Ibaraki 305-0032, Japan
Phone: +81-29-861-0001, Fax: +81-29-861-1209
http://www.epochal.or.jp/
SSDM2014 will be held at Tsukuba International Congress Center (EPOCHAL TSUKUBA). The access map is available in the conference website.

SHORT COURSES

Short Course lectures are scheduled on September 8, 13:00-17:30. Two Short Course lectures will be held each at Convention Hall 200 and Convention Hall 300.
These two courses are designed for beginners such as young researchers, young engineers, and students.
A) Trends for Future Power Devices
B) Functional Devices in Integrated Systems
*Registrants for Short Course are able to attend both 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 book for the other course can be purchased, but numbers are limited. Details can be found on page 39.

TECHNICAL SESSIONS

Plenary Sessions:
Plenary Sessions are scheduled on September 9, 10:30 -12:00 at Main Convention Hall.

Non-Technical Plenary Talk:
"Strategy for Science and Technology Innovations- Expectations for Solid State Devices and Materials"
by Kazuo Kyuma (Council for Science and Technology Policy, Cabinet Office, Japan)
Technical Plenary Talk:
"New Channel Materials and Devices Beyond Si CMOS"
by Peide D. Ye (Purdue University, USA)
Details can be found on page 11.

Oral and Poster Presentations:
Oral presentations will be held in the rooms located on 1st, 2nd, 3rd and 4th floors of Tsukuba International Congress Center from September 9 to 11. Poster presentations will be held on September 10, 14:00-16:00 at Multi-Purpose Hall and Conference Room 102.

Rump Sessions:
Rump Sessions are scheduled on September 10, 18:30-20:00 at Room 201(A+B) and 202(A+B). Details can be found on page 38.

OTHER EVENTS

Welcome Reception:

Welcome Reception will be held on September 8, 18:30-20:00 at ESPOIR (1st floor).

Banquet:

Conference Banquet will be held on September 9, 18:30-20:30 at SUBARU Room (1st floor) of OKURA FRONTIER HOTEL TSUKUBA ANNEX. 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 10:00 on September 9 at Main Convention Hall. Young Researcher Award Ceremony will be held in the Banquet starting 18:30 on September 9 at SUBARU Room (1st floor) of OKURA FRONTIER HOTEL TSUKUBA ANNEX.

REGISTRATION

The on-site registration desk will be open September 8 to 11 at the Entrance Hall (1st floor).
Open hours are as follows:

September 8th	16:00 – 19:00
September 9th	09:00 – 17:30
September 10th	08:30 – 17:30
September 11th	08:30 – 14:00

SPECIAL ISSUE of JJAP

The Special Issue of Japanese Journal of Applied Physics will be published in April, 2015.
The online publication will start from February, 2015 in advance of the paper based publication.

INSURANCE

The organizer cannot accept responsibility for accidents that may occur during a delegate's stay. Delegates are therefore encouraged to obtain travel insurances (for medical, personal accident, and luggage) in their home countries prior to departure.

INTERNET ACCESS

Complementary Internet Access is available in public space on each floor and in every conference room.
Some internet services may be restricted due to the internet system restriction of the conference site.
ID and password to connect internet on free Wi-Fi;
Conference rooms: SSID: SSDM2014 / Password (case sensitive): SSDM_TSUKUBA
Public space: SSID: public / Password (case sensitive): will be provided on-site

Non-Technical Plenary Talk

10:30-11:15

"Strategy for Science and Technology Innovations - Expectations for Solid State Devices and Materials"

Kazuo Kyuma

Council for Science and Technology Policy, Cabinet Office, Japan

Technical Plenary Talk

11:15-12:00

"New Channel Materials and Devices Beyond Si CMOS"

Peide D. Ye

Purdue University, USA

Tuesday, September 9

Opening & Plenary Sessions (Main Convention Hall)

Opening Session
Chair: Y. Miyamoto, Tokyo Tech

10:00
Welcome Address
K. Masu, Tokyo Tech

10:15
SSDM Award / Paper Award Ceremony

Non-Technical Plenary Session
Chair: S. Takagi, Univ. of Tokyo

10:30 PL-1
"Strategy for Science and Technology Innovations - Expectations for Solid State Devices and Materials"
K. Kyuma / Council for Science and Technology Policy, Cabinet Office, Japan

Technical Plenary Session
Chair: S. Takagi, Univ. of Tokyo

11:15 PL-2
"New Channel Materials and Devices Beyond Si CMOS"
P. D. Ye / Purdue Univ., USA

Lunch

2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-1: ReRAM(I) (13:30-15:00) Chairs: K. Kinoshita (Tottori Univ.) Y. Sasago (Hitachi)	**B-1: Group-IV Optical Devices** (13:30-15:00) Chairs: Y. Ishikawa (Univ. of Tokyo) N. Iizuka (Toshiba)		**D-1: Nano Devices for Chemical & Biosensing** (13:30-15:15) Chairs: T. Sakata (Univ. of Tokyo) T. Tanaka (Tohoku Univ.)	**E-1: GaN Devices & Characterization** (13:30-15:15) Chairs: T. Suzuki (JAIST) T. Hashizume (Hokkaido Univ.)	**F-1: Advanced Process and Reliability** (13:30-15:20) Chairs: T. Tsunomura (Tokyo Electron) L. Grenouillet (CEA-LETI)	**G-1: 3D/TSV** (13:30-15:15) Chairs: M. Kodera (Toshiba) K. -N. Chen (NCTU)
13:30 A-1-1 (Invited) **Scaling of Resistive Switching Devices** *D. Ielmini, Politecnico di Milano and IU.NET (Italy)*	**13:30 B-1-1 (Invited)** **Germanium Tin Light Emitters on Silicon** *E. Kasper and M. Oehme, Univ. of Stuttgart (Germany)*		**13:30 D-1-1 (Invited)** **Silicon and reduced graphene oxide device concepts for electronically interfacing individual cells in culture** *S. Ingebrandt[1], X. -T. Vu[1,2], L. Delle[1], R. L. F. Hempel[1], A. Müller[1], J. K. -Y. Law[1] and V. Pachauri[1], [1]Univ. of Applied Science Kaiserslautern, [2]RWTH Aachen Univ. (Germany)*	**13:30 E-1-1 (Invited)** **Physical effects limiting performance and reliability of GaN High Electron Mobility Transistors** *E. Zanoni[1], G. Meneghesso[1], M. Meneghini[1], D. Bisi[1], A. Chini[2], C. De Santi[1], F. Rampazzo[1], I. Rossetto[1], A. Stocco[1] and G. Verzellesi[3], [1]Univ. di Padova, [2]Dipartimento di Ingegneria "Enzo Ferrari" and [3]Dipartimento di Scienze e Metodi dell'Ingegneria, Università di Modena e Reggio Emilia (Italy)*	**13:30 F-1-1 (Invited)** **Heated Ion Implantation Technology for High Performance SOI FinFETs** *W. Mizubayashi, H. Onoda, Y. Nakashima, Y. Ishikawa, T. Matsukawa, K. Endo, Y.X. Liu, S. O'uchi, J. Tsukada, H. Yamauchi, S. Migita, Y. Morita, H. Ota and M. Masahara, AIST (Japan)*	**13:30 G-1-1 (Invited)** **Technology and Application Requirements of 2.5D/3D Field Programmable System-in-Package (SiP)** *A. Rahman, Altera Corp. (USA)*
14:00 A-1-2 **Non-negligible Metal Ions Diffusion in Amorphous Oxygen-Deficient Metal-Oxide Based Resistive Switches: A First Principle Study** *B. Xiao and S. Watanabe, Univ. of Tokyo (Japan)*	**14:00 B-1-2** **Impact of Post-Growth Annealing for Thin-Film Ge Photodiodes on Si** *S. Nagatomo[1], Y. Kawamata[1], Y. Izawa[2], S. Hoshino[3] and Y. Ishikawa[1], [1]Univ. of Tokyo, [2]Tokyo Electron Miyagi Ltd. and [3]Tokyo Electron Ltd. (Japan)*		**14:00 D-1-2** **High Density Horizontal-aligned Carbon Nanotube Thin Film with Oxygen Plasma Treatment as pH Sensing Membrane of Extended-Gate Field-Effect Transistor** *K.Y. Wang, W.L. Tsai, C.H. Chou, Y.R. Li, C.Y. Liao and H.C. Cheng, NCTU (Taiwan)*	**14:00 E-1-2** **Combined PEALD Gate-Dielectric and In-Situ SiN Cap-Layer for Reduced V_{th} Shift and R_{DS-ON} Dispersion of AlGaN/GaN HEMTs on 200 mm Si Wafer** *N. Ronchi[1], B. De Jaeger[1], M. Van Hove[1], R. Roelofs[2], T.L. Wu[1,3], J. Hu[1,3], X. Kang[1] and S. Decoutere[1], [1]imec, [2]ASM and [3]KU Leuven (Belgium)*	**14:00 F-1-2** **Operations of CMOS Inverter and Ring Oscillator Composed of Ultra-Thin Body Poly-Ge p- and n-MISFETs for Stacked Channel 3D-IC** *Y. Kamata[1], M. Koike[1], E. Kurosawa[1], M. Kurosawa[2], H. Ota[1], O. Nakatsuka[2], S. Zaima[2] and T. Tezuka[1], [1]Green Nanoelectronics Center (GNC), AIST and [2]Nagoya Univ. (Japan)*	**14:00 G-1-2** **Improvement of Motional Resistance through Concave TSV Design and Modification for Static Capacitance of TSV-Based Resonator** *J.Y. Shih[1], Y.C. Chen[2], C.H. Chiu[2], C.L. Lo[2] and K.N. Chen[1], [1]NCTU and [2]TXC Corp. (Taiwan)*

Opening & Plenary Sessions (Main Convention Hall)

Lunch

4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
H-1: 2D Materials (1) (13:30-15:15) Chairs: T. Machida (Univ. of Tokyo) K. Matsuda (Kyoto Univ.)	**J-1: Tunnel FET** (13:30-15:20) Chairs: M. Masahara (AIST) M. Goto (Toshiba)	**K-1: Flexible Electronics and Thin-film Devices** (13:30-15:15) Chairs: T. Someya (Univ. of Tokyo) T. Hayashi (NTT)	**M-1: Spin Dynamics** (13:30-15:15) Chairs: H. Munekata (Tokyo Tech) H. Shimizu (Tokyo Univ. of Agri. & Tech.)	**N-1: Processing and Growth** (13:30-14:45) Chairs: M. Kato (Nagoya Inst. of Tech.) S. Harada (Nagoya Univ.)	
13:30 H-1-1 (Invited) **Spin-valley physics in 2D crystals** *Y. Iwasa, Univ. of Tokyo and RIKEN (Japan)*	**13:30 J-1-1 (Invited)** **Tunnel-FET Transistors for 13nm Gate-Length and Beyond** *U.E. Avci, D.H. Morris and I.A. Young, Intel Corp. (USA)*	**13:30 K-1-1 (Invited)** **Polymeric Optical Devices with Printable and Flexible Electrode** *Y. Ohmori, T. Yamamoto, K. Hiraoka and H. Kajii, Osaka Univ. (Japan)*	**13:30 M-1-1 (Invited)** **Engineering materials for all-optical helicity-dependent magnetic switching** *M. Cinchetti[1], S. Alebrand[1], M. Gottwald[2], C.-H. Lambert[2,3], D. Steil[1], L. Pang[4], M. Hehn[3], M.G. Malinowski[3,5], Y. Fainman[4], M. Aeschlimann[1], S. Mangin[2,3] and E.E. Fullerton[2,4], [1]Univ. of Kaiserslautern, [2] Center for Magnetic Recording Research, Univ. of California San Diego, [3] Univ. de Lorraine, [4] Dept. of Electrical and Computer Engineering, Univ. of California San Diego and [5]Univ. Paris-Sud (Germany)*	**13:30 N-1-1** **Nitrogen doping of 4H-SiC by excimer laser irradiation in liquid nitrogen** *A. Ikeda, D. Marui, H. Ikenoue and T. Asano, Kyushu Univ. (Japan)*	
14:00 H-1-2 **In situ Tuning of Bandgap in Graphene Oxide Achieved by Solid State Ionics Device** *T. Tsuchiya, K. Terabe and M. Aono, NIMS (Japan)*	**14:00 J-1-2** **Novel Device Architecture Proposal of Source Junctionless Tunneling Field-Effect Transistor (SJL-TFET)** *Y. Kondo[1], M. Goto[1], Y. Morita[2], T. Mori[2], S. Migita[2], A. Hokazono[1], H. Ota[2], M. Masahara[2] and S. Kawanaka[1], [1]Toshiba Corp. and [2]AIST (Japan)*	**14:00 K-1-2** **Flip-Flop Circuits using Fully Solution Processed Pseudo-CMOS Circuits** *Y. Takeda[1,2], Y. Yoshimura[1,2], F.A. Ezarudin Binn Adib[3], K. Fukuda[1,2], D. Kumaki[1,2] and S. Tokito[1,2], [1]Graduate School of Science and Engineering, Yamagata Univ., [2]ROEL, Yamagata Univ. and [3]SATO HOLDINGS Corp., Ltd (Japan)*	**14:00 M-1-2** **Enhancement of Excitation Efficiency of Photo-Excited Precession of Magnetization in Co/Pd Multilayers with Oblique-Angle Excitation** *K. Nishibayashi, T. Matsuda, J. Saeki, K. Yamamoto and H. Munekata, Tokyo Tech (Japan)*	**13:45 N-1-2** **An experiment on the alleviation of wafer-bending for CVD grown heavily Al-doped 4H-SiC epi-wafer by co-doping of N** *S.Y. Ji[1], K. Kojima[1], Y. Ishida[1], S. Saito[1], H. Yamaguchi[1], S. Yoshida[1], H. Tsuchida[2] and H. Okumura[1], [1]AIST and [2]CRIEPI (Japan)*	

Tuesday, September 9

2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-1: ReRAM(I)	**B-1: Group-IV Optical Devices**		**D-1: Nano Devices for Chemical & Biosensing**	**E-1: GaN Devices & Characterization**	**F-1: Advanced Process and Reliability**	**G-1: 3D/TSV**
14:20 A-1-3 **Interface Engineering in Homogeneous Barrier Modulation RRAM for 3D Vertical Memory Applications** *W.L. Lai[1], C.T. Chou[1], C.W. Hsu[1], J.C. Liu[1], B. Hudec[1], C.H. Ho[2], W.Y. Jang[2], C.H. Lin[2] and T.H. Hou[1], [1]NCTU and [2]Winbond Electronics Corp. (Taiwan)*	**14:15 B-1-3** **Electroluminescence from Multiply-Stack of Doped Si Quantum Dots** *T. Yamada[1], K. Makihara[1], M. Ikeda[2] and S. Miyazaki[1], [1]Nagoya Univ. and [2]Hiroshima Univ. (Japan)*		**14:15 D-1-3** **pH and pK Sensing Modification by Cosputtered TiSiON/ SiO_2/Si Electrolyte-Insulator-Semiconductor Structure** *C.Y. Hsu[1], T.C. Chen[1], H. Yang[1], H.C. Wang[1], W.T. Lin[1], P.C. Juan[2], C.M. Yang[1,3,4,5] and C.S. Lai[1,4,5], [1]Department of Electronic Eng, Chang Gung Univ, [2] Department of Materials Eng and Center for Thin Film Technologies and Applications, Ming Chi Univ, [3] Institute of Electro-Optical Eng, Chang Gung Univ, [4] Healthy Aging Research Center, Chang Gung Univ and [5]Center for Biomedical Eng, Chang Gung Univ (Taiwan)*	**14:15 E-1-3** **Novel Overlaid Field-Plate for Improvement of Drain I-V Characteristics of AlGaN/GaN HEMTs** *S. Mase, T. Egawa and A. Wakejima, Nagoya Inst. of Tech. (Japan)*	**14:20 F-1-3** **Atomically Flattening of Si Surface of SOI and Isolation-patterned Wafers** *T. Goto[1], R. Kuroda[2], N. Akagawa[2], T. Suwa[1], A. Teramoto[1], X. Li[2], S. Sugawa[1,2], T. Ohmi[1], Y. Kumagai[3], Y. Kamata[3] and K. Sibusawa[3], [1]NICHe, Tohoku Univ., [2] Graduate School of Engineering, Tohoku Univ. and [3]LAPIS Semiconductor Miyagi Co., Ltd. (Japan)*	**14:20 G-1-3** **Ultrawideband Ultralow PDN Impedance of Decoupling Capacitor Embedded Interposers Using Narrow Gap Chip Parts Mounting Technology for 3-D Integrated LSI System** *K. Kikuchi[1], M. Ujiie[2], M. Aoyagi[1] and S. Takayama[2], [1]AIST and [2]Arena Co., Ltd. (Japan)*
14:40 A-1-4 **Novel Non-Precious Metal Electrode Material for ReRAM Device** *N. Fukuda, Y. Nishioka and K. Suu, ULVAC, Inc. (Japan)*	**14:30 B-1-4** **Observation of Stimulated Raman Scattering in Silica-Cladded Silicon Photonic Crystal Waveguides with Modified Holes** *Y.H. Hsiao, S. Iwamoto and Y. Arakawa, Univ. of Tokyo (Japan)*		**14:30 D-1-4** **Self-Powered Solar Diode Gas Sensors** *A.E. Gad[1,5,6], M.W.G. Hoffmann[1,6], J.D. Prades[3], F. Ramirez[3,4], R. Fiz[2], H. Shen[1,6], S. Mathur[2] and A. Waag[1,6], [1]Braunschweig Univ. of Technology, [2] Univ. of Cologne, [3] Univ. of Barcelona, [4] Catalonia Institute for Energy Research, [5] National Research Center and [6]Laboratory of Nanometrology (Germany)*	**14:30 E-1-4** **Temperature Dependence of TiN-Anode GaN Schottky Barrier Diode Characteristics for Microwave Power Rectification** *R. Fujihara[1], Y. Itai[1], L. Li[1], Q. Liu[1], Y. Ohno[2] and J.P. Ao[1], [1]Univ. of Tokushima and [2]e-Device Inc. (Japan)*	**14:40 F-1-4** **Large Size InGaAs-o-I Substrates Fabricated by Direct Wafer Bonding on Si** *E. Uccelli[1], N. Daix[1], L. Czornomaz[1], D. Caimi[1], C. Rossel[1], M. Sousa[1], H. Siegwart[1], C. Marchiori[1], J.M. Hartmann[2], K.T. Shiu[3], C.W. Weng[3], M. Krishnan[3], M. Lofaro[3], M. Kobayashi[3], D. Sadana[3] and J. Fompeyrine[1], [1]IBM Zurich Research Laboratory, [2] CEA, LETI and [3]IBM T. J. Watson Research Center (Switzerland)*	**14:40 G-1-4** **Characterization of Vapor Deposited Polyimides and Process Integration with the Polymeric Liner for Via-Last/Backside-Via Cu-TSV Formation** *T. Fukushima, M. Mariappan, J.C. Bea, K.W. Lee and M. Koyanagi, Tohoku Univ. (Japan)*
	14:45 B-1-5 **A 0.94-THz Detector in 180-nm Standard CMOS Process** *Z. Liu, L. Liu, Z. Zhang, J. Liu and N. Wu, Chinese Academy of Sci. (China)*		**14:45 D-1-5** **Organic Field-Effect Transistor with Organic Acceptors for Ammonia Gas Sensor** *H.H. Lyu and H.M. Chen, NCTU (Taiwan)*	**14:45 E-1-5** **Low-frequency Noise of Intrinsic Gated Region in AlN/AlGaN/GaN Metal-insulator-semiconductor Heterojunction Field-effect Transistors** *S.P. Le, T.Q. Nguyen, H. Shih, M. Kudo and T. Suzuki, JAIST (Japan)*	**15:00 F-1-5** **A New Method to Effectively Separate PBTI-induced Shallow and Deep Energy Traps in a 28nm High-k Metal-Gate MOSFET** *E. Hsieh[1], P. Wu[1], S. Chung[1], J. Ke[2], C. Yang[2] and C. Tsai[2], [1]NCTU and [2]UMC (Taiwan)*	**15:00 G-1-5 (Late News)** **Improved Leakage Current for TiO_2-Based MIM Capacitors by Embedding Ge Nanocrystals** *Y.-H. Chen, M.-T. Yu, C.-C. Lin and Y. -H. Wu, Natl. Tsing Hua Univ. (Taiwan)*
			15:00 D-1-6 **Ultra-High Selective Gas Sensors: novel approaches and future developments** *M.W.G. Hoffmann[1,3,5], J.D. Prades[3], L. Mayrhofer[2], F. Ramirez[3,4], T.T. Jaervi[2], M. Moseler[2], A. Waag[1,5] and H. Shen[1,5], [1]Braunschweig Univ. of Technology, [2] Fraunhofer Institute for Mechanics of Materials, [3] Univ. of Barcelona, [4] Catalonia Institute for Energy Research and [5]Laboratory of Nanometrology (Germany)*	**15:00 E-1-6 (Late News)** **Record-Low Contact Resistance for InAlN/AlN/GaN HEMTs on Si with Non-Gold Metal** *S. Arulkumaran[1], G.I.. Ng,[1,2], K. Ranjan[1], C.M. Manoj Kumar[1], S.C. Foo[1], K.S. Ang[1] and S. Vicknesh.[1], [1]Temasek Laboratories@NTU, Nanyang Technological Univ. and [2]School of EEE, Nanyang Technological Univ. (Singapore)*		

Tuesday, September 9

4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
H-1: 2D Materials (1)	**J-1: Tunnel FET**	**K-1: Flexible Electronics and Thin-film Devices**	**M-1: Spin Dynamics**	**N-1: Processing and Growth**	
14:15 H-1-3 **Exfoliated-graphene/MoS_2/metal Vertical Field Effect Transistor with Large Current Modulation and On Current Density** *R. Moriya[1], T. Yamaguchi[1], Y. Inoue[1], Y. Sata[1], N. Yabuki[1], S. Morikawa[1], S. Masubuchi[1,2] and T. Machida[1,2], [1]IIS, Univ. of Tokyo and [2]INQIE, Univ. of Tokyo (Japan)*	**14:20 J-1-3** **Self-aligned Bottom Source Tunnel Field-Effect Transistor (Btm-S TFET) with Si:C and Si:P Epitaxial Process** *T. Miyata, S. Mori, E. Sugizaki, M. Goto, Y. Kondo, A. Hokazono, T. Ohguro and S. Kawanaka, Toshiba Corp. (Japan)*	**14:15 K-1-3** **Fabricating Very Short Channels in Organic Field Effect Transistors by Dielectrophoresis Technique** *R. Negishi[1], T. Murata[1], J. Takeya[2] and Y. Kobayashi[1], [1]Osaka Univ. and [2]Univ. of Tokyo (Japan)*	**14:15 M-1-3** **Laser Induced Sub-Terahertz Coherent Spin Dynamics in Ferrimagnetic $D0_{22}$ Mn_3Ga Films** *S. Mizukami, A. Sugihara and K.Z. Suzuki, Tohoku. Univ. (Japan)*	**14:00 N-1-3** **Structure of basal plane defects formed by the conversion of threading screw dislocation during solution growth of SiC** *S. Harada, S.Y. Xiao, M. Tagawa, Y. Yamamoto, S. Arai, N. Tanaka and T. Ujihara, Nagoya Univ. (Japan)*	
14:30 H-1-4 **Fabrication and Characterization of MoS_2 FET structure with Nano-Sheets $Ca_2Nb_3O_{10}$ Gate Insulator** *T. Kobayashi[1], S. Hirose[1], H. Uchida[2], T. Kawae[1] and A. Morimoto[1], [1]Kanazawa Univ. and [2]Sophia Univ. (Japan)*	**14:40 J-1-4** **Fabrication Process and Thermal Stability of Isoelectronic Traps for High ON-current Si-based Tunnel Field-Effect Transistors** *T. Mori, Y. Morita, N. Miyata, S. Migita, K. Fukuda, T. Yasuda, M. Masahara and H. Ota, AIST (Japan)*	**14:30 K-1-4** **Annealing Effect on Field-Effect Mobilities in Bottom-Contact Alkylated Dinaphthothienothiophene Transistors** *M. Kitamura[1,2], Y. Kuzumoto[3] and Y. Arakawa[2], [1]Kobe Univ., [2] Univ. of Tokyo and [3]Sharp Corp. (Japan)*	**14:30 M-1-4** **Excitation of Electric-Field-induced Spin Wave in the Strained Garnet Ferrite Thin Films Using Sub-Picosecond Pulsed Wave** *M. Adachi, H. Yamahara, M. Seki, H. Matsui and H. Tabata, Univ. of Tokyo (Japan)*	**14:15 N-1-4** **Heteroepitaxial growth of diamond films on 3C-SiC(001)/Si substrates by antenna-edge microwave plasma CVD** *J. Yaita[1, 2], T. Iwasaki[1, 2, 3], M. Natal[4], S.E. Saddow[4] and M. Hatano[1, 2, 3], [1]Tokyo Tech, [2] JST-CREST, [3] JST-ALCA and [4]Univ. of South Florida (Japan)*	
14:45 H-1-5 (Invited) **Band nesting in semiconducting transition metal dichalcognide** *G. Eda, Dept. of Physics/ Chemistry, NUS and Graphene Research Centre, NUS (Singapore)*	**15:00 J-1-5** **Design Guidelines of Steep Subthreshold TFET to Minimize Energy of Logic Circuits** *H. Fuketa[1], K. Yoshioka[1], K. Fukuda[2], T. Mori[2], H. Ota[2], M. Takamiya[1] and T. Sakurai[1], [1]Univ. of Tokyo and [2]AIST (Japan)*	**14:45 K-1-5** **High-Mobility n-Channel Organic Transistor of Solution Processed Perylene-diimide Derivative Single Crystals on PS/SiO_2 Dielectric** *S. Mondal, W.H. Lin, Y.C. Chen, B.H. Chen, T.F. Yang and M.Y. Kuo, National Chi Nan Univ. (Taiwan)* **15:00 K-1-6** **Heat Protection Circuit with Polymer PTC for Flexible Electronics** *T. Yokota[1,2], Y. Terakawa[1], J. Reeder[1,3], M. Kaltenbrunner[1,2], T. Ware[3], W. Voit[3], T. Sekitani[2,4] and T. Someya[1,2], [1]Univ. of Tokyo, [2] JST ERATO, [3] Univ. of Texas and [4]Univ. of Osaka (Japan)*	**14:45 M-1-5** **Snell's law of the magnetostatic surface wave in ferromagnetic films** *K. Tanabe[1], R. Matsumoto[2], J. Ohe[3], S. Murakami[2], T. Moriyama[4], D. Chiba[5], K. Kobayashi[1] and T. Ono[4], [1]Osaka Univ., [2] Tokyo Tech, [3] Toho Univ., [4]Kyoto Univ. and [5]Univ. of Tokyo (Japan)* **15:00 M-1-6** **Spin Wave-Assisted Magnetization Switching in Nanometer-Scaled Bilayer Elements** *T. Seki, W. Zhou and K. Takanashi, IMR, Tohoku Univ. (Japan)*	**14:30 N-1-5 (Late News)** **α-Ga_2O_3 Schottky barrier diodes fabricated by mist epitaxy technique** *M. Oda[1,2], A. Takatsuka[1], T. Hitora[1], J. Kikawa[3], K. Kaneko[2] and S. Fujita[2], [1]FLOSFIA, INC., [2]Kyoto Univ. and [3]Ritsumeikan Univ. (Japan)*	

Tuesday, September 9

2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-2: ReRAM(II) (15:40-17:15) Chairs: T. Sakamoto (LEAP) M. -H. Lee (Macronix)	**B-2: Si Photonics** (15:40-17:10) Chairs: T. Shimizu (PETRA) H. Fukuda (NTT)		**D-2: Microfluidics** (15:40-17:10) Chairs: C. -H. Liu (National Tsing Hua Univ.) T. Sakata (Univ. of Tokyo)	**E-2: High-Frequency Devices & Circuits** (15:40-17:10) Chairs: E. Lind (Lund Univ.) K. Maezawa (Univ. of Toyama)	**F-2: Gate Stack Characterization** (15:40-17:25) Chairs: K. Kita (Univ. of Tokyo) P. D. Ye (Purdue Univ.)	**G-2: Reliability** (15:40-17:20) Chairs: T. Fukushima (Tohoku Univ.) N. Sugiyama (Toray Res. Center)
15:40 A-2-1 **Growth and Shrinkage of Conductive Filament in Cu/MoO_x ReRAMs Observed by Means of In-Situ TEM** *M. Arita, Y. Ohno, M. Kudo and Y. Takahashi, Hokkaido Univ. (Japan)*	**15:40 B-2-1 (Invited)** **Hybrid III-V on Silicon Lasers** *B. Ben Bakir[1], C. Sciancalepore[1], A. Descos[1], H. Duprez[1], T. Ferrotti[1,2], C. Jany[1], J. Harduin[1], D. Bordel[1], K. Hassan[1], A. Chantre[2] and S. Menezo[1], [1]CEA, Leti, Minatec Campus and [2]STMicroelectronics (France)*		**15:40 D-2-1 (Invited)** **Device Technologies for Cell and Tissue Analysis** *T. Fujii, IIS, Univ. of Tokyo (Japan)*	**15:40 E-2-1 (Invited)** **Room-Temperature Resonant-Tunneling-Diode Terahertz Oscillator** *S. Suzuki and M. Asada, Tokyo Tech (Japan)*	**15:40 F-2-1 (Invited)** **Band Offsets at High-k Oxide/Semiconductor Interfaces: From Silicon to High-Mobility Channel Materials** *V.V. Afanas'ev, H.-Y. Chou, M. Houssa and A. Stesmans, Univ. of Leuven (Belgium)*	**15:40 G-2-1** **Stress Distribution Pattern in Cross-Sectional 3D-LSI Examined by u-XRD** *M. Mariappan, J.C. Bea, T. Fukushima, K.W. Lee and M. Koyanagi, Tohoku Univ. (Japan)*
16:00 A-2-2 **Dual-Mode Bipolar Resistance Switching in the HfO_2 RRAM Device** *H.Z. Zhang[1], K.S. Yew[1], D.S. Ang[1], C.J. Gu[1] and X.P. Wang[2], [1]Nanyang Tech. Univ. and [2]Inst. of Microelectronics, A*STAR (Singapore)*	**16:10 B-2-2** **High Efficiency Apodized Grating Couplers with Metal Mirrors between a-Si:H Multilayer Waveguides toward 3D Optical Interconnection** *Y. Kuno, J. Kang, Y. Hayashi, J. Suzuki, T. Amemiya, N. Nishiyama and S. Arai, Tokyo Tech (Japan)*		**16:10 D-2-2 (Invited)** **Microfluidic biochip technology for biological cell research** *M.-H. Wu, Chang Gung Univ. (Taiwan)*	**16:10 E-2-2** **F-band Bidirectional Transceiver using 75-nm InP HEMTs** *S. Shiba[1], M. Sato[1], H. Matsumura[1], Y. Kawano[1], T. Suzuki[1], Y. Nakasha[1], T. Takahashi[1], K. Makiyama[1], T. Iwai[2] and N. Hara[1], [1]Fujitsu Ltd. and [2]Fujitsu Laboratories Ltd. (Japan)*	**16:10 F-2-2** **Quantitative Evaluation of Slow Traps near Ge MOS Interfaces by Using Time Response of MOS Capacitance** *K. Tanaka[1,2], R. Zhang[1,2], M. Takenaka[1,2] and S. Takagi[1,2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)*	**16:00 G-2-2** **Investigation of the Plasma Damage by Etching Process for TSV Formation in Via-last Backside-via 3D IC** *Y. Sugawara[1], H. Hashiguchi[1], S. Tanikawa[1], H. Kino[2], K. Lee[3], T. Fukusima[3], M. Koyanagi[3] and T. Tanaka[1,2], [1]Dept. of Bioengineering and Robotics, Tohoku Univ., [2]Dept. of Biomedical Engineering, Tohoku Univ. and [3]NICHe, Tohoku Univ. (Japan)*
16:20 A-2-3 **Electro-thermal driven nano-scale IMT characteristics of $SmNiO_3$ for selector application of cross-point memory array** *S.H. Misha, N. Tamanna, A. Prakash, J. Song, D. Lee, E. Cha and H. Hwang, Pohang Univ. of Sci. and Tech. (Korea)*	**16:25 B-2-3** **A High Extinction Ratio Silicon Nitride Polarizing Beam Splitter** *J. Feng and R. Akimoto, AIST (Japan)*		**16:40 D-2-3** **In Vitro Reconstruction of Tumor Microenvironment for Studying Angiogenesis** *K.W. Chang[1], Y.Y. Hsu[1], T.H. Punde[1], Y.F. Chan[2], L.W. Kuo[2], K.Y. Lee[2] and C.H. Liu[1], [1]National Tsing Hua Univ. and [2]Shuang Ho Hospital (Taiwan)*	**16:25 E-2-3** **Experimental Demonstration of Resonant Tunneling Super Regenerative Detectors Detecting High Order Harmonic Signals** *J. Pan, Y. Kakutani, T. Nakayama, M. Mori and K. Maezawa, Univ.of Toyama (Japan)*	**16:30 F-2-3** **Validity of Direct-gap Photoluminescence Analysis for Non-destructive Characterization of Oxide/Germanium Interface** *S. Kabuyanagi[1,2], T. Nishimura[1,2], T. Yajima[1,2], K. Nagashio[1,2] and A. Toriumi[1,2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)*	**16:20 G-2-3** **Dominant Factors of Stress-Induced Migration in Electroplated Copper Thin Films Used for Through Silicon Via (TSV) Interconnections** *K. Suzuki, R. Furuya and H. Miura, Tohoku Univ. (Japan)*
16:40 A-2-4 **Self-Rectifying Ta/TaO_x/TiO_2/Ti Cell for High-Density Flexible RRAM** *C.T. Chou, C.W. Hsu, C.C. Chang and T.H. Hou, NCTU (Taiwan)*	**16:40 B-2-4** **Humidity Tolerance for Athermal Si-Slot Wavelength Filters using Amorphous Fluoride Polymer and SiO_2 Protection Layer** *Y. Atsumi, J. Kang, J. Suzuki, Y. Hayashi, N. Nishiyama and S. Arai, Tokyo Tech (Japan)*		**16:55 D-2-4** **High-Efficiency Cellular Separation Method Utilizing Optically-Induced Dielectrophoretic (ODEP) Force-based Microfluidic Platform** *S.B. Huang[1], S.L. Liu[1], T.K. Chiu[1], C.H. Hsieh[2] and M.H. Wu[1], [1]Chang Gung Univ. and [2]Hosp. of Chang Gung Memorial (Taiwan)*	**16:40 E-2-4** **Non-destructive Mapping of Doping and Structural Composition of High Current Density Resonant Tunnelling Diodes Grown by Metal-Organic Vapour Phase Epitaxy Through Photoluminescence Spectroscopy** *K.J.P. Jacobs[1], B.J. Stevens[2], T. Mukai[3], D. Ohnishi[3] and R.A. Hogg[1], [1]Univ. of Sheffield, [2]EPSRC National Centre for III-V Technologies and [3]Rohm Co. Ltd. (UK)*	**16:50 F-2-4** **Spatial Variation of the Work Function in Nano-crystalline TiN Films Measured by Dual-Mode Scanning Tunneling Microscopy** *L. Bolotov, K. Fukuda, T. Tada, T. Matsukawa and M. Masahara, AIST (Japan)*	**16:40 G-2-4** **Suppression of Cu Ion Drift by Metal-Cap on Cu lines, Improving Interconnect Dielectric Reliability** *M. Ueki, N. Furutake, N. Inoue and Y. Hayashi, Renesas Electronics Corp. (Japan)*
17:00 A-2-5 (Late News) **Modeling of Read Disturbance Mechanism due to Carrier Trapping in Sub-20nm NAND Flash Memory** *D. Kang[1], K. Lee[1], S. Kwon[2], S. Kim[2], Y. Hwang[2] and H. Shin[1], [1]Seoul Natioanl Univ. and [2]Samsung Electronics Corp., Ltd. (Korea)*	**16:55 B-2-5 (Late News)** **High-quality thin-film-like multifold Ge/Si/Ge composite quantum-dot hetero-structures for visible to near-infrared photodetection** *M.-H. Kuo[1], W.-T. Lai[1], H.-T. Chang[2], S.-W. Lee[2] and P.-W. Li[1], [1]Dept. of Electrical Engineering and Center for Nano Science and Technology, National Central Univ. and [2]Institute of Materials Science and Engineering, National Central Univ. (Taiwan)*			**16:55 E-2-5 (Late News)** **Impact of $In_{1-x}Ga_xAs$ Capping Layer on Characteristic of III-V Trigate MOSFET Devices** *C.-H. Huang[1,2] and Y. Li[1,2,3], [1]Parallel and Scientific Computing Lab., NCTU, [2]Institute of Communications Engineering, NCTU and [3]Dept. of Electrical and Computer Engineering, NCTU (Taiwan)*	**17:10 F-2-5 (Late News)** **Sub-300°C Fabrication of Poly-GeSn Junctionless Tri-Gate p-FETs Enabling Sequential 3D Integration of CMOS Circuits** *M. Kurosawa[1,2], Y. Kamata[3], H. Ikenoue[4], N. Taoka[1], O. Nakatsuka[1], T. Tezuka[3] and S. Zaima[1], [1]Nagoya Univ., [2]JSPS, [3]AIST/GNC and [4]Kyushu Univ. (Japan)*	**17:00 G-2-5** **Analysis of the Breakdown Voltage of an Area Surrounded by the Multi-trench Gaps in a 4kV Monolithic Isolator for a Communication Network Interface** *Y. Takeuchi, R. Kuroda and S. Sugawa, Graduate School of Engineering, Tohoku Univ. (Japan)*

Tuesday, September 9

4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
H-2: 2D Materials (2) (15:40-17:25) Chairs: T. Suemasu (Univ. of Tsukuba) T. Nagata (NIMS)	**J-2: Characterization** (15:40-17:25) Chairs: T. Hiramoto (Univ. of Tokyo) K. Sukegawa (Fujitsu Semicon.)	**K-2: Organic Photovoltaics I** (15:40-16:55) Chairs: M. Ikegami (Toin Univ. of Yokohama) K. Tajima (RIKEN)	**M-2: Spin Transport** (15:40-17:25) Chairs: H. Shimizu (Tokyo Univ. of Agri. & Tech.) K. Hamaya (Osaka Univ.)	**N-2: Power Devices and Modules** (15:40-17:25) Chairs: S. Matsumoto (Kyushu Inst. of Tech.) H. Tadano (Univ. of Tsukuba)	
15:40 H-2-1 (Invited) **Growth, characterization, and functionalization of graphene and hexagonal boron nitride** *H. Hibino, S. Wang, C.M. Orofeo and S. Suzuki, NTT Corp. (Japan)*	**15:40 J-2-1 (Invited)** **Comprehensive Investigation of Self-Heating Effect (SHE) in Nanoscale Planar and Fin FETs: Impacts of Device Parameters on SHE and Analog Performance Optimization** *T. Takahashi[1,2], T. Matsuki[3], T. Shinada[3], Y. Inoue[3] and K. Uchida[1,2], [1]Keio Univ., [2]JST-CREST and [3]AIST (Japan)*	**15:40 K-2-1 (Invited)** **Design and Characterizations of Perovskite Solar Cells** *H.-Y. Hsu and E.W.-G. Diau, NCTU (Taiwan)*	**15:40 M-2-1 (Invited)** **Magneto-reprogrammable semiconductor logic at room temperature** *J. Hong[1], S. Joo[2], J.D. Song[3], J. Chang[4] and M. Johnson[5], [1]Korea Univ, [2]KRISS, [3]Center for Opto-Electronic Convergence Systems, KIST, [4]Spin Convergence Research Center, KIST and [5]Naval Research Lab (Korea)*	**15:40 N-2-1 (Invited)** **Challenges to the silicon IGBT limit with PNM structure** *M. Sumitomo, H. Sakane, K. Arakawa, Y. Higuchi and M. Matsui, DENSO Corp. (Japan)*	
16:10 H-2-2 **Chemical Vapor Deposition of Hexagonal Boron Nitride Films on c-plane Sapphire Substrates** *N. Umehara, I. Kuwahara, T. Kouno, H. Kominami, Y. Nakanishi and K. Hara, Shizuoka Univ. (Japan)*	**16:10 J-2-2** **Improvement of S-factor Method for Evaluation of MOS Interface State Density** *W.–L. Cai[1,2], M. Takenaka[1,2] and S. Takagi[1,2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)*	**16:10 K-2-2** **Dye-sensitized Solar Cells Using Scattering Layer with Micron-sized Pores for Indoor Light Energy Harvesting** *M. Suzuka, H. Yabe, N. Hayashi, T. Kitagaki and T. Sekiguchi, Panasonic Corp. (Japan)*	**16:10 M-2-2** **Anisotropic spin dynamics of drifting electrons with coexistence of Rashba and Dresselhaus spin-orbit interactions** *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)*	**16:10 N-2-2** **Current filamentation caused by dynamic avalanche during turn-off transient under short-circuit operation of IGBTs** *T. Kobayashi[1], T. Suwa[1], T. Matsudai[2] and T. Ogura[2], [1]Toshiba I.S. Corp. and [2]Toshiba Corp. (Japan)*	
16:25 H-2-3 **Quantum Interference in a Ballistic Graphene n-p-n Junction: Fabry-Perot Interference and a Novel Magnetoresistance Oscillation** *S. Morikawa[1], S. Masubuchi[1], R. Moriya[1], K. Watanabe[2], T. Taniguchi[2] and T. Machida[1], [1]Univ. of Tokyo and [2]NIMS (Japan)*	**16:30 J-2-3** **Effective Work Function Shift Induced by TiN Sacrificial Metal Gates as a Function of Their Thickness and Composition in 14 nm NMOS devices** *C. Suarez-Segovia[1,2], P. Caubet[1], V. Joseph[1], O. Gourhant[1], G. Romano[1], F. Domengie[1] and G. Ghibaudo[2], [1]STMicroelectronics and [2]IMEP-LAHC (France)*	**16:25 K-2-3** **Development of Integrated Tandem Dye Sensitized Solar Cells** *S. Kosar[1], Y. Struk[1], Y. Pihosh[2], K. Matsubara[3], M. Kondo[3] and I. Turkevych[3], [1]Chernitsy National Univ., [2]Univ. of Tokyo and [3]AIST (Ukraine)*	**16:25 M-2-3** **Large Spin Accumulation Signals in Epitaxial Mn5Ge3 Contacts on Ge without Oxide Tunnel Barrier** *A. Spiesser, H. Saito, R. Jansen, S. Yuasa and K. Ando, Spintronics Res. Center, AIST (Japan)*	**16:25 N-2-3** **Design for EMI suppression during reverse recovery by 600V lateral SOI PiN diode with traps** *M. Tsukuda[1], H. Imaki[2] and I. Omura[2], [1]The International Centre for the Study of East Asian Development and [2]Kyusyu Inst. of Tech. (Japan)*	
16:40 H-2-4 **Fabrication of Two-Dimensional 10 nm Graphene Dot Array and Optical Characterization** *T. Okada[1], K. Igarashi[1], P. Han[2], T. Hitosugi[2], C.H. Huang[3], C.Y. Su[4] and S. Samukawa[1,2], [1]IFS, Tohoku Univ., [2]WPI-AIMR, Tohoku Univ., [3]Ming Chi Univ. of Tech. and [4]National Central Univ. (Japan)*	**16:50 J-2-4** **Radiation Hardness Evaluations of 65 nm FD-SOI and Bulk Processes by Measuring SET Pulse Widths and SEU Rates** *E. Sonezaki, J. Furuta and K. Kobayashi, Kyoto Inst. of Tech. (Japan)*	**16:40 K-2-4** **Improvement of Electrical Conductivity by Low-temperature Solvent Annealing Method for High Performance Organic Solar Cells** *S.J. Park, K.Y. Lee, D.H. Kim and Y.J. Kim, Yonsei Univ. (Korea)*	**16:40 M-2-4** **Effect of Insertion Layers on Schottky Barrier Height of Fe/n-type Ge Junctions** *H. Saito, Y. Sato, T. Takada, R. Jansen and S. Yuasa, AIST (Japan)*	**16:40 N-2-4** **An 800V-class lateral NMOS structure with a reduced parasitic capacitance for a level-shift circuit integrated in a high voltage gate driver IC** *M. Yamaji[1], A. Jonishi[1], H. Sumida[1] and Y. Hashimoto[2], [1]Fuji Electric Corp. Ltd. and [2]Shinshu Univ. (Japan)*	
16:55 H-2-5 **Influence of Rhenium on the Structural and Optical Properties of Molybdenum Disulfide** *M. Sigiro[1], Y.S. Huang[1], C.H. Ho[2], Y.C. Lin[3], K. Suenaga[3] and K.K. Tiong[4], [1]Department of Electronic and Computer Eng. National Taiwan Univ. of Sci. and Tech., [2]Graduate Inst. of Applied Sci. and Tech. National Taiwan Univ. of Sci. and Tech., [3]AIST and [4]National Taiwan Ocean Univ. (Taiwan)*	**17:10 J-2-5 (Late News)** **Charge Pumping Current from Single Si/SiO_2 Interface Traps: Direct Observation of P_b Centers and Fundamental Trap-Counting by the Charge Pumping Method** *T. Tsuchiya[1] and Y. Ono[2], [1]Shimane Univ. and [2]Univ. of Toyama (Japan)*		**16:55 M-2-5** **Layer Thickness Dependence of Spin Orbit Torques and Fields in Pt/Co/AlO Trilayer Structures.** *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 N-2-5** **250°C Switching Behavior of All SiC Power Module with Sandwich Structure** *F. Kato[1,2], R. Simanjorang[2], F. Lang[2], H. Nakagawa[1,2], H. Yamaguchi[1,2] and H. Sato[1,2], [1]AIST and [2]R&D Partnership for Future Power Electronics Tech. (Japan)*	
17:10 H-2-6 **Withdrawn**			**17:10 M-2-6** **Magnetic Sensors Based on MgO-Magnetic Tunnel Junctions with Perpendicularly Magnetized CoFeB Sensing Layers** *T. Nakano[1], M. Oogane[1], H. Naganuma[1], T. Yano[2], K. Ao[2] and Y. Ando[1], [1]Tohoku Univ. and [2]DENSO Corp. (Japan)*	**17:10 N-2-6** **High speed real-time temperature monitoring system inside power devices package using infrared radiation** *N. Hirata, A. Watanabe and I. Omura, Kyushu Inst. of Tech. (Japan)*	

Wednesday, September 10

2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-3: CBRAM/DRAM (9:30-11:00) Chairs: K. Hamada (Micron Memory Japan) T. Sakamoto (LEAP)	**B-3: Light Sources and Functional Devices** (9:30-11:15) Chairs: H. Oohashi (NTT Electronics) K. Kojima (Tohoku Univ.)	**C-3: Growth and Process of Nitrides** (9:30-10:45) Chairs: T. Iwai (Fujitsu Lab.) T. Suemasu (Univ. of Tsukuba)	**D-3: Biosensors** (9:30-10:45) Chairs: H. -M. Chen (NCTU) R. Tero (Toyohashi Univ. of Tech.)	**E-3: GaN Power Devices** (9:30-11:15) Chairs: T. Tanaka (Panasonic) T. Uesugi (Toyota Central R&D Labs.)	**F-3: Interface and Material Science** (9:30-11:00) Chairs: K. Kakushima (Tokyo Tech) T. Yamaguchi (Renesas Electronics)	
9:30 A-3-1 (Invited) **Current Status of Cation-Based Resistive Memory** *M.N. Kozicki and H.J. Barnaby, Arizona State Univ. (USA)*	**9:30 B-3-1** **Demonstration of GaAs based Nanowire Plasmonic Laser** *J.F. Ho[1], J. Tatebayashi[1], S. Sergent[1], C.F. Fong[1], S. Iwamoto[1, 2] and Y. Arakawa[1, 2], [1]Inst. Nano Quantum Info. Electron., Univ. of Tokyo and [2]Inst. Industrial Sci., Univ. of Tokyo (Japan)*	**9:30 C-3-1 (Invited)** **Direct Growth of Uniform In-rich InGaN on Si: A New Basic Technology** *P. Aseev[1], P.S. Rodriguez[1], V.J. Gómez[1], P. Kumar[1], N.H. Alvi[1], J.M. Mánuel[2], F.M. Morales[2], J.J. Jiménez[2], R. García[2], E. Calleja[1] and R. Nötzel[1], [1]Univ. Politécnica de Madrid and [2]Univ. de Cádiz (Spain)*	**9:30 D-3-1** **Sensitivity Enhancement for Reaction between Drosophila LUSH odorant-binding Protein and Ethanol using Dual-Gate EGFETs** *I.K. Lee[1], T.E. Bae[1], H.C. Lau[2], J.O. Lim[2], J.Y. Kwon[3], T.J. Ha[1] and W.J. Cho[1], [1]Kwangwoon Univ., [2]Kyungpook National Univ. and [3]Sungkyunkwan Univ. (Korea)*	**9:30 E-3-1 (Invited)** **Commercialization of 600V GaN HEMTs** *P. Parikh[1], Y. Wu[1], U. Mishra[1], L. Shen[1], R. Birkhahn[1], B. Swenson[1], J. Gritters[1], R. Barr[1], L. McCarthy[1], J. Honea[1], S. Yea[1], K. Smith[1], P. Smith[1], D. Dunn[1], J. McKay[1], H. Clement[1], T. Kikkawa[2], T. Hosoda[2], Y. Asai[2], K. Imanashi[2] and K. Shono[2], [1]Transphorm Inc. and [2]Transphorm Japan Inc. (USA)*	**9:30 F-3-1 (Invited)** **Negative Capacitance in Ferroelectric Materials and Implications for Steep Transistors** *S. Salahuddin, Univ of California, Berkeley (USA)*	
10:00 A-3-2 **Mechanism of OFF-State Lifetime Improvement in Complementary Atom Switch** *N. Banno, M. Tada, T. Sakamoto, M. Miyamura, K. Okamoto, N. Iguchi, T. Nohisa and H. Hada, LEAP (Japan)*	**9:45 B-3-2** **Optical Coherence Tomography Imaging by Using a Superluminescent Diode Based on InAs/GaAs Quantum Dots** *H. Shibata[1], T. Yasuda[1], S. Ohkouchi[2], N. Ikeda[3], H. Ohsato[3], E. Watanabe[3], Y. Sugimoto[3], K. Furuki[4], K. Miyaji[4], R.A. Hogg[5] and N. Ozaki[1], [1]Wakayama Univ., [2]NEC Corp., [3]NIMS, [4]Think-Lands Co. Ltd. and [5]Univ. Sheffield (Japan)*	**10:00 C-3-2** **Selective Area Growth of N-face GaN (000-1) Films by Group-III-Source Flow-Rate Modulation Epitaxy** *T. Akasaka, C.H. Lin and H. Yamamoto, NTT BRL (Japan)*	**9:45 D-3-2** **Elucidation of semiconductor / bio-interface structure by molecular dynamics simulation** *Y. Maekawa, Y. Shibuta and T. Sakata, Univ. of Tokyo (Japan)*	**10:00 E-3-2** **A Novel High-Current Density GaN-based Normally-Off Transistor with Tensile Strained Quaternary InAlGaN Barrier** *R. Kajitani, K. Tanaka, M. Ogawa, H. Ishida, M. Ishida and T. Ueda, Panasonic Corp. (Japan)*	**10:00 F-3-2** **Development of Ferroelectric Phase in TiN/Hf-Zr-O/TiN Capacitors Prepared by Sputter Deposition and Capped Anneal** *S. Migita, H. Ota, Y. Morita and M. Masahara, AIST (Japan)*	
10:20 A-3-3 **DRAM with Storage Capacitance of 3.9 fF using CAAC-OS Transistor with L of 60 nm and having More Than 1-h Retention Characteristics** *T. Onuki, K. Kato, M. Nomura, Y. Yakubo, S. Nagatsuka, T. Matsuzaki, S. Hondo, Y. Hata, Y. Okazaki, M. Nagai, T. Atsumi, M. Sakakura, T. Okuda, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Lab. Corp., Ltd. (Japan)*	**10:00 B-3-3** **Effect of Cavity-Layer Thicknesses on Two-Color Lasing in a Coupled Multilayer Cavity with InAs Quantum Dots** *C. Harayama[1], S. Katoh[1], Y. Nakagawa[1,2], X. Lu[1], N. Kumagai[1], T. Kitada[1] and T. Isu[1], [1]Univ. of Tokushima and [2]NICHIA Corp. (Japan)*	**10:15 C-3-3** **Synthesis of Gallium Nitride Nanostructure by Ammoniating the Electrochemically Deposited Gallium Oxide on Silicon Substrate** *N. M. Ghazali[1], M.R. Mahmood[2], K. Yasui[3] and A.M. Hashim[1], [1]Univ. Teknologi Malaysia, [2]Univ. Teknologi MARA and [3]Nagaoka Univ. of Tech. (Malaysia)*	**10:00 D-3-3** **A Miniaturized Implantable Glucose Sensor Based on CMOS Line Sensor Using Glucose-Responsive Fluorescent Hydrogel** *T. Kawamura[1], M. Takahashi[2], K. Masuda[1], T. Noda[1], K. Sasagawa[1], T. Tokuda[1], T. Okitsu[3], S. Takeuchi[3] and J. Ohta[1], [1]Nara Inst. of Sci. and Tech., [2]BEANS Laboratory and [3]Univ. of Tokyo (Japan)*	**10:15 E-3-3** **5V High Threshold Voltage Normally-off MIS-HEMTs with Combined Partially Recessed and Multiple Fluorinated-Dielectric Layers Gate Structures** *H. Huang[1], Y.H. Wang[1], Y.C. Liang[1], G.S. Samudra[1], C.F. Huang[2] and W.H. Kuo[3], [1]National Univ. of Singapore, [2]National Tsing Hua Univ. and [3]Indus. Tech. Res. Inst. (Singapore)*	**10:20 F-3-3** **SiO_2-interface Layer Reduction in HfO_2 Gate Stacks through Si-substrate Oxidation** *X. Li, T. Yajima, T. Nishimura, K. Nagashio and A. Toriumi, Univ. of Tokyo (Japan)*	
10:40 A-3-4 **2T1C Gain Cell Memory with Improved Retention Characteristic By Dual Coupling Method for SOC application Using 45nm-logic compatible CMOS Process** *C.J. Lee, Y.K. Lee, M.K. Park, S.W. Kim and D.H. Lee, Samsung Electronics Corp. (Korea)*	**10:15 B-3-4** **Intersubband All-Optical Logic Gate in InGaAs/AlAsSb Quantum Wells** *J. Feng, R. Akimoto and S. Gozu, AIST (Japan)*	**10:30 C-3-4** **Droplet Epitaxial Growth of 1.55-μm Wavelength InAs Quantum Dots on Metamorphic InAlAs/GaAs(111)A** *N. Ha[1,2], T. Mano[1], X. Liu[1], T. Kuroda[1,2], K. Mitsuishi[1], A. Ohtake[1], A. Castellano[1,3], S. Sanguinetti[3], T. Noda[1], Y. Sakuma[1] and K. Sakoda[1], [1]NIMS, [2]Kyushu Univ. and [3]Univ. Milano Bicocca (Japan)*	**10:15 D-3-4** **Signal Amplification of Immune-Field-Effect Transistors Using Enzyme Catalyzed Ag Reduction to Overcome Debye Screening Length** *H.J. Jang[1], J.H. Ahn[2], S.W. Moon[1], T.E. Bae[1], M.G. Kim[3], Y.B. Shin[4] and W.J. Cho[1], [1]Department of Electronic Materials Eng, Kwangwoon Univ, [2]Department of Nano Manufac Tech, Nano Convergence Mech Systems Res Division, Korea Inst of Machinery and Materials, [3]Department of Chemistry, Gwangju Inst of Sci & Tech and [4]Res Center of Integrative Cellulomics, Korea Res Institute of Bioscience and Biotech (Korea)*	**10:30 E-3-4** **Normally-off Operation GaN HEMT Devices with Nano-pattern Structure** *Y.K. Fu, W.H. Kuo, S.F. Lin and Y.L. Chou, Indus. Tech. Res. Inst. (Taiwan)*	**10:40 F-3-4** **Defect Distribution and MIGS at Metal/Ge Interfaces; First-Principles Study** *S. Sasaki, T. Hiramatsu, K. Kobinata and T. Nakayama, Chiba Univ. (Japan)*	

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4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
H-3: Topological Insulators and Imaging (9:30-11:15) Chairs: A. Kimura (Hiroshima Univ.) K. Terabe (NIMS)	**J-3: CMOS Platform & SRAM** (9:30-11:15) Chairs: H. Tokita (Renesas Electronics) N. Planes (STMicroelectronics)	**K-3: Organic Photovoltaics II** (9:30-11:00) Chairs: P. Ho (National Univ. of Singapore) S. Yata (Panasonic)	**M-3: RF and Analog Techniques** (9:30-11:15) Chairs: I. Akita (Toyohashi Univ. of Tech.) T. Matsuda (Toyama Pref. Univ.)		**P-3: Nanowire Electronics** (9:30-11:15) Chairs: K. Kawaguchi (Univ. of Tokyo) G. Zhang (NTT)
9:30 H-3-1 (Invited) **Quantum anomalous Hall effect in magnetically doped topological insulator** *K. He, Y. Wang and Q.-K. Xue, Tsinghua Univ. (China)*	**9:30 J-3-1 (Invited)** **A 16 nm FinFET CMOS Technology for Mobile SoC and Computing Applications** *S.–Y. Wu, C.Y. Lin, M.C. Chiang, J.J. Liaw, J.Y. Cheng, S.H. Yang, C.H. Yao, T.L. Lee, W. Chang, C.C. Chen, M.H. Tsai, S.M. Jang, K.S. Chen and Y. Ku, Taiwan Semiconductor Manufacturing Company (Taiwan)*	**9:30 K-3-1 (Invited)** **FUTURE PROSPECTS OF ORGANIC AND HYBRID SOLAR CELLS FOR NEXT GENERATION PHOTOVOLTAICS** *H. Segawa, Univ. of Tokyo (Japan)*	**9:30 M-3-1 (Invited)** **Time Difference Amplifier and Its Application for TDC** *T. Nakura, Univ. of Tokyo (Japan)*		**9:30 P-3-1 (Invited)** **Signatures of Majorana Fermions in Topological Superconductor Nanowires** *H. Xu, Lund Univ. and Peking Univ. (Sweden)*
10:00 H-3-2 **Band-Alignment Induced Current Modulation in Bi_2Se_3 Topological Insulator** *G. Gupta, M.B.A. Jalil and G. Liang, NUS (Singapore)*	**10:00 J-3-2** **Detailed Analysis of Minimum Operation Voltage (V_{min}) of Extraordinarily Unstable Cells in Fully Depleted Silicon-on-Thin-BOX (SOTB) 6T-SRAM** *T. Mizutani[1], Y. Yamamoto[2], H. Makiyama[2], T. Yamashita[2], H. Oda[2], S. Kamohara[2], N. Sugii[2] and T. Hiramoto[1], [1]Univ. of Tokyo and [2]LEAP (Japan)*	**10:00 K-3-2** **Push Coating Technique Applied for a Bulk-heterojunction Solar Cell** *S. Kobayashi[1], D. Kaneto[1], S. Fujii[2], H. Kataura[2] and Y. Nishioka[1], [1]Ninon Univ. and [2]AIST (Japan)*	**10:00 M-3-2** **A 0.8 ps-LSB, 10-bit, 0.018 mm^2 Time-to-Digital Converter** *Z. Xu, M. Sugawara, M. Miyahara and A. Matsuzawa, Tokyo Tech (Japan)*		**10:00 P-3-2** **Encapsulated Gate-All-Around InAs/InP Core-Shell Nanowire FETs** *S. Sasaki, K. Tateno, G. Zhang, H. Pigot, Y. Harada, S. Saito, A. Fujiwara, T. Sogawa and K. Muraki, NTT Basic Research Labs. (Japan)*
10:15 H-3-3 (Late News) **Electric transport properties of the thallium-based topological insulators** *G. Eguchi[1], K. Kuroda[2], K. Shirai[2], A. Kimura[2] and M. Shiraishi[1], [1]Dept. of Electronic Science and Engineering, Graduate School of Engineering, Kyoto Univ. and [2]Graduate School of Science, Hiroshima Univ. (Japan)*	**10:20 J-3-3** **Comparison and Statistical Analysis of Four Write Stability Metrics in Bulk CMOS SRAM Cells** *H. Qiu, T. Mizutani, T. Saraya and T. Hiramoto, Univ. of Tokyo (Japan)*	**10:15 K-3-3** **Control of Donor/Acceptor Interface in Bilayer Organic Solar Cells** *K. Tajima[1,2], Y.F. Zhong[1,3], A. Tada[3], Y.F. Geng[3,4], Q.S. Wei[3], S. Izawa[1,3] and K. Hashimoto[3], [1]RIKEN CEMS, [2]JST, [3]Univ. of Tokyo and [4]NCNST (Japan)*	**10:20 M-3-3** **Evaluation of Uniqueness of Output from Current Mismatch ID Generation Circuit for Sensor Network Services** *K. Matsunaga, S. Oshima, T. Minotani, T. Kondo and H. Morimura, NTT Microsystem Integration Laboratories (Japan)*		**10:15 P-3-3** **Integration of Vertical InAs Nanowires on Ge(111) by Selective-Area MOVPE** *K. Tomioka[1,2], F. Ishizaka[1], E. Nakai[1] and T. Fukui[1], [1]Hokkaido Univ. and [2]JST-PRESTO (Japan)*
10:30 H-3-4 **Withdrawn**	**10:40 J-3-4** **High Reliability SRAM Development for 40 nm Embedded Spilt Gate-MONOS** *S. Okamoto[1], K. Maekawa[2], Y. Kawashima[1], K. Shiba[2], H. Sugiyama[1], M. Inoue[1] and A. Nishida[1], [1]Renesas Electronics Corp. and [2]Renesas Semiconductor Manufacturing Co., Ltd. (Japan)*	**10:30 K-3-4** **The Effect of Bathocuproine (BCP) buffer layer in boron subphthalocyanine chloride (SubPc)/fullerene (C_{60}) Organic Solar Cells with inverted structure** *X. Hao, S. Wang, T. Sakurai and K. Akimoto, Univ. of Tsukuba (Japan)*	**10:40 M-3-4** **A Nano-Watt Power Rail-to-Rail CMOS Amplifier with Adaptive Biasing for Ultra-Low Power Analog LSIs** *T. Ozaki, T. Hirose, K. Tsubaki, N. Kuroki and M. Numa, Kobe Univ. (Japan)*		**10:30 P-3-4** **Impact of High-κ Spacers on Parasitic Effects Considering DC/AC Performance Optimization in Si-Nanowire FETs for sub 10 nm Technology Node** *J.H. Hong[1], S.H. Lee[1], Y.R. Kim[1], E.Y. Jeong[1], J.S. Yoon[1], J.S. Lee[1], R.H. Baek[2] and Y.H. Jeong[1], [1]Pohang Univ. of Tech. and Sci. and [2]SEMATECH (Korea)*

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2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-3: CBRAM/DRAM	**B-3: Light Sources and Functional Devices**	**C-3: Growth and Process of Nitrides**	**D-3: Biosensors**	**E-3: GaN Power Devices**	**F-3: Interface and Material Science**	
	10:30 B-3-5 **Room Temperature Lasing Characteristics in Metal-Coated GaN Spiral and Grating Structures** *S.W. Liao[1], W.C. Liao[1], K.J. Chen[1], M.H. Shih[1,2] and H.C. Kuo[1], [1]NCTU and [2]Academia Sinica (Taiwan)*		**10:30 D-3-5 (Late News)** **Anions Sensing and Interfering Behaviors of Electrolyte-Insulator-Semiconductor Sensors with Nitrogen Plasma Treated Samarium Oxide** *Y.-T. Chan, Y.-R. Ye, J.-C. Wang and C.-S. Lai, Dept. of Electronic Engineering, Chang Gung Univ. (Taiwan)*	**10:45 E-3-5** **Enhancement-mode AlGaN/GaN HEMTs by selective area growth of AlGaN layer with Al_2O_3 deposition** *T. Narita, K. Inoue, A. Wakejima and T. Egawa, Nagoya Inst. of Tech. (Japan)*		
	10:45 B-3-6 **Highly Efficient White Organic Light Emitting Devices with a Binary Random Phase Array** *T. Hirasawa[1], Y. Inada[1], S. Nishiwaki[1], J. Matsuzaki[2], Y. Nakamura[1], A. Hashiya[1], S. Wakabayashi[1] and M. Suzuki[1], [1]Panasonic Corp. and [2]Panasonic Corp. Eco Solutions Company (Japan)*			**11:00 E-3-6** **Study of Constant Voltage Off-state Stress on Au-free AlGaN/GaN Schottky Barrier Diodes** *J. Hu[1,2], S. Stoffels[1], S. Lenci[1], T. Wu[1,2], N. Ronchi[1], S. You[1], B. Bakeroot[1,3], G. Groeseneken[1,2] and S. Decoutere[1], [1]imec, [2] KU Leuven and [3]Ghent Univ. (Belgium)*		
	11:00 B-3-7 **Synthetic Multi-Spectral Material Filter Based on Terahertz Metamaterial Combined with Thin-Film Etalon Structure** *H. Kang, H. Jung and H. Lee, Soongsil Univ. (Korea)*					

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H-3: Topological Insulators and Imaging	**J-3: CMOS Platform & SRAM**	**K-3: Organic Photovoltaics II**	**M-3: RF and Analog Techniques**		**P-3: Nanowire Electronics**
10:45 H-3-5 **Real-space Mapping of Spin-resolved Quantum Hall Chiral Edge States by Near-field Scanning Optical Microscopy** *S. Nomura[1], S. Mamyouda[1], H. Ito[1], Y. Shibata[1], T. Ohira[1], L. Yoshikawa[1], Y. Ootuka[1], S. Kashiwaya[2], M. Yamaguchi[3], H. Tamura[3] and T. Akazaki[3], [1]Univ. of Tsukuba, [2]AIST and [3]NTT BRL (Japan)*	**11:00 J-3-5 (Late News)** **The Guideline of Si/SiGe Hetero-Junction Design in Parallel Plate Style TFETs (PP-TFETs) for Si CMOS Platform Implementation** *M. Goto[1], Y. Kondo[1], Y. Morita[2], S. Migita[2], A. Hokazono[1], H. Ota[2], M. Masahara[2] and S. Kawanaka[1], [1]Toshiba Corp. and [2]GNC, AIST (Japan)*	**10:45 K-3-5** **Property Enhancement of Hole Transport Layer and Transparent Electrode by the Addition of Polar Solvents for Organic Solar Cells** *D.H. Kim, K.Y. Lee, S.J. Park and Y.J. Kim, Yonsei Univ. (Korea)*	**11:00 M-3-5 (Late News)** **On-chip Microparticle Manipulation with Efficient Wireless Power Transfer** *Y. Dei, Y. Kishiwada, R. Yamane, T. Inoue and T. Matsuoka, Osaka Univ. (Japan)*		**10:45 P-3-5** **Comparative Study of Silicon Nanowire Transistors with Triangular-Shaped Cross Sections** *Y.B. Zhang, L. Sun, H. Xu, Y.Q. Xia, J.W. Han, Y. Wang and S.D. Zhang, Peking Univ. (China)*
11:00 H-3-6 **KPFM Observation of Quantum Dots Induced by Clustered Donors in Selectively-Doped SOI-FETs** *K. Tyszka[1,2], D. Moraru[1], T. Mizuno[1], R. Jablonski[2] and M. Tabe[1], [1]Shizuoka Univ. and [2]Warsaw Univ. of Tech. (Japan)*					**11:00 P-3-6** **Thermal Transport Properties of Si Nanowire Covered with SiO_2 Layer: A Molecular Dynamics Study** *T. Zushi[1,3], K. Ohmori[2], K. Yamada[2] and T. Watanabe[1], [1]Waseda Univ., [2]Univ. of Tsukuba and [3]JSPS Research Fellow (Japan)*

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2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-4: FeRAM/PCRAM (16:30-17:30) Chairs: H. Saito (Fujitsu Semicon.) Y. Sasago (Hitachi)	**B-4: Magneto-Optic Devices** (16:30-17:45) Chairs: H. Munekata (Tokyo Tech) H. Oohashi (NTT Electronics)	**C-4: Metal Induced Crystallization** (16:30-17:30) Chairs: T. Suemasu (Univ. of Tsukuba) T. Iwai (Fujitsu Lab.)	**D-4: Neural Interface** (16:30-17:45) Chairs: Y. Mita (Univ. of Tokyo) J. Ohta (Nara Inst. of Sci. & Tech.)	**E-4: Silicon Carbide Devices** (16:30-17:45) Chairs: Y. Tanaka (AIST) R. Hattori (Mitsubishi Electric)	**F-4: Metal Contacts and Junction Technologies** (16:30-17:40) Chairs: T. Nakayama (Chiba Univ.) S. Migita (AIST)	**G-4: III-V and Quantum Photovoltaics** (16:30-17:45) Chairs: N. Kojima (Toyota Tech. Inst.) L. -S. Hong (National Taiwan Univ. of Science and Technology)
16:30 A-4-1 **10^8 Endurance Nonvolatile Memory Transistor with 100 nm Metal Gate** *L.V. Hai, M. Takahashi, W. Zhang and S. Sakai, AIST (Japan)*	**16:30 B-4-1 (Invited)** **On-Chip Nonreciprocal Photonic Devices Using Magneto-Optical Oxide Thin Films** *L. Bi[1], J. Hu[2], H.S. Kim[3], G.F. Dionne[3], C.A. Ross[3], X. Liang[1], J. Xie[1] and L. Deng[1], [1]Univ. of Electron. Sci. and Tech. of China, [2]Univ. of Delaware and [3]Mass. Inst. Tech. (China)*	**16:30 C-4-1 (Invited)** **Metal-Induced Crystallization - Fundamentals and Applications** *Z. Wang[1] and E.J. Mittemeijer[1,2], [1]Max Planck Inst. for Intelligent Systems and [2]Univ. of Stuttgart (Germany)*	**16:30 D-4-1 (Invited)** **MEMS Neural Probes by CMOS Technology and Micromachining** *O. Paul, Univ. of Freiburg (Germany)*	**16:30 E-4-1 (Invited)** **The Continuing Evolution of Silicon Carbide Power MOSFETs** *J.A. Cooper, Purdue Univ. (USA)*	**16:30 F-4-1 (Invited)** **Nickel Compound and Alloy Contacts to Nanoscale Si, Ge, and InGaAs Channels** *R. Chen[1], B.-M. Nguyen[1,2], W. Tang[2,3] and S.A. Dayeh[1], [1]Univ. of California San Diego, [2]Los Alamos National Laboratory and [3]Univ. of California Los Angeles (USA)*	**16:30 G-4-1 (Invited)** **High Efficiency, Flexible, Thin Film III-V Solar Cell Technology** *G.S. Higashi, Alta Devices, Inc. (USA)*
16:50 A-4-2 **Effect of Oxygen Partial Pressure Under Heat Treatment on Ferroelectricity of $(Hf_{0.5}Zr_{0.5})O_2$ Thin Films** *H. Funakubo[1, 2], T. Shimizu[2], T. Yokouchi[1], T. Oikawa[1], T. Shiraishi[1], T. Kiguchi[3], A. Akama[3], T.J. Konno[3], H. Uchida[4], D. Kim[5] and A. Gruverman[5], [1]Department of Innovative and Engineered Material, Tokyo Tech, [2]Materials Reserch Center for Element Strategy, Tokyo Tech, [3]Institute for Materials Research, Tohoku Univ., [4]Department of Materials and Life Sciences, Sophia Univ. and [5]Department of Physics and Astronomy, Univ. of Nebraska, Lincoln (Japan)*	**17:00 B-4-2 (Invited)** **Optical Isolators and Circulators on Si Waveguide Platforms** *T. Mizumoto and Y. Shoji, Tokyo Tech (Japan)*	**17:00 C-4-2** **Orientation-Controlled Large-Grain SiGe on Flexible Substrate by Nucleation-Controlled Gold-Induced Crystallization** *J.H. Park[1,2], M. Miyao[1] and T. Sadoh[1], [1]Kyushu Univ. and [2]JSPS Research Fellow (Japan)*	**17:00 D-4-2 (Invited)** **Multi-channel Recording System with UWB Wireless Data Transmitter for Brain-Machine Interface** *T. Suzuki[1], H. Ando[1], T. Yoshida[2], M. Hirata[1,3], K. Takizawa[1], [1]NICT and Osaka Univ., [2]Hiroshima Univ. and [3]Osaka Univ. Medical School (Japan)*	**17:00 E-4-2** **3.3-kV Double Channel-Doped SiC Vertical JFET in Cascode Configuration** *H. Shimizu, S. Akiyama, N. Yokoyama, A. Shima and Y. Shimamoto, Hitachi, Ltd. (Japan)*	**17:00 F-4-2** **NiPt Silicide Agglomeration Caused by Stress Relaxation along <010> Direction in NiSi Grain** *M. Mizuo[1], T. Yamaguchi[2], X. Pages[3], K. Vanormelingen[3], M. Smits[3], E. Granneman[3], M. Fujisawa[2] and N. Hattori[1], [1]Renesas Semiconductor Manufacturing Co., Ltd., [2]Renesas Electronics Corp. and [3]Levitech BV (Japan)*	**17:00 G-4-2** **Hole Trap Associated with High Background Doping in P-type GaAsN Grown by Chemical Beam Epitaxy** *O. Elleuch, L. Wang, K. Demizu, K. Ikeda, N. Kojima, Y. Ohshita and M. Yamaguchi, Toyota Tech (Japan)*
17:10 A-4-3 **A $4F^2$-cross-point Phase Change Memory Using Nano-crystalline Doped GeSbTe Material** *T. Morikawa, K. Akita, M. Kinoshita, M. Tai, T. Ohyanagi and N. Takaura, LEAP (Japan)*	**17:30 B-4-3** **Double-Dielectric-Loaded Plasmonic Optical Isolator for Integration into Photonic Integrated Circuits** *T. Kaihara[1], T. Ando[1], H. Shimizu[1], V. Zayets[2], H. Saito[2], K. Ando[2] and S. Yuasa[2], [1]Tokyo Univ. of Agri. Tech. and [2]AIST (Japan)*	**17:15 C-4-3** **Metal-Induced Crystallization of Amorphous Ge on Insulators: Comparative Study of Catalytic Effects between Al and Sn** *N. Oya, K. Toko and T. Suemasu, Univ. of Tsukuba (Japan)*	**17:30 D-4-3** **A Flexible Antenna Using a Parylene Film for Wirelessly-Powered Neural Recording Devices** *K. Okabe[1], 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)*	**17:15 E-4-3** **Temperature Dependence of Current Gain in 4H-SiC Bipolar Junction Transistors** *S. Asada, T. Okuda, T. Kimoto and J. Suda, Kyoto Univ. (Japan)*	**17:20 F-4-3** **Reduction of Parasitic Resistance in Ge nMOSFETs with NiGe/n^+Ge Junctions by Two-step Phosphorus Ion Implantation** *M. Koike, Y. Kamimuta and T. Tezuka, AIST (Japan)*	**17:15 G-4-3** **Electrical Evaluation of Energy Distribution of State Density for Embedded Quantum Dot Single Layer** *T. Hoshii and Y. Okada, RCAST, Univ. of Tokyo (Japan)*
				17:30 E-4-4 (Late News) **3.3 kV/1500 A Power Modules for the World's First All-SiC Traction Inverter** *K. Hamada[1], S. Hino[1,2], N. Miura[1], H. Watanabe[1,2], S. Nakata[1,2], E. Suekawa[3], Y. Ebiike[3], M. Imaizumi[3], I. Umezaki[3] and S. Yamakawa[1,2], [1]Advanced Technology R&D Center, Mitsubishi Electric Corp., [2]R&D Partnership for Future Power Electronics Technology (FUPET) and [3]Power Device Works, Mitsubishi Electric Corp. (Japan)*		**17:30 G-4-4** **Enhanced Light Absorption in Ge/Si Quantum Dot Solar Cells by Surface Photonic Nanostructures** *T. Tayagaki[1], Y. Kishimoto[1], Y. Hoshi[2] and N. Usami[2], [1]Kyoto Univ. and [2]Nagoya Univ. (Japan)*

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4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
H-4: Novel Devices (16:30-17:30) Chairs: H. Inokawa (Shizuoka Univ.) T. Tanamoto (Toshiba)	**J-4: Device Physics** (16:30-17:30) Chairs: M. Hane (Renesas Electronics) O. Weber (CEA-LETI)	**K-4: Organic Biosensors** (16:30-17:45) Chairs: S. Tokito (Yamagata Univ.) K. Shinbo (Niigata Univ.)			**P-4: Novel Interconnects** (16:30-17:45) Chairs: M. Ueki (Renesas Electronics) D. Kondo (Fujitsu)
16:30 H-4-1 **Purcell Effect of THz Emission using Multilayer Photonic Micro-Structures** *N. Tsurumachi[1], H. Izawa[1], T. Kai[1], T. Kawanaka[1], F. Toyoshima[1], H. Shirai[2], F. Shimokawa[1], H. Miyagawa[1], S. Koshiba[1] and S. Nakanishi[1], [1]Kagawa Univ. and [2]Inst. of Molecular Science (Japan)*	**16:30 J-4-1** **n^+/p^+-Single Doping Effects on Impurity Band Structure Modulation in Two Dimensional Si Layers** *T. Mizuno[1], Y. Nakahara[1], Y. Nagamine[1], Y. Suzuki[1], Y. Nagata[1], T. Aoki[1] and T. Sameshima[2], [1]Kanagawa Univ. and [2]Tokyo Univ. of Agric. and Tech. (Japan)*	**16:30 K-4-1 (Invited)** **Organic Bioelectronics - regulating cell signalling *in vivo* and *in vivo*, towards new therapy methods** *M. Berggren, D. Simon, K. Tybrandt, E. Gabrielsson, A. Jonsson and D. Nilsson, Linköping Univ. (Sweden)*			**16:30 P-4-1 (Invited)** **A Possibility of Cross-Bar Wiring in Three-Dimensional Crystallographic Space** *H.M. Yamamoto, CIMoS, IMS and RIKEN (Japan)*
16:45 H-4-2 **Control of Metal-to-Insulator Phase Transition in VO_2 Thin Films via Interface Engineering** *T. Yajima, T. Nishimura and A. Toriumi, Univ. of Tokyo (Japan)*	**16:50 J-4-2** **Mobility Model for Advanced SOI-MOSFETs Including Back-Gate Contribution** *H. Zenitani, H. Miyamoto, H. Kikuchihara, U. Feldmann, H.J. Mattausch and M. Miura-Mattausch, Hiroshima Univ. (Japan)*	**17:00 K-4-2** **An Extended-gate Organic Field-Effect Transistor toward Food Freshness Sensing** *T. Minamiki[1,2], T. Minami[1,2], K. Fukuda[1,2], D. Kumaki[1,2] and S. Tokito[1,2], [1]Yamagata Univ. and [2]Research Center for Organic Electronics (Japan)*			**17:00 P-4-2 (Invited)** **METAL-CNT CONTACTS** *P. Wilhite, A.A. Vyas and C.Y. Yang, Santa Clara Univ. (USA)*
17:00 H-4-3 **Impact of Dopant Induced States on Interband Tunneling in Nanoscale pn Junctions** *H.N. Tan[1], S. Purwiyanti[1,2], D. Moraru[1], L.T. Anh[3], M. Manoharan[3], T. Mizuno[1], H. Mizuta[3,4], D. Hartanto[2] and M. Tabe[1], [1]Shizuoka Univ., [2] Univ of Indonesia, [3] JAIST and [4]Univ of Southampton (Japan)*	**17:10 J-4-3** **On the Importance of Electron-electron Scattering for Hot-carrier Degradation** *S. Tyaginov[1,2], M. Bina[1], J. Franco[3], B. Kaczer[3] and T. Grasser[3], [1]Inst. for Microelectronics, TU Wien, [2] Ioffe Physical-Technical Inst. and [3]imec (Austria)*	**17:15 K-4-3** **Detection of Cysteine in Water using an Extended-gate Organic Field Effect Transistor** *T. Minami, T. Minamiki, K. Fukuda, D. Kumaki and S. Tokito, Yamagata Univ. (Japan)*			**17:30 P-4-3** **Resistivity of Graphene Nanowires: Requirements of Quality and Doping for Inter-Connect Applications** *H. Miyazaki[1], M. Katagiri[1], M. Takahashi[1], Y. Yamazaki[1], D. Nishide[1], T. Matsumoto[1], M. Wada[1], N. Sakuma[1], K. Ueno[2], R. Matsumoto[3], A. Kajita[1] and T. Sakai[1], [1]LEAP, [2] Shibaura Inst. of Tech. and [3]Tokyo Polytechnic Univ. (Japan)*
17:15 H-4-4 **Resistance Switching Behavior of ZnO Resistive RAM (RRAM) with a Reduced Graphene Oxide capping layer** *C.L. Lin, W.Y. Chang, Y.L. Huang, T.W. Wang and K.Y. Hung, Feng Chia Univ. (Taiwan)*		**17:30 K-4-4** **OTFT Circuit Design for Actuator Driving Control in an Organic Fluid Pump** *L. Chen, T.K. Maiti, H. Miyamoto, M. Miura–Mattausch and H.J. Mattausch, Hiroshima Univ. (Japan)*			

POSTER SESSION

(14:00-16:00, Multi-Purpose Hall and 102)

Area 1: Advanced LSI Processing & Materials Science

(15 papers)

PS-1-1
High Mobility Ultrathin GeSn (111) pMOSFETs by Solid Phase Epitaxy
T. Maeda[1], W. Jevasuwan[1], H. Hattori[1], N. Uchida[1], S. Miura[2], M. Tanaka[2], J.P. Locquet[3] and R. Lieten[3,4,5], [1]AIST, [2] Yokohama National Univ., [3] KU Leuven, [4] IMEC and [5]Entegris (Japan)

PS-1-2
Electrically Active Defects in GeSnSi/Ge Junctions Formed at Low Temperature
N. Taoka[1,2], T. Asano[2], T. Yamaha[2], T. Terashima[2], S. Asaba[2], O. Nakatsuka[2], P. Zaumseil[1], G. Capellini[1], T. Schroeder[1] and S. Zaima[2], [1]IHP and [2]Nagoya Univ. (Germany)

PS-1-3
Effect of Kr/O_2 Mixed ECR Plasma Oxidation on Electrical Properties of Al_2O_3/Ge Gate Stacks Fabricated by ALD
Y. Nagatomi, Y. Nagaoka, K. Yamamoto, D. Wang and H. Nakashima, Kyushu Univ. (Japan)

PS-1-4
High-k／Ge Interface Passivation Using Cycling Ozone Oxidation
X. Yang[1,2], S.K. Wang[1], L. Han[1,2], X. Zhang[2], B. Sun[1], H.D. Chang[1], W. Zhao[1], Z.H. Zeng[1,2], H.G. Liu[1] and Y.P. Cui[2], [1]Inst. of Microelectronics of Chinese Academy of Science and [2]Univ. of Southeast (China)

PS-1-5
Flexible Silicon-Germanium Devices With High-k/Metal Gate Stacks For Next Generation High Hole Mobility Channel Devices
J.M. Nassar, A.M. Hussain, J.P. Rojas and M.M. Hussain, King Abdullah Univ. of Science and Technology (KAUST) (Saudi Arabia)

PS-1-6
Transformation of Holes Emission Paths under Negative Bias Temperature Stress in Deeply Scaled pMOSFETs
Y. Liao[1], X. Ji[1], Q. Guo[2] and F. Yan[1], [1]Nanjing Univ. and [2]Wuhan Xinxin Semiconductor Manufac. Company (China)

PS-1-7
Thickness Dependences of Stress, Poisson's Ratio and Longitudinal Optical Phonon Lifetime in Ultrathin Strained-Silicon-on-Insulator
V. Poborchii, M. Hara and T. Tada, AIST (Japan)

PS-1-8
Assessment of Self Heating Effect (SHE) on Negative Bias Temperature Instability in SOI FinFETs under Circuit Operation
H. Jiang, Z.Y. Lun, B. Chen, G. Du, X.Y. Liu and X. Zhang, Peking Univ. (China)

PS-1-9
The Impact of Positive Bias Temperature Instabilities on Stacked High-k/Metal Gate Transistor with TiN Barrier Layer
D.C. Huang[1], J. Gong[2], C.F. Huang[1] and S.S. Chung[3], [1]National Tsing Hua Univ., [2] Tunghai Univ. and [3]NCTU (Taiwan)

PS-1-10
Recovery of Interface States Generated by Hot-Carrier Stress
Y. Yonamoto, Hitachi, Ltd. (Japan)

PS-1-11
Reliability of Polycrystalline HfO_2 Thin Films Directly Bonded to Si Substrates
R. Hasunuma, Y. Tomura and K. Yamabe, Univ. of Tsukuba (Japan)

PS-1-12 (Late News)
Fabrication of High Performance Single-Crystalline Silicon Thin Film Transistors on a Polyethylene Terephthalate Substrate
K. Sakaike[1], M. Akazawa[1], A. Nakagawa[1] and S. Higashi[1,2], [1]Dept. of Semiconductor Electronics and Integration Science, Graduate School of Advanced Sciences of Matter, Hiroshima Univ. and [2]Research Inst. for Nanodevice and Bio Systems, Hiroshima Univ. (Japan)

PS-1-13 (Late News)
Toward 1-nm-EOT $Hf_{0.5}Zr_{0.5}O_2$ Ferroelectric Films
T. Nishimura, T. Yajima, K. Nagashio and A. Toriumi, Univ. of Tokyo (Japan)

PS-1-14 (Late News)
Si-substrate-based High Mobility Ge-pMOSFETs Using Ozone Passivated Al_2O_3/GeO_x Gate Dielectric
S.K. Wang[1], X. Yang[1,2], Z. Gong[1], R. Liang[3], B. Sun[1], W. Zhao[1], H. Chang[1], J. Wang[3] and H.G. Liu[1], [1]Inst. of Microelectronics of Chinese Academy of Sci., [2] Southeast Univ. and [3]Tsinghua Univ. (China)

PS-1-15 (Late News)
Properties of Ultrathin Body Condensation GOI Films Thinned by Additional Thermal Oxidation
W.K. Kim[1, 2], M. Takenka[1, 2] and S. Takagi[1, 2], [1]Univ. of Tokyo and [2]JST-CREST (Japan)

Area 2: Advanced Interconnect and 3D Integration/ Materials and Characterization

(4 papers)

PS-2-1
Joule Heating Induced Bonding Interface Improvement and Ti Breakthrough by Electron Bombardment for 40-μm Pitch of Cu TSV and Cu/Sn μ-Bump Pair
Y.J. Chang[1], Y.S. Hsieh[1], C.T. Ko[1,2], W.C. Lo[2], F.Y. Ouyang[3], C.S. Wu[4], Y.M. Cheng[4], W.J. Chen[4] and K.N. Chen[1], [1]NCTU, [2] Electronics and Optoelectronics Res. Lab., ITRI, [3] Department of Engineering and System Science, National Hsing Hua Univ. and [4]Metal Industries R&D Centre (Taiwan)

PS-2-2
Influence of Lateral Stress on Interdiffusion in Thin Cr/Au Film
J. He, X. Huang, L. Zhang, D. Zhao, W. Hu and D. Zhang, Peking Univ. (China)

PS-2-3
Measurement on Interfacial Adhesion Property of Low-k Thin Film by the Surface Acoustic Waves Using the Cohesion Zone Model
X. Xiao[1], Y. Tao[1] and T. Kikkawa[2], [1]Univ. of Tianjin and [2]Hiroshima Univ. (China)

PS-2-4 (Late News)
Vacuum Ultraviolet (VUV) / Vapor-Assisted Bonding for Organic / Inorganic Hybrid Integration
A. Shigetou[1], M. Ajayan[1,2], J. Mizuno[2] and S. Shuichi[2], [1]National Inst. for Mater. Sci. and [2]Waseda Univ. (Japan)

Area 3: CMOS Devices / Device Physics

(12 papers)

PS-3-1
Extraction of Source/Drain Series Resistance Components Optimized for Double-gate FinFETs.
J.–S. Yoon, E.–Y. Jeong, S.–H. Lee, Y.–R. Kim, J.–H. Hong, J.–S. Lee and Y.–H. Jeong, Pohang Univ. of Sci. and Tech. (Korea)

PS-3-2
Impact of Surface Oxide Layer on Band Structure Modulation in Si Quantum Well Structures
T. Mizuno[1], Y. Suzuki[1], M. Yamanaka[1], Y. Nagamine[1], Y. Nakahara[1], Y. Nagata[1], T. Aoki[1] and T. Maeda[2], [1]Kanagawa Univ. and [2]AIST (Japan)

PS-3-3
Strain Effects on Monolayer MoS_2 Field Effect Transistors
L. Zeng[1], Z. Xin[2], P.Y. Chang[2] and X.Y. Liu[1], [1]Inst. of Microelectronics, Peking Univ. and [2]School of Electronic and Computer Engineering, Peking Univ. (China)

PS-3-4
Impact of Trap Behavior in High-k/Metal Gate p-MOSFET with Incorporated Fluorine on Low-Frequency Noise Characteristics
T.–H. Kao[1], S.–L. Wu[2], C.–Y. Wu[2], Y.–K. Fang[1], P.–C. Huang[1], C.–M. Lai[3], C.–W. Hsu[3], Y.–W. Chen[3], O. Cheng[3] and S.–J. Chang[1], [1]National Cheng Kung Univ., [2] Cheng Shiu Univ. and [3]United Microelectronics Corp. (Taiwan)

PS-3-5
Initial and Long-Term Frequency Degradation on Ring Oscillators from Plasma Induced Damage in 65 nm Bulk and Silicon On Thin BOX Processes
R. Kishida, A. Oshima, M. Yabuuchi and K. Kobayashi, Kyoto Inst. of Tech. (Japan)

PS-3-6
Gate Voltage Dependent 1/f Noise Variance Model in n-Channel MOSFETs
Y. Arai, H. Aoki, F. Abe, S. Todoroki, R. Khatami, M. Kazumi, T. Totsuka, T. Wang and H. Kobayashi, Gunma Univ. (Japan)

PS-3-7
Electrical Characteristics of Novel Junctionless FinFET Utilizing Trench Structure for Extreme Scaling
M.–S. Yeh, Y.–C. Wu, M.–H. Wu, Y.–R. Jhan and M.–H. Chung, National Tsing Hua Univ. (Taiwan)

PS-3-8
Dopant Drive-in Path Analysis in Poly-Silicon Filled in Trench Type 3D-MOSFET using Atom Probe Tomography
K. Inoue[1], H. Takamizawa[1], Y. Shimizu[1], B. Han[1], Y. Nagai[1], F. Yano[2], Y. Kunimune[3], M. Inoue[4] and A. Nishida[4], [1]Tohoku Univ., [2] Tokyo City Univ., [3] Renesas Semiconductor Manufacturing Co., Ltd. and [4]Renesas Electronics Corp. (Japan)

PS-3-9
High Performance Germanium n^+/p Shallow Junction for the Scaled nMOSFET
C. Wang, C. Li, W. Huang, S.Y. Chen and H.K. Lai, Xiamen Univ. (China)

PS-3-10
Investigation of Low-Frequency Noise in High-k First/Metal Gate Last HfO_2 and ZrO_2 nMOSFETs
S.L. Wu[1], B.C. Wang[2], Y.Y. Lu[1], S.C. Tsai[2], J.F. Chen[2], S.J. Chang[2,3], S.P. Chang[2,3], C.H. Hsu[4], C.W. Yang[4], C.G. Chen[4], O. Cheng[4] and P.C. Huang[2,3], [1]Cheng Shiu Univ., [2] Inst. of Microelectronics and Department of Electrical Engineering, National Cheng Kung Univ., [3] Advanced Optoelectronic Tech. Center, National Cheng Kung Univ. and [4]United Microelectronics Corp. (Taiwan)

PS-3-11
New Concept of Planar Germanium MOSFET with Stacked Germanide Layers at Source/Drain
H. Xu, L. Sun, Y.–B. Zhang, Y.–Q. Xia, J.–W. Han, Y. Wang and S.–D. Zhang, Peking Univ. (China)

PS-3-12
Physical DC and Thermal Noise Models of 18 nm DG Junctionless pMOSFETs
E.–Y. Jeong[1], M.J. Deen[2], C.–H. Chen[2], R.–H. Beak[3], J.–S. Lee[1] and Y.–H. Jeong[1], [1]Pohang Univ. of Sci. and Tech., [2]McMaster Univ. and [3]SEMATECH (Korea)

Area 4: Advanced Memory Technology
(13 papers)

PS-4-1
The Impact of Inserted Ta Ultra-thin Layer on the Resistive Switching Voltage in Ir/Ti/Ta/HfO_2/TiN/Ti/SiO_2/Si Devices
S. Asanuma, H. Shima, M. Yamazaki, N. Hata and H. Akinaga, AIST (Japan)

PS-4-2
A Possible Bipolar HfO_x Resistive Memory Device with Self-Rectification - Observations from STM Study
Y. Zhou, K.S. Yew and D.S. Ang, Nanyang Tech. Univ. (Singapore)

PS-4-3
Rectifying Characteristics of Sol-gel derived TiO_x thin films for 1D-1R Resistance Switching Memory Applications
J.H. Kim, K.H. Nam, T.J. Ha, W.J. Cho and H.B. Chung, Kwangwoon Univ. (Korea)

PS-4-4
Scanning Tunneling Microscopy Study of the Bipolar Resistance Switching Characteristics of Nanoscopic Conductive Filament for HfO_2-based MIM stack
K.S. Yew, Y. Zhou and D.S. Ang, Nanyang Tech. Univ. (Singapore)

PS-4-5
La/Al-doped ZrO_2 Thin-Film Resistive Random Access Memory Devices by Sol-gel Method for Transparent Solid-State Circuit Systems
Y.R. Wang[1], B. Chen[1], B. Gao[1], L.F. Liu[1] and J.F. Kang[1], Peking Univ. (China)

PS-4-6
Improvement of Unipolar Resistive Switching by N_2 Annealing in Ni/ZrO_2/TaN Memory Device
T.L. Tsai, T.H. Ho and T.Y. Tseng, NCTU (Taiwan)

PS-4-7
Switching Properties in ZrO_2-Based Resistive Switching Device
U. Chand, C-Y. Huang, J.S. Meena and T.-Y. Tseng, NCTU (Taiwan)

PS-4-8
A Measurement of Ratio-less 12-transistor SRAM cell Operation at Ultra-low Supply-voltage
T. Kondo, H. Yamamoto, H. Imi, H. Okamura and K. Nakamura, Kyushu Inst. of Tech. (Japan)

PS-4-9
Enhanced Erasing Performance of Ω-Gate P-Channel Junctionless Fin-FET SOncOS Nonvolatile Memory
M.S. Yeh, Y.C. Wu, M.H. Chung, Y.R. Jhan and M.H. Wu, National Tsing Hua Univ. (Taiwan)

PS-4-10
Stochastic Model for SPICE simulation about Resistance Distribution of Magnetic Tunnel Junction
G.H. Kil[1], J.T. Choi[1], C.M. Choi[1], H. Sukegawa[2], S. Mitani[2] and Y.H. Song[1], [1]Hanyang Univ. and [2]NIMS (Korea)

PS-4-11
Reliability Modeling of Magnetic Tunnel Junction using MgO Barrier
J.M. Lee[1], C.M. Choi[1], Y.T. Oh[1], H. Sukegawa[2], S. Mitani[2] and Y.H. Song[1], [1]Hanyang Univ. and [2]NIMS (Korea)

PS-4-12 (Late News)
Find Filament in ReRAM using Thermal Analysis
M. Uenuma, I. Yamashita and Y. Uraoka, NAIST (Japan)

PS-4-13 (Late News)
Multilevel Storage and its Cycling in $Ge_1Sb_4Te_7$ Phase-Change Memory
Y. Yin[1], S. Iwashita[2] and S. Hosaka[1], [1]Divi. of Electronics and Informatics, Gunma Univ. and [2]Dept. Production of Science and Technology, Gunma Univ. (Japan)

Area 5: Advanced Circuits and Systems
(13 papers)

PS-5-1
A Characterization Method of On-Chip Tee-Junction for Millimeter-Wave CMOS Circuit Design
K.K. Tokgoz, N. Fajri, Y. Seo, S. Kawai, K. Okada and A. Matsuzawa, Tokyo Tech (Japan)

PS-5-2
Diode Modeling with Lossy Nonlinear Capacitance Model
R. Nahara, K. Katayama, K. Takano, S. Amakawa, T. Yoshida and M. Fujishima, Univ. of Hiroshima (Japan)

PS-5-3
A Comprehensive Modeling of Skin and Proximity Effects for mm-wave Inductors Simulation and Design in Nanoscale CMOS Technology
J.C. Guo and R.J. Chan, NCTU (Taiwan)

PS-5-4
A Novel Electromechanical Model of a MEMS Energy Harvesting Device for a Multi-physics Simulation Platform on a Circuit Simulator
T. Konishi[1], T. Matsushima[1], D. Yamane[2], K. Masu[2], H. Toshiyoshi[3] and K. Machida[1,2], [1]NTT Advanced Tech. Corp., [2]Tokyo Tech and [3]Univ. of Tokyo (Japan)

PS-5-5
SoC Realization of LVQ Neural Network with On-chip Learning and Recognition
F. An, T. Akazawa, S. Yamazaki, L. Chen and H.J. Mattausch, Hiroshima Univ. (Japan)

PS-5-6
Digital Word-Parallel Low-Power Recognition SoC for Mobile Equipment Based on Nearest Euclidean Distance Search and KNN Classification
S. Yamasaki, T. Akazawa, F. An and H.J. Mattausch, Univ. of Hiroshima (Japan)

PS-5-7
Design Guidelines of All Storage Class Memory (SCM) SSD and Hybrid SCM/NAND Flash SSD to Balance Performance, Power, Endurance and Cost
T. Onagi[1], C. Sun[1,2] and K. Takeuchi[1], [1]Chuo Univ. and [2]Univ. of Tokyo (Japan)

PS-5-8
A High-frequency Level-up Shifter Based on 0.18μm Vertical MOSFETs with More than 70% Reduction of Overshoot-voltage Above VDD
S. Tanoi[1,2] and T. Endoh[1,2], [1]Tohoku Univ. and [2]ACCEL, JST (Japan)

PS-5-9
Dynamically Reconfigurable Non-Volatile Multi-Context FPGA with CAAC-OS-based Programmable Routing Switches
N. Bjorklund[1,2], Y. Okamoto[1], T. Aoki[1], M. Kozuma[1], Y. Kurokawa[1], T. Ikeda[1], N. Yamade[1], Y. Okazaki[1], H. Miyairi[1], M. Fujita[3] and S. Yamazaki[1], [1]Semiconductor Energy Lab. Co., Ltd., [2]Linkoping Univ. and [3]Univ. of Tokyo (Japan)

PS-5-10
A Dual-Mode Active Pixel Sensor for Low-Light-Level Detection Using a Hybrid Photodetector
S. Lee, S.H. Jo, M. Bae, B.S. Choi and J.K. Shin, Kyungpook National Univ. (Korea)

PS-5-11
Multichannel Capacitance to Voltage Converter for Pressure Sensor Front-end
R. Kuguminato[1], T. Matsuda[1], K. Izumi[1], H. Iwata[1], M. Mizushima[2] and T. Obata[3], [1]Toyama Pref. Univ., [2]Oga Inc. and [3]Toyama Industrial Technology Center (Japan)

PS-5-12
Pulse-Output Readout Circuit with Temperature Compensation for a Temperature-Dependent Input Voltage
R.L. Wang[1], C. Yu[1], W.D. Wu[1], Y.F. Hao[1], J.L. Shi[1], 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-5-13 (Late News)
Studies on Response Speed and Sensitivity of Two-Dimensional Integrated Magnetic Sensor
T. Kimura, K. Uno and T. Masuzawa, Ibaraki Univ. (Japan)

Area 6: Compound Semiconductor Electron Devices & Related Technologies
(18 papers)

PS-6-1
Comparison of Power Gain Performance between Conventional and Independently Biased HBT Cascode Chips
D.M. Luong, K. Honjo, Y. Takayama and R. Ishikawa, Univ. of Electro-Communications (Japan)

PS-6-2
Fluorinated Al_2O_3 Gate Dielectric Engineering on GaSb MOS Devices
Z.H. Zeng[1,2], B. Sun[1], H.D. Chang[1], W. Zhao[1], X. Yang[1,2], S.K. Wang[1], X. Zhang[2], Y.P. Cui[2] and H.G. Liu[1], [1]Inst. of Microelectronics of Chinese Academy of Sciences and [2]Southeast Univ. (China)

PS-6-3
InGaSb Buried-Channel pMOSFET Fabricated by Using Digital Etch Technique
B. Sun[1], Z.H. Zeng[1,3], H.D. Chang[1], S.K. Wang[1], W.X. Wang[2] and H.G. Liu[1], [1]Inst. of Microelectronics of Chinese Academy of Sciences, [2]Inst. of Physics, Chinese Academy of Sciences and [3]Southeast Univ. (China)

PS-6-4
Characterization of GaAs Surface State by Hard X-ray Photoemission Spectroscopy
Y. Saito, J. Iihara, T. Yonemura, K. Yamaguchi and D. Tsurumi, Sumitomo Electric Industries, Ltd. (Japan)

PS-6-5
High-frequency Performance $In_{0.49}Ga_{0.51}P/In_{0.4}Ga_{0.6}As$ MOSFET
J.H. Zhou[1,2], H.D. Chang[2], G.M. Liu[2], H.O. Li[1] and H.G. Liu[2], [1]Guangxi Experiment Center of Info. Sci. , Guilin Univ. of Electronic Tech. and [2]Microwave Device and IC Department, Inst. of Microelectronics of Chinese Academy of Sciences (China)

PS-6-6
Reduction of Initial Threshold Voltage Shift in ALD-Al_2O_3/AlGaN/GaN MIS-HEMTs on Si Substrates by Post-deposition Annealing
T. Kubo, J. Freedsman, Y. Yoshida and T. Egawa, Nagoya Inst. of Tech. (Japan)

PS-6-7
Observation of Drain Current Instability on p-GaN Gate AlGaN/GaN HEMTs
T.F. Chang[1], T.C. Hsiao[1], C.F. Huang[1], C.W. Chiu[2], T.Y. Yang[2], T.Y. Huang[2], Y.C. Liang[3] and G. Samudra[3], [1]Nat'l Tsing Hua Univ., [2]Richtek Tech. Corp. and [3]Nat'l Univ. of Singapore (Taiwan)

PS-6-8
Study of HfO_2/AlGaN/GaN MOS-HEMT for High Power Application
W.C. Lan[1], P.C. Chin[1], Y.C. Lin[2], J.S. Maa[3] and E.Y. Chang[2,4], [1]1Inst. of Photonic System, NCTU, [2] 2Inst. of Materials Sci. and Eng.,NCTU, [3] Inst. of Lighting and Energy Photonics NCTU and [4]Inst. of Electronics Engineering, NCTU (Taiwan)

PS-6-9
Electrical Characteristic Simulation of Novel AlGaN/GaN Vertical HEMT with Multi-Aperture and SiO_2 Current Blocking Layer
N.M. Shrestha, Y.Y. Wang, Y. Li and E.Y. Chang, NCTU (Taiwan)

PS-6-10
Reduction in Mobility Difference between C-Axis-Aligned Crystalline IGZO-FET and Si-FET by Miniaturization
S. Matsuda, Y. Yamane, Y. Okazaki, T. Ishizu, Y. Kobayashi, H. Suzawa, A. Isobe and S. Yamazaki, Semiconductor Energy Laboratory Co., Ltd. (Japan)

PS-6-11
Fabrication and Characteristics of Fully–Transparent Al–Sn–Zn–O TFTs Fabricated on Glass at Low Temperature
Y.Y. Cong[1], D.D. Han[1], J. Wu[1,2], N.N. Zhao[1,2], Z.F. Chen[1,2], F.L. Zhao[1,2], J.C. Dong[1,2], S.D. Zhang[2], X. Zhang[1] and Y. Wang[1], [1]Inst. of Microelectronics, Peking Univ. and [2]Shenzhen Graduate School, Peking Univ. (China)

PS-6-12
Characteristics of Submicron Indium-Tin-Oxide Thin-Film Transistors Fabricated by Film Profile Engineering
Y.A. Huang[1], H.C. Lin[1,2] and T.Y. Huang[1], [1]NCTU and [2]National Nano Device Labs. (Taiwan)

PS-6-13
Fabrication of High Performance Ultra-thin body SnO_2 Thin-Film-Transistors (TFTs) using Microwave Annealing
S.W. Moon, H.J. Jang and W.J. Cho, Department of Electronic Materials Eng, Kwangwoon Univ. (Korea)

PS-6-14
Fully Transparent Dual-active-layer ITO/TZO TFT Fabricated on Glass Substrate at low-temperature
Z.F. Chen[1,2], D.D. Han[2], N.N. Zhao[1,2], J. Wu[1,2], Y.Y. Cong[2], J.C. Dong[1,2], F.L. Zhao[1,2], S.D. Zhang[1,2], X. Zhang[1,2], Y. Wang[2] and L.F. Liu[2], [1]Shenzhen Gradnate School, Peking Univ. and [2]Inst. of Microelectronics, Peking Univ. (China)

PS-6-15
A Comparison of Photo-Induced Hysteresis between Hydrogenated Amorphous Silicon and Amorphous IGZO Thin-Film Transistors
T.J. Ha, J.H. Kim, W.J. Cho and H.B. Chung, Kwangwoon Univ. (Korea)

PS-6-16 (Late News)
Ideal transport characteristics of Schottky contacts on AlGaN/GaN structure grown on free-standing SI-GaN substrate
T. Nanjo, K. Kurahashi, M. Tanaka, A. Kiyoi, A. Imai, M. Suita, Y. Suzuki, T. Tanaka and E. Yagyu, Mitsubishi Electric Corp. (Japan)

PS-6-17 (Late News)
Physical Mechanism of Source and Drain Resistance Reduction in Oxide TFT ~Towards High-Performance Short-Channel InGaZnO TFT~
K. Ota, K. Sakuma, T. Irisawa, C. Tanaka, D. Matsushita and M. Saitoh, Toshiba Corp. (Japan)

PS-6-18 (Late News)
The reading operation of quantum dot memory devices using photocurrent detection in strain relaxation InAs quantum dots
J.-F. Wang, C.-L. Lin, S.-S. Pan, C.-P. Huang, C.-S. Hsieh and J.-F. Chen, National Chiao Tung Univ. (Taiwan)

Area 7: Photonic Devices and Related Technologies
(14 papers)

PS-7-1
Structure Dependence of over 10 GHz Lateral Si-PIN Photodiode Fabricated by CMOS Compatible Process
G. Li, K. Maekita, T. Maruyama and K. Iiyama, Kanazawa Univ. (Japan)

PS-7-2
A Silicon Schottky Photodetector Made Directly on a Silicon Fiber
Y.P. Huang, S.H. Chen and L.A. Wang, National Taiwan Univ. (Taiwan)

PS-7-3
A Novel Method of Fabricating Silicon Microsphere Resonators for High Quality-Factor Whispering-Gallery-Mode Generation
C.A. Lin, J.H. Chen and L.A. Wang, National Taiwan Univ. (Taiwan)

PS-7-4
All-Optical-Gate-Type Mode-Locked Few-Picosecond Pulsed Laser with Externally Injected, Weakly Modulated Optical Seed
K. Nagahiro, T. Nakane, H. Itagaki, T. Shibuya, K. Hirai and Y. Ueno, Univ. of Electro-Communications (Japan)

PS-7-5
Modes Selection in a Semiconductor Circular Ring Laser Diode by Perturbation at the Active Soliton Cavity
M.C. Shih, C.L. Yen, J.Z. Luo and W.H. Lan, National Univ. of Kaohsiung (Taiwan)

PS-7-6
Ge/Si/Ge Potential Barrier Structure for Bolometer in Uncooled Infrared Image Sensor
J. Takarada, T. Oda and A. Furukawa, Tokyo Univ. of Sci. (Japan)

PS-7-7
GaAs/AlAs Triple-Coupled Cavity with InAs Quantum Dots for an Ultrafast Wavelength Conversion Device via the Four-Wave-Mixing
M. Ogarane[1], Y. Yasunaga[1], Y. Nakagawa[1,2], K. Morita[1,3], T. Kitada[1] and T. Isu[1], [1]Univ. of Tokushima, [2]NICHIA Corp. and [3]Chiba Univ. (Japan)

PS-7-8
The Improvement of Surface Current of 2.6 μm InGaAs Photodetectors by Using ICPCVD Technology
X. Ji[1], B. Liu[1], H. Tang[2], X. Li[2], M. Shi[2], Y. Zhou[1], Y. Xu[1], H. Gong[2] and F. Yan[1], [1]Nanjing Univ. and [2]Chinese Academy of Sci. (China)

PS-7-9
GaN Metal-Insulator-Semiconductor Ultraviolet Photodetectors with a Magnesium Fluoride Insulator
C.H. Chen, W.C. Lin and J.F. He, Cheng Shiu Univ. (Taiwan)

PS-7-10
Optical Property of Triangle-Shaped GaN Microdisk Array with Triangular Lattice
S. Suzuki[1], 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)

PS-7-11
Hydrothermal Growth of Quasi-Crystalline ZnO Thin Films and Theirs Application in Ultraviolet Photodetectors
Y.C. Tu[1], S.J. Wang[1], R.W. Wu[1], T.C. Tsai[1], T.H. Lin[1], C.H. Hung[1], K.M. Uang[2] and T.M. Cheng[2], [1]National Cheng Kung Univ. and [2]WuFeng Univ. (Taiwan)

PS-7-12
High Pockel's Coefficient for Poled Polymer in Multilayered Electro-Optical Device
Y. Jouane[1], Y.C. Chang[1], D. Zhang[1], A.K.Y. Jen[2] and Y. Enami[1], [1]Kochi Univ. of Tech. and [2]Univ. of Washington (Japan)

PS-7-13
Electro-Optic Polymer/TiO_2 Slot Waveguide Modulators Driven with Low Half-Wave Voltage
Y. Enami[1], Y. Jouane[1], D. Zhang[1], Y.C. Chang[1], J. Luo[2] and A.K.Y. Jen[2], [1]Kochi Univ. of Tech. and [2]Univ. of Washington (Japan)

PS-7-14
Scaling Study of Antenna-Coupled Microbolometer
A. Tiwari[1], H. Satoh[1], M. Aoki[2], M. Takeda[2], N. Hiromoto[2] and H. Inokawa[1], [1]Research Institute of Electronics, Shizuoka Univ. and [2]Graduate School of Engineering, Shizuoka Univ. (Japan)

Area 8: Advanced Material Synthesis and Crystal Growth Technology
(18 papers)

PS-8-1
Morphological and Structural Observation of Ni and Fe Clusters on $SrTiO_3$ (001) and (110) surfaces
M. Tanaka, NIMS (Japan)

PS-8-2
Growth and Optical Properties of GaSb/GaAs type-II Quantum Dots with and without Wetting Layer
T. Kawazu[1], T. Noda[1], M. Mano[1], Y. Sakuma[1] and H. Sakaki[1,2], [1]NIMS and [2]Toyota Tech. Inst. (Japan)

PS-8-3
Low-temperature Formation of nc-Si in SiO_x by Soft X-ray Irradiation
F. Kusakabe[1], S. Hirano[1], A. Heya[1], N. Matsuo[1], K. Kanda[2], T. Mchizuki[2], K. Kohama[3] and K. Ito[3], [1]Univ. of Hyogo, [2]LASTI, Univ. of Hyogo and [3]Osaka Univ. (Japan)

PS-8-4
Soft X-ray Crystallization of $Si_{1-x}Ge_x$ Multilayer Films
A. Heya[1], F. Kusakabe[1], N. Matsuo[1], K. Kanda[2], T. Motizuki[2], M. Takahashi[3] and K. Ito[3], [1]Univ. of Hyogo, [2]LASTI, Univ. of Hyogo and [3]Osaka Univ. (Japan)

PS-8-5 (Late News)
A self-aligned Ge/SiO_2/$Si_{0.4}Ge_{0.6}$ gate-stacking heterostructure generated in a single fabrication step
W.-T. Lai[1], K.-C. Yang[1], T.-C. Hsu[1], P.-H. Liao[1], T. George[2] and P.-W. Li[1], [1]National Central Univ. and [2]Private Consultant (Taiwan)

PS-8-6
Synthesis, Characterization and Carrier Transport Properties of Crystalline Ge Nanowires Growth with Ag-Based Catalysts
R. C. Gouveia[1,2], H. Kamimura[1], A. G. Rodrigues[1] and A. J. Chiquito[1], [1]Federal Univ. of São Carlos and [2]Instituto Federal de Educação Ciência e Tecnologia de São Paulo (Brazil)

PS-8-7
Evolution of TiO_2 Nanostructures from Nucleation to Nanorods by Hydrothermal Growth Method
Y.C. Huang[1], R.M. Ko[2], S.J. Wang[1] and Y.R. Lin[3], [1]Department of Electrical Engineering, National Cheng Kung Univ., [2]Advanced Optoelectronic Tech. Center, National Cheng Kung Univ. and [3]Ming Chi Univ. of Tech. (Taiwan)

PS-8-8
High Electron Mobility, Low Carrier Concentration of Hydrothermally Grown ZnO Thin Films on Seeded a–Plane Sapphire at Low Temperature
N.A. Jayah[1], H. Yahaya[1], M.R. Mahmood[2], T. Terasako[3], K. Yasui[4] and A.M. Hashim[1], [1]Univ. Teknologi Malaysia, [2]Univ. Teknologi MARA, [3]Ehime Univ. and [4]Nagaoka Univ. of Tech. (Malaysia)

PS-8-9
Growth of V-doped ZnO Thin Films with Two-layer Structure on a-Al_2O_3 by RF Magnetron Sputtering
H. Chiba, T. Kawashima and K. Washio, Tohoku Univ. (Japan)

PS-8-10
Effects of Annealing on In-Ga-Zn-Oxide Films
K. Okazaki[1], H. Kanemura[1], Y. Hosaka[1], T. Obonai[1], M. Oota[2], M. Takahashi[2], S. Nishino[2] and S. Yamazaki[2], [1]Advanced Film Device Inc. and [2]Semiconductor Energy Lab. Co., Ltd. (Japan)

PS-8-11
Synthesis, Microstructure, Optical and Magnetic Properties of Ge-doped $CuFeO_2$ Delafossite Oxide
T. Kamwanna, L. Naka–in, P. Srepusharawoot, S. Pinitsoontorn and V. Amornkitbamrung, Khon Kaen Univ. (Thailand)

PS-8-12
(001) Orientation Single Crystalline PZT Pyroelectric Nanorod Array Synthesized by Hydrothermal Reaction
C.G. Wu, Q.X. Peng, J. Meng, X.Y. Sun, Y. Shuai, J.Q. Cao, W.B. Luo and W.L. Zhang, Univ. of Electronic Sci. and Tech. of China (China)

PS-8-13
Enhancement of Pyroelectric PZT Thick Film Sintered at Low Temperature on Pt-Si Substrate by Adding $Pb_5Ge_3O_{11}$
C.G. Wu, Q.X. Peng, J. Meng, X.Y. Sun, Y. Shuai, J.Q. Cao, W.B. Luo and W.L. Zhang, Univ. of Electronic Sci. and Tech. of China (China)

PS-8-14
Effects of Pr Doping on the Scintillation Properties of $CeBr_3$ Crystals Grown by the Modified Micro-Pulling-Down Method
T. Ito[1], Y. Yokota[2], S. Kurosawa[1,2], K. Kamada[2,3], J. Pejchal[2,4], Y. Ohashi[1] and A. Yoshikawa[1,2,3], [1]IMR, Tohoku Univ., [2]NICHe, Tohoku Univ., [3]C&A Corp. and [4]Inst. of Phys. AS CR (Japan)

PS-8-15
LiF/CaF_2/$LiBaF_3$ Ternary Fluoride Eutectic Scintillator
K. Hishinuma[1], K. Kamada[2,3], S. Kurosawa[1,2], A. Yamaji[1], J. Pejchal[2,4], Y. Yokota[2], Y. Ohashi[1] and A. Yoshikawa[1,2,3], [1]IMR, Tohoku Univ., [2]NICHe, Tohoku Univ., [3]C&A Corp. and [4]Inst. of Phys. AS CR, Cukrovarnicka (Japan)

PS-8-16
Improvement of Scintillation Properties on Ce doped $Y_3Al_5O_{12}$ scintillator by divalent cations co-doping
K. Kamada[1,2], A. Nagura[3], M. Nikl[4], S. Kurosawa[3], J. Pejchal[1,4], Y. Ohashi[3], Y. Yokota[1] and A. Yoshikawa[1,2,3], [1]NICHe, Tohoku Univ., [2]C&A Corp., [3]IMR, Tohoku Univ. and [4]Inst. of Phys. AS CR (Japan)

PS-8-17
Electrical Transport Properties in Ternary $NbMoS_2$ Layer crystals
H.P. Hsu[1], R.S. Chen[2], Y.H. Huang[2], C.C. Pung[2] and Y.S. Huang[2], [1]Ming Chi Univ. of Tech. and [2]National Taiwan Univ. of Sci. and Tech. (Taiwan)

PS-8-18
Behavior of Focused Ga^+ Beam Spot Milling and its Superimposition Propetry
H.M. Chen[1], P.J. Wu[2], K.Y. Shen[1] and C.H. Kuan[1,2], [1]Graduate Inst. of Electronics Engineering, National Taiwan Univ. and [2]Graduate Inst. of Biomedical Electronics and Bioinformatics, National Taiwan Univ. (Taiwan)

Area 9: Physics and Applications of Novel Functional Devices and Materials
(12 papers)

PS-9-1
Analysis of Single- and Double-barrier Tunneling Diode Structures using Ultra-thin-CaF_2/CdF_2/Si Multilayered Heterostructures Grown on Si
K. Suda, Y. Kuwata and M. Watanabe, Tokyo Tech (Japan)

PS-9-2
Diode like Behavior of IZO Junction with Superconducting Electrode at Low Temperatures
K. Makise[1] and B. Shinozaki[2], [1]NICT and [2]Univ. of Kyushu (Japan)

PS-9-3
Investigation and Mitigation of Work-Function Variation for III-V Heterojunction Tunnel FET
C.W. Hsu, M.L. Fan and P. Su, NCTU (Taiwan)

PS-9-4
High–performance Fully–transparent Ni–doped ZnO Thin–film Transistors Fabricated on Flexible Plastic Substrate at Low Temperature
L.L. Huang[1], D.D. Han[1], Z.F. Chen[1,2], Y.Y. Cong[1], J. Wu[1,2], N.N. Zhao[1,2], J.C. Dong[1,2], F.L. Zhao[1,2], L.F. Liu[1], S.D. Zhang[2], X. Zhang[1] and Y. Wang[1], [1]Inst. of Microelectronics, Peking Univ. and [2]Shenzhen Graduate School, Peking Univ. (China)

PS-9-5
Position Control of PbS Quantum Dot by Nanohole on Silicon Substrate
A. Hirota[1], S. Nakashima[1,2] and K. Mukai[1], [1]Yokohama National Univ. and [2]RIKEN Advanced Research Institute (Japan)

PS-9-6
Performance Enhancement of Colloidal Synthesis-Coated Au-Nanoparticle Nonvolatile Memory with Low Damage NH_3 Plasma Treatment on SiO_2 Tunneling Layer
C. Liao[1], Y. Liu[1], J. Wang[1], L. Chang[2] and C. Lai[1], [1]Chang Gung Univ. and [2]Ming Chi Univ. of Tech. (Taiwan)

PS-9-7
Single InGaN nanocolumn spectroscopy
K. Sekine, Y. Onoue, T. Yoshiike, K. Asami, S. Ishizawa, T. Nakaoka and K. Kishino, Sophia Univ. (Japan)

PS-9-8
Fabrication of 10-nm-Scale Nanoconstrictions in graphene using AFM-Based Local Anodic Oxidation Lithography
M. Arai[1], S. Masubuchi[1,2], K. Nose[1], Y. Mitsuda[1] and T. Machida[1,2], [1]IIS, Univ. of Tokyo and [2]INQIE, Univ. of Tokyo (Japan)

PS-9-9
Theoretical study of current fluctuation in multi-contact molecular bridge systems
S. Tsukuda and T. Nakayama, Chiba Univ. (Japan)

PS-9-10
Parameter Extraction by Microwave Characteristics of two-section Distributed feedback lasers
Y.C. Hwang, S.C. Hsu, Y.H. Lo, C.Y. Chien, H.C. Kuo and C.C. Lin, NCTU (Taiwan)

PS-9-11
High Detectivity Infrared Detectors Using Porous PZT Pyroelectric Thick Films
C.G. Wu, Q.X. Peng, X.Y. Sun, J. Meng, Y. Shuai, J.Q. Cao, W.B. Luo and W.L. Zhang, Univ. of Electronic Sci. and Tech. of China (China)

PS-9-12
Electric states in laterally and vertically arrayed Type-II Quantum Dots
T. Kawazu, NIMS (Japan)

Area 10: Organic Materials Science, Device Physics, and Applications
(15 papers)

PS-10-1
Measurement and Analysis of Annealing Effect on Parylene Dielectric Transistor
R. Shidachi[1], N. Take[1], L. Philida[1], T. Tokuhara[1], T. Yokota[1,2], T. Sekitani[1,2,3] and T. Someya[1,2], [1]Univ. of Tokyo, [2]JST and [3]Osaka Univ. (Japan)

PS-10-2
Improvement in Electronic Stability under Bending Stress in Flexible Organic TFT using Polymer Semiconductor
T. Sekine, K. Fukuda, D. Kumaki and S. Tokito, Research Center for Organic Electronics, Yamagata Univ. (Japan)

PS-10-3
Impact of Gate Coupling and Misalignment on Performance of Double-gate Organic Thin Film Transistors
J.W. Han, L. Sun, Y.Q. Xia, H. Xu, Y.B. Zhang, S.D. Zhang and Y. Wang, Peking Univ. (China)

PS-10-4
Charge-Transfer Behavior of Conducting Polymers as Contact Electrode for Semiconductor Devices
J. Kawakita, Y. Fujikawa, T. Nagata and T. Chikyow, NIMS (Japan)

PS-10-5
Dramatic Improvement of Bulk Heterojunction PTB7: $PC_{61}BM$ Organic Solar Cells by Adding Small Amounts of P3HT
Y. Ohori[1], T. Hoashi[1], S. Fujii[2], H. Kataura[2] and Y. Nishioka[1], [1]Nihon Univ. and [2]AIST (Japan)

PS-10-6
Electrochemical Deposition of ZnO Nanorods for Hybrid Solar Cells
J. Damasco Ty and H. Yanagi, NAIST (Japan)

PS-10-7
1,3,5-tri(phenyl-2-benzimidazole)-benzene Cathode Buffer Layer Effects on Solution-Processable Organic Solar Cell Based on 1,4,8,11,15,18,22,25-Octahexylphthalocyanine
G.D.R. Banoukepa[1], A. Fujii[1], Y. Shimizu[2] and M. Ozaki[1], [1]Osaka Univ. and [2]AIST (Japan)

PS-10-8
Cathode Buffer Layer Composed of Hyper-Branched Polymer Having Imidazoline Moieties for Organic Devices
K. Fujita, Y. Kimoto and T. Okada, Kyushu Univ. (Japan)

PS-10-9
Fabrication of Large-area Nano Metal Meshes by Strip-off Method
X. Fang[1], C.H. Lin[2], Y.T. Sun[1], H.W. Zan[3], H.F. Meng[4] and L.A. Wang[1], [1]Graduate Inst. of Photonics and Optoelectronics, National Taiwan Univ., [2]Inst. of Electronics Eng., National Tsing-Hua Univ., [3]Department of Photonics and Institute of Electro-Optics, NCTU and [4]Institute of Physics, NCTU (Taiwan)

PS-10-10
Variety of Emission Color Control for Coating and Self-Aligned Ink-jet Printed Small Molecules Organic Light-Emitting Diodes
T. Kanamori[1], S. Naka[1] and H. Okada[1,2], [1]Univ. of Toyama and [2]Center for Res. and Development in Natural Sciences (Japan)

PS-10-11
Low-Frequency Noise Characteristics of Metal-Organic-Metal Ultraviolet Sensors
P.Y. Su[1], R.W. Chuang[1], C.H. Chen[2] and T.H. Kao[1], [1]National Cheng Kung Univ. and [2]Cheng Shiu Univ. (Taiwan)

PS-10-12
Investigation of Localized SPR and Grating-coupled SPR Enhanced Photocurrent of TiO_2 Films
S. Nootchanat[1,2], H. Ninsonti[1,3], C. Thammacharoen[2], S. Ekgasit[2], K. Shinbo[1], K. Kato[1], F. Kaneko[1] and A. Baba[1], [1]Niigata Univ., [2]Chulalongkorn Univ. and [3]Chiang Mai Univ. (Japan)

PS-10-13
Investigation of Initial Deposition Stage of Small Molecule Alq_3 on ϋ-NPD Layer by Modified Electro-spray Deposition (ESD) Technique (nano-mist deposition: NMD)
Y. Takatsuka[1], T. Irie[1], D. Nishi[1] and A. Kikuchi[1,2], [1]Univ. of Sohpia and [2]Sophia Nanotechnology Research Center (Japan)

PS-10-14
Electric and Pyroelectric Properties of spin-coated Polyurea Films
M. Morimoto, Y. Koshiba, M. Misaki and K. Ishida, Kobe Univ. (Japan)

PS-10-15
Fabrication and Optical Anisotropy of Non-Peripheral Octahexylphthalocyanine Films with Large Mono-Domain
T. Higashi, M. Ohmori, M.F. Ramananarivo, H. Yoshida, A. Fujii and M. Ozaki, Osaka Univ. (Japan)

Area 11: Sensors and Materials for Biology, Chemistry and Medicine
(17 papers)

PS-11-1
Detection of PCR Products by Micro- and Nanoscale Field-Effect Transistors
M. Schwartz[1,3], T.C. Nguyen[1], X.T. Vu[1,2], P. Wagner[3] and S. Ingebrandt[1], [1]Univ. of Applied Sciences Kaiserslautern, [2]RWTH Aachen Univ. and [3]Hasselt Univ. (Germany)

PS-11-2
Surface Modified Poly-crystalline Silicon Nanowires Field Effect Transistor for Ammonia Gas Sensor
W.T. Kuo[1], Y.R. Lo[2], Y.S. Yang[2] and H.M.P. Chen[1,3], [1]Department of Photonics, NCTU, [2]Department of Biological Science and Technology, NCTU and [3]Institute of Biomedical Engineering, NCTU (Taiwan)

PS-11-3
CMOS Pulse-Width-Modulation Readout Circuit for ISFET-Based Sensors
R.L. Wang[1], W.D. Wu[1], C. Yu[1], P.H. Chiu[1], J.L. Shi[1], Y.F. Hao[1], 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-11-4
PSPICE Simulation Model for Biomolecule Detection with Silicon Nanowire Bio-sensors in both Potentiometric and Impedimetric Readout Mode
T.C. Nguyen[1], M. Schwartz[1], X.T. Vu[1,2] and S. Ingebrandt[1], [1]Univ. of Applied Sciences Kaiserslautern and [2]RWTH Aachen Univ. (Germany)

PS-11-5
Characterization of ion sensitive extended-gate field effect transistor coated by functional self-assembled monolayer
T. Kajisa and T. Sakata, Univ. of Tokyo (Japan)

PS-11-6
Schottky Barrier Carbon Nanotube FET (CNTFET) Gas Sensors
C.V.S. Reddy[1], S. Maheshwaram[1], S. Dasgupta[1], A.K. Saxena[1], N. Jain[2] and S.K. Manhas[1], [1]Indian Inst. of Tech. Roorkee and [2]Solid State Physics Lab. (India)

PS-11-7
Conductive Diamond-like Carbon Film Deposition by Low Temperature Neutral Beam Enhanced Chemical Vapor Deposition for Bio-LSIs
X.J. Chang[1], Y. Kikuchi[1,2], T. Kubota[1], K.Y. Inoue[3], T. Matsue[3,4] and S. Samukawa[1,4], [1]Inst. of Fluid Sci., Tohoku Univ., [2]Tokyo Electron Ltd., [3]Grad. Sch. of Environ., Tohoku Univ. and [4]WPI-Adv. Inst. Mat. Res., Tohoku Univ. (Japan)

PS-11-8
Induction of Neural Stem Cells on Indium Tin Oxide Surface
I.C. Lee, Y.C. Liu, Y.C. Wu and K.F. Lei, Chang Gung Univ. (Taiwan)

PS-11-9
Fluidity Evaluation of Cell Membrane Model Formed on Graphene Oxide with Single Particle Tracking Using Qdot
Y. Okamoto, T. Motegi, S. Iwasa, A. Sandhu and R. Tero, Toyohashi Univ. of Tech. (Japan)

PS-11-10
Formation and Fluidity Measurement of Artificial Lipid Membranes on Polyvinyl Chloride Substrate
T. Kobayashi[1], A. Kono[1], T. Hattori[1], K. Sawada[1] and R. Tero[1,2], [1]Toyohashi Univ. of Tech and [2]Electronics-Inspired Interdisciplinary Research Institute (Japan)

PS-11-11
Fiber-optic Biosensor based on Multimode Interference using Small-core Single-mode Fiber
M. Doi[1], S. Taue[1], Y. Yanase[2] and H. Fukano[1], [1]Okayama Univ. and [2]Hiroshima Univ. (Japan)

PS-11-12
Sensitivity Enhancement in Refractive Index Measurement based on Optical Fiber Multimode Interference with Gold Nanoparticles
S. Taue, H. Daitoh and H. Fukano, Okayama Univ. (Japan)

PS-11-13
SPR Imaging Sensor for Visualization of Individual Cell Activation and Clinical Diagnosis of Allergy
Y. Yanase, T. Kawaguchi, K. Ishii and M. Hide, Hiroshima Univ. (Japan)

PS-11-14
Electrochemical Impedance Spectroscopy of Colloidal Gold Nanoparticles in Chromatography Paper for Immunochromatographic Assay
F. Hori and S. Uno, Ritsumeikan Univ. (Japan)

PS-11-15
Catalytic Behaviour of Ultrafine Pt on the Gas Sensor of ZnO Nanoparticles
A. Ahmadi Daryakenari[1], A. Apostoluk[2] and J.J. Delaunay[1], [1]Univ. of Tokyo, Mechanical Eng. and [2]Institut des Nanotechnologies de Lyon (Japan)

PS-11-16
Bioassay of Target Proteins Using A NiCr Strain Gauge-Cantilever Liposome Biosensor with Droplet-Sealed Structure
Z. Zhang[1], T. Akai[1], M. Sohgawa[2], K. Takada[1], K. Yamashita[1] and M. Noda[1], [1]Kyoto Inst. Tech. and [2]Niigata Univ. (Japan)

PS-11-17
Capacitive Breathing Sensor and Evaluation of Body Movement Noise
M. Sasaki, S.K. Kundu, J. Jeong and S. Kumagai, Toyota Tech. Inst. (Japan)

Area 12: Spintronics Materials and Devices
(13 papers)

PS-12-1
Preparation of GaAs-based Spin-photonic Devices for Emission and Detection of Circularly Polarized Light
H. Munekata, N. Nishizawa, H. Ikeda and K. Nishibayashi, Tokyo Tech (Japan)

PS-12-2
Monolithic integration of Magneto-Optical Plasmonic Waveguides with GaAs/Al-GaAs Waveguides on GaAs Substrate and with Si Nanowire Waveguides on Si sub-strate for Integrated Non-reciprocal Optical Devices
V. Zayets, H. Saito, K. Ando and S. Yuasa, AIST (Japan)

PS-12-3
Fabrication of Ge-based light-emitting diodes with a ferromagnetic electrode
S. Iba[1], H. Saito[1], S. Yuasa[1], Y. Yasutake[2] and S. Fukatsu[2], [1]AIST and [2]Univ. of Tokyo (Japan)

PS-12-4
Effects of Band Mixing on 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]Department of Physics, Faculty of Sci. and Eng., Konan Univ. (Japan)

PS-12-5
Effects of interface electric field on the magnetoresistance for nonlocal setup
T. Tanamoto, M. Ishikawa, T. Inokuchi, H. Sugiyama and Y. Saito, Toshiba Corp. (Japan)

PS-12-6
In-plane Anisotropy of a CoFeB-MgO Magnetic Tunnel Junction with Perpendicular Magnetic Easy Axis
E. Hirayama[1], S. Kanai[1], K. Sato[2], M. Yamanouchi[1,3], H. Sato[3,4], S. Ikeda[1,3,4], F. Matsukura[2,3] and H. Ohno[1,2,3,4], [1]Lab. for Nanoelectronics and Spintronics, Res. Inst. of Electrical Communication, Tohoku Univ., [2]WPI-AIMR, Tohoku Univ., [3]Center for Spintronics Integrated Systems, Tohoku Univ. and [4]Center for Innovative Integrated Electronic Systems, Tohoku Univ. (Japan)

PS-12-7
Dependence of magnetic properties of MgO/CoFeB/Ta stacks on CoFeB and Ta thicknesses
K. Watanabe[1], S. Ishikawa[1], H. Sato[2,3], S. Ikeda[1,2,3], M. Yamanouchi[1,2], S. Fukami[2,3], F. Matsukura[4,1,2] and H. Ohno[1,2,3,4], [1]Lab. for Nanoelectronics and Spintronics, Res. Inst. of Electrical Communication, Tohoku Univ., [2]Center for Spintronics Integrated Systems, Tohoku Univ., [3]Center for Innovative Electronic Systems, Tohoku Univ. and [4]WPI-Advanced Inst. for Materials Res., Tohoku Univ. (Japan)

PS-12-8
The Fabrication of the Magnetic Tunnel Junctions Including Spinel Ferrite Layers
N. Takahashi[1], T. Kawai[1], T. Nagahama[2] and T. Shimada[2], [1]Graduate School of Chemical Sciences and Engineering, Hokkaido Univ. and [2]Graduate School of Engineering, Hokkaido Univ. (Japan)

PS-12-9
Synthesis And Characterization of Electron Doped $La_{0.85}Te_{0.15}MnO_3$ Thin Film Grown on $LaAlO_3$ Substrate By Pulsed Laser Deposition Technique.
I. Bhat[1], Shahid. Husain[1] and S.I. Patil[2], [1]Department of Physics, Aligarh Muslim Univ. and [2]Department of Physics, Univ. of Pune (India)

PS-12-10
Growth of Very Thin Films of Mn_3Ge with a Perpendicular Magnetic Anisotropy
A. Sugihara, S. Mizukami and T. Miyazaki, WPI-AIMR, Tohoku Univ. (Japan)

PS-12-11
LLG Micromagnetic Simulation on STT Efficiency of sub 30nm Perpendicular MTJs with etching damage
K. Ito, S. Ohuchida and T. Endoh, Tohoku Univ. (Japan)

PS-12-12
Fabrication of Magnetic Tunnel Junctions with Synthetic Coupled Free Layer for Highly Sensitive Magnetic Field Sensor Devices
D. Kato[1], M. Oogane[1], K. Fujiwara[1], T. Nishikawa[2], H. Naganuma[1] and Y. Ando[1], [1]Tohoku Univ. and [2]KONICA MINOLTA (Japan)

PS-12-13
Development of Scanning dc-SQUID system for local magnetic imaging
Y. Shibata[1], Y. Osima[1], H. Kashiwaya[2], R. Ishiguro[3], S. Kashiwaya[2], H. Takayanagi[4] and S. Nomura[1], [1]Univ. of Tsukuba, [2]AIST, [3]RIKEN and [4]NIMS (Japan)

Area 13: Applications of Nanotubes, Nanowires, and Graphene

(14 papers)

PS-13-1
Electrical Properties of MoS_2/Graphene Heterostructure and pn Junction Diode
W.J. Su[1], H.C. Chang[2], H.Y. Chang[2], Y.S. Huang[1,2] and K.Y. Lee[1,2], [1]Graduate Institute of Electro-Optical Engineering, National Taiwan Univ. of Sci. and Tech. and [2]Department of Electronic Engineering, National Taiwan Univ. of Sci. and Tech. (Taiwan)

PS-13-2
Improved Dispersibility and Thermopower of Single-Walled Carbon Nanotubes in Ionic Polymers
M. Nakano, Y. Nonoguchi, T. Nakashima and T. Kawai, NAIST (Japan)

PS-13-3
Graphene as a Template Layer for the Growth of Ga-Based Compound Materials
F.R. Wong[1], N.S.A. Aziz[1], K. Yasui[2] and A.M. Hashim[1], [1]Malaysia-Japan International Inst. of Tech. and [2]Nagaoka Univ. of Tech. (Malaysia)

PS-13-4
Defect Generation in Mono-layer Graphene in O_2-PDA and FGA
W.J. Liu, K. Nagashio, T. Nishimura and A. Toriumi, Univ. of Tokyo (Japan)

PS-13-5
Damping of Unexpected Motion of Carbon-Nanotube Nanorelay-Arm by Introducing Pinhole Defects
A. Nagataki[1,2], K. Takei[1], T. Arie[1] and S. Akita[1], [1]Osaka Pref. Univ. and [2]KRI Inc. (Japan)

PS-13-6
Ab Initio Calculations for Li^+ Solvation in Ethylene Carbonate near the Graphite Edges with Hydrogen/Oxygen Terminations
T. Kawai[1,2] and S. Okada[2], [1]NEC Corp. and [2]Univ. of Tsukuba (Japan)

PS-13-7
A First Principles Study on CVD Graphene Growth on Copper Surface: C-C Bonding Reactions at Graphene Edges
N. Tajima[1], T. Kaneko[1], J. Nara[1] and T. Ohno[1,2], [1]NIMS and [2]Univ. of Tokyo (Japan)

PS-13-8
Detection of Molecular Charge Dynamics through Current Noise in A GaAs-based Nanowire FET
S. Inoue[1,2], R. Kuroda[1,2], M. Sato[1,2] and S. Kasai[1,2], [1]Graduate School of Info.Sci.Tech., Hokkaido Univ. and [2]RCIQE, Hokkaido Univ. (Japan)

PS-13-9
Highly-Sensitive BiFeO-Coated ZnO Nanowire Arrays for Flexible Piezoelectric Sensing Applications
C.P. Cheng, C.H. Hsu, C.P. Chou, Z.Y. Liou, Y.S. Li, Y.Y. Syu and C.H. Cheng, National Taiwan Normal Univ. (Taiwan)

PS-13-10
Characterization of Electron Transport Properties of <110> InAs Nanowires by Hall Effect Measurements
Z. Cui[1], R. Perumal[1], T. Ishikura[1], K. Konishi[1], K. Yoh[1] and J. Motohisa[2], [1]RCIQE, Hokkaido Univ. and [2]IST, Hokkaido Univ. (Japan)

PS-13-11
Characterization of Selective Doping and Stress in Ge⁄Si Core-Shell Nanowires
M. Yu, J. Wipakorn and N. Fukata, NIMS (Japan)

PS-13-12
Design and Growth of Nanowire Nanocavity
T. Wada[1], S. Hara[1,2] and J. Motohisa[1], [1]Graduate School of Information Science and Technology, Hokkaido Univ. and [2]Research Center for Integrated Quantum Electronics, Hokkaido Univ. (Japan)

PS-13-13
Enhancement of Thermoelectric Properties via Radial Dopant Inhomogeneity in B-doped Si Nanowires
T. Yanagida[1], F. Zhuge[1], K. Nagashima[1], N. Fukata[2] and K. Uchida[3], [1]Osaka Univ., [2]NIMS and [3]Keio Univ. (Japan)

PS-13-14 (Late News)
Electrical Characterization of Nanometer Structures with Graphene Directly Grown on SiO_2 by Alcohol Chemical Vapor Deposition
H. Sato[1], K. Yamada[1], A. Nakamura[1], H. Satoh[1], J. Temmyo[1] and H. Inokawa[2], [1]Grad. Sch. Of Engineering. Shizuoka Univ. and [2]Res. Inst. Of Elec. Shizuoka Univ. (Japan)

Area 14: Power Devices and Materials

(14 papers)

PS-14-1
Hot carrier effect and PBTI of a thin-film SOI power MOSFET at high temperature
W. Yoshida, T. Takasugi and S. Matsumoto, Kyushu Inst. of Tech. (Japan)

PS-14-2
Well proximity effect impact on fully isolated low R_{on}*Q_g MOSFET performance
M. Shima[1], M. Katayama[1], H. Sato[1], M. Onoda[1], T. Yoshimura[1], T. Ishihara[1], Y. Suzuki[1], N. Suzuki[1], M. Hosoda[2], T. Imada[2] and T. Hirose[2], [1]Fujitsu Semiconductor Ltd. and [2]Fujitsu Laboratories Ltd. (Japan)

PS-14-3
Impact of the silicon on diamond structure for high temperature switching applications
H. Kanoya, K. Nakagawa and S. Matsumoto, Kyushu Inst. of Tech. (Japan)

PS-14-4
Analysis of forward voltage and reverse recovery charge control of silicon PiN diodes
Y. Yamashita and S. Machida, Toyota Central R&D Labs., Inc. (Japan)

PS-14-5
Growth and investigation of stacking fault of 4H-SiC C-face homoepitaxial layers with 1° off-angle
K. Masumoto[1,2], H. Asamizu[1,3], K. Tamura[1,3], C. Kudou[1,4], J. Nishio[1,5], K. Kazutoshi[1,2], T. Ohno[1,6] and H. Okumura[1,2], [1]FUPET, [2] AIST, [3] ROHM Co., Ltd., [4] Panasonic Corp., [5] Toshiba Corp. and [6]Hitachi, Ltd. (Japan)

PS-14-6
Tilt-implanted trench termination for SiC power devices
G.Y. Song, D.H. Cho, G.H. Song and G.S. Kim, Sogang Univ. (Korea)

PS-14-7
Short-circuit capability of SiC power MOSFETs
T. Shoji[1,3], A. Soeno[2], H. Toguchi[2], S. Aoi[1], Y. Watanabe[1] and H. Tadano[3], [1]Toyota Central R&D Labs., Inc., [2] Toyota Mortor Corp. and [3]Univ. of Tsukuba (Japan)

PS-14-8
Switching characteristics of a 4H-SiC IGBT with interface defects up to the nonquasi-static regime
I. Pesic[1,2], D. Navarro[2], M. Fujinaga[2], Y. Furui[2] and M. Miura-Mattausch[1], [1]Hiroshima Univ. and [2]Silvaco Japan (Japan)

PS-14-9
Energy-band offset of AlN/Diamond(111) heterojunction determined by X-ray photoelectron spectroscopy
M. Imura, A. Tanaka, H. Iwai, J. Liu, M. Liao and Y. Koide, NIMS (Japan)

PS-14-10
Schottky-barrier inhomogeneities in WC/p-diamond at high temperature
A. Fiori, T. Teraji and Y. Koide, NIMS (Japan)

PS-14-11
Static and transient performance comparisons between diamond p+/p- diode and m-i-p+ (Metal-Intrinsic-p+) diode
A. Nawawi[1], K.J. Tseng[1], R. Rusli[1], G.A.J. Amaratunga[1,2], H. Umezawa[3] and S. Shikata[3], [1]Nanyang Tech. Univ., [2] Univ. of Cambridge and [3]AIST (Singapore)

PS-14-12 (Late News)
Generation and suppression of oxidation byproducts at 4H-SiC C-face / SiO_2 interface characterized by infrared spectroscopy
H. Hirai[1] and K. Kita[1,2], [1]The Univ. of Tokyo and [2]JST-PRESTO (Japan)

PS-14-13 (Late News)
Effect of gate oxide process at SiC-MOS interface on threshold voltage shift analyzed by DLTS
J. Hasegawa[1], M. Noguchi[2], M. Furuhashi[2], S. Nakata[2], T. Iwasaki[1], T. Kodera[1], T. Nishimura[1] and M. Hatano[1], [1]Tokyo Inst. Of Tech. and [2]Mitsubishi Electric Corp. (Japan)

PS-14-14 (Late News)
Quantitative characterization of border traps with widely-spread time constants in SiC MOS capacitors by transient capacitance measurements
Y. Fujino[1], R.H. Kikuchi[1], H. Hirai[1] and K. Kita[1,2], [1]The Univ. of Tokyo and [2]JST-PRESTO (Japan)

Area 15: Photovoltaic Materials and Devices

(9 papers)

PS-15-1
Simulation Analysis of The Potential Causes for The Low Jsc in GaAsN Solar Cells
L. Wang, O. Elleuch, N. Kojima, Y. Ohshita and M. Yamaguchi, Toyota Tech. Inst. (Japan)

PS-15-2
Characterization of Directly Bonded Ge/GaAs by Surface Activated Bonding for Multi-junction Solar Cells
G. Kono, M. Fujino, D. Yamashita, K. Watanabe, M. Sugiyama, Y. Nakano and T. Suga, Univ. of Tokyo (Japan)

PS-15-3
Optical Characterization of GaInP p–i–n Solar Cells
Y.G. Li[1], D.Y. Lin[1], T.S. Ko[1], J.S. Wu[1], C.H. Wu[2], Y.L. Tsai[2], M.C. Kao[3] and H.Z. Chen[3], [1]National Changhua Univ. of Edu., [2] Inst. of Nuclear Energy Res. and [3]Hsiuping Univ. Sci. and Tech. (Taiwan)

PS-15-4
Effects of Copper Concentration on the Characteristics of Cu_2ZnSnS_4 Thin Films Prepared by Rapid Thermal Annealing
B.T. Jheng[1] and P.T. Liu[2], [1]National Tsing Hua Univ. and [2]NCTU (Taiwan)

PS-15-5
Ultra-low Reflective Micro-structures Fabricated by One-step Advanced Silicon Etching on Silicon Surface
L. Zhang, D.Q. Zhao, J. He, X. Huang, F. Yang and D.C. Zhang, Peking Univ. (China)

PS-15-6
Investigation of chemical-bonding state and fixed charge state of Sr_2SiO_4 film on Si(100) substrate
S. Taniwaki[1], Y. Hotta[1,3], H. Yoshida[1,3], K. Arafune[1,3], A. Ogura[2,3] and S. Satoh[1,3], [1]Univ. of Hyogo, [2] Meiji Univ. and [3]JST-CREST (Japan)

PS-15-7
Withdrawn

PS-15-8
Enhanced Conversion Efficiency of Hybrid Solar Cells by using Alloyed Silicon-Tin Nanocrystals via Quantum Confinement Effect
M. Lozac'h[1], V. Svrcek[1], D. Mariotti[2] and K. Matsukuba[1], [1]AIST and [2]Univ. of Ulster (Japan)

PS-15-9 (Late News)
Effect of Inter-dot Spacing on Radiative Lifetime in InAs/GaAsSb Type II Quantum Dot Superlattices
H. Yoshikawa, T. Kotani, Y. Kuzumoto, M. Izumi and Y. Tomomura, SHARP Corp. (Japan)

Thursday, September 11

2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-6: Non Volatile Memory and Logic I (9:30-11:00) Chairs: S. Mitani (NIMS) T. Nagahama (Hokkaido Univ.)	**B-6: Optical Interconnection I** (9:30-10:45) Chairs: H. Ishii (Toyohashi Univ. of Tech.) F. Boeuf (STMicroelectronics)	**C-6: Growth and Process of Oxides** (9:30-10:45) Chairs: T. Nagata (NIMS) T. Kawae (Kanazawa Univ.)	**D-6: Bio Molecular Analysis** (9:30-10:30) Chairs: M. Sasaki (Toyota Tech. Inst.) S. Machida (Hitachi)		**F-6: Thermal Oxidation and MOS Interface** (10:00-10:50) Chairs: M. Kato (Nagoya Inst. of Tech.) H. Nohira (Tokyo City Univ.)	**G-6: Compound Semiconductor Photovoltaics** (9:30-10:30) Chairs: T. Okamoto (Kisarazu National Collage of Tech.) M. Isomura (Tokai Univ.)
9:30 A-6-1 (Invited) **Progress of STT-MRAM Technology and its application to low-power memory systems *A key Technology and Prospect of Normally-off memory systems*** *H. Yoda[1], N. Shimomura[2], J. Ito[2], S. Fujita[2] and K. Ando[3], [1]Center For Semiconductor Research & Development, Toshiba Corp., [2] Corporate R&D Center, Toshiba Corp. and [3]AIST (Japan)*	**9:30 B-6-1 (Invited)** **Luxtera's Silicon Photonics Platform for Transceiver Manufacturing** *M.P. Mack, A. Ayazi, Y. Chi, A. Dahl, P. De Dobbelaere, S. Denton, S. Gloeckner, K.Y. Hon, S. Hovey, Y. Liang, G. Masini, A. Mekis, M. Peterson, T. Pinguet, S. Sahni, J. Schramm, M. Sharp, C. Sohn, K. Stechschulte, P. Sun, G. Vastola, L. Verslegers and R. Zhou, Luxtera, Inc. (USA)*	**9:30 C-6-1 (Invited)** **Epitaxial Growth, Doping, and Electron Transport of the Semiconducting Oxides In_2O_3, Ga_2O_3, and SnO_2** *O. Bierwagen[1,2], M.E. White[2], M.-Y. Tsai[2], J.S. Speck[2], T. Nagata[3], N. Preissler[1] and P. Vogt[1], [1]Paul-Drude-Inst., [2] Univ. of California Santa Barbara and [3]NIMS (Germany)*	**9:30 D-6-1** **DNA Single Base Polymerization Detection Using CMOS FET-Based Redox Potential Sensor Array** *H. Ishihara, K. Niitsu and K. Nakazato, Univ. of Nagoya (Japan)*		**10:00 F-6-1** **Depth Profile of Thermally Grown SiO_2 Film Density** *R. Hasunuma, M. Hayashi and K. Yamabe, Univ. of Tsukuba (Japan)*	**9:30 G-6-1 (Invited)** **Cu_2ZnSnS_4 Solar Cells Fabricated by an Electrochemical Technique** *S. Ikeda, F. Jiang, W. Septina, T. Harada and M. Matsumura, Osaka Univ. (Japan)*
10:00 A-6-2 **Perpendicular Magnetic Tunnel Junctions with L10-MnGa/FeCo Bilayer Electrodes with Tunable Interfacial Exchange Coupling** *Q.L. Ma, S. Mizukami, X.M. Zhang, Y. Ando and T. Miyazaki, Tohoku Univ. (Japan)*	**10:00 B-6-2** **MOS Capacitor Type Si Optical Modulator Integrated with Ge Photodetector and its High Speed Operation with CMOS Driver** *J. Fujikata[1], S. Takahashi[1], M. Takahashi[2], M. Noguchi[1], H. Noguchi[3], T. Horikawa[2], T. Nakamura[1] and Y. Arakawa[4], [1]PETRA, [2] AIST, [3] NEC Corp. and [4]Univ. of Tokyo (Japan)*	**10:00 C-6-2** **A New Classification of Nano-Scale Crystallinity of In-Ga-Zn-Oxide Films** *Y. Nonaka, Y. Yamada, M. Oota, N. Ishihara, Y. Kurosawa, S. Nishino and S. Yamazaki, Semiconductor Energy Lab. Co., Ltd. (Japan)*	**9:45 D-6-2** **DNA Biosensing using Ga_2O_3 Based Metal/Oxide Diode** *T. Rahman[1], T. Masui[2] and T. Ichiki[1], [1]Univ. of Tokyo and [2]Koha Co., Ltd (Japan)*		**10:20 F-6-2** **Reduction of Defect State Density at SiO_2/SiC Interface Formed by the Thermal Oxidation Accompanied with Direct CO Generation** *R. Kikuchi[1], Y. Fujino[1] and K. Kita[1,2], [1]Univ. of Tokyo and [2]JST-PRESTO (Japan)*	**10:00 G-6-2** **Properties of deep-level defect in Cu(In, Ga)Se_2 thin films** *X.B. Hu[1], T. Sakurai[1], A. Yamada[2], S. Ishizuka[2], S. Niki[2] and K. Akimoto[1], [1]Univ. of Tsukuba and [2]AIST (Japan)*
10:20 A-6-3 **Properties of Perpendicular-Anisotropy Magnetic Tunnel Junctions Fabricated over The Cu Via** *S. Miura[1], H. Honjo[1], K. Kinoshita[1], K. Tokutome[1], H. Koike[2], S. Ikeda[2], T. Endoh[2] and H. Ohno[2], [1]NEC Corp. and [2]Tohoku Univ. (Japan)*	**10:15 B-6-3** **A Method Enables Height-Control of Bonding Chip for Edge-Emitting Laser Stacking** *M. Aoyagi, T.T. Bui, L. Ma, T. Amano, K. Kikuchi and M. Mori, AIST (Japan)*	**10:15 C-6-3** **Rapid Thermal Oxidation of Zinc Nitride Film** *C.W. Lin, Y.P. Song and S.C. Chang, Tatung Univ. (Taiwan)*	**10:00 D-6-3** **Single-Molecule Tunnel-Current based Detection Toward Amino-Acid Identification** *T. Ohshiro, M. Tsutsui, K. Yokota, T. Kawai and M. Taniguchi, Osaka Univ. (Japan)*		**10:35 F-6-3** **Estimation of Real SiC-MOS Characteristics by Using Novel High-Speed Pulse IV** *N. Tega, D. Hisamoto, H. Yoshimoto, A. Shima and Y. Shimamoto, Hitachi, Ltd. (Japan)*	**10:15 G-6-3** **Fabrication of Polycrystalline CdTe Thin-Film Solar Cells using Carbon Electrodes with Carbon Nanotubes** *T. Okamoto[1], R. Hayashi[1], Y. Ogawa[1], A. Hosono[1] and M. Doi[2], [1]Kisarazu Natl. Coll. Tech. and [2]JFE Eng. Corp. (Japan)*
10:40 A-6-4 **Study about the Process Damage Mechanism of the Patterned Interface Perpendicular Magnetic Tunnel Juncotions (MTJs) by Hydrogen Ion Treatments** *J.H. Jeong[1, 3] and T. Endoh[1, 2], [1]Tohoku Univ., [2] Center for Innovative Integrated Electronic Systems (CIES) and [3]SAMSUNG Electronics Co., Ltd. (Japan)*	**10:30 B-6-4** **Monolithically Integrated Quantum Dot Electro-Optic Modulator with Semiconductor Optical Amplifier for Short-Reach Optical Communications** *N. Yamamoto, K. Akahane, T. Umezawa and T. Kawanishi, NICT (Japan)*	**10:30 C-6-4** **Epitaxial Growth of ZnO Film on Patterned n-GaN Layer by Hydrothermal Method** *R.M. Ko[1], Y.C. Huang[2], T.H. Yu[2], S.M. Su[3], Y.R. Lin[3] and S.J. Wang[2], [1]Adv. Optoelectronic Tech. Center, National Cheng Kung Univ., [2] Inst. of Microelectronics, National Cheng Kung Univ. and [3]Ming Chi Univ. of Tech. (Taiwan)*	**10:15 D-6-4** **Nanoporous Organosilicates Thin Films for Selective Enrichment of Metabolites** *C. Yeromonahos, A. Mombrun, C. Leclech, A. Bouamrani and V. Jousseaume, CEA - LETI Grenoble (France)*			

Thursday, September 11

4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
H-6: Quantum Transport (1) (9:30-10:45) Chairs: T. Tanamoto (Toshiba) T. Machida (Univ. of Tokyo)	**J-6: Ge & SiGe CMOS** (9:30-10:40) Chairs: N. Sugii (LEAP) F. -L. Yang (Academia Sinica)	**K-6: OLED** (9:30-10:45) Chairs: H. Okada (Univ. of Toyama) H. Murata (JAIST)	**M-6: MEMS and Energy Harvestors** (9:30-10:50) Chairs: H. Takao (Kagawa Univ.) Y. Mita (Univ. of Tokyo)		**P-6: Nanowire Photonics** (9:30-10:45) Chairs: M. Arita (Univ. of Tokyo) N. Fukata (NIMS)
9:30 H-6-1 (Invited) **Angular momentum conversion from single photons to single electron spins in a lateral double quantum dot** *A. Oiwa[1,2], T. Fujita[2], K. Morimoto[2], H. Kiyama[1,2], G. Allison[2,3], M. Larsson[2], A. Ludwig[4], A.D. Wieck[4] and S. Tarucha[2,3], [1]Osaka Univ., [2] Univ. of Tokyo, [3] RIKEN and [4]Ruhr-Universität Bochum (Japan)*	**9:30 J-6-1 (Invited)** **Drive Current Performance of Inversion Mode Ge CMOS Transistors** *X. Gong and Y.-C. Yeo, National Univ. of Singapore (Singapore)*	**9:30 K-6-1 (Invited)** **Recent Progress in Polymer Light Emitting Materials** *T. Yamada, Y. Tsubata, K. Ohuchi, D. Fukushima and N. Akino, Sumitomo Chemical Co., Ltd. (Japan)*	**9:30 M-6-1** **A Sub-1G Tri-axis MEMS Capacitive Sensor for Integrated CMOS-MEMS Accelerometers** *D. Yamane[1], T. Konishi[2], T. Matsushima[2], H. Toshiyoshi[3], K. Masu[1] and K. Machida[1,2], [1]Tokyo Tech, [2] NTT Advanced Tech. Corp. and [3]Univ. of Tokyo (Japan)*		**9:30 P-6-1 (Invited)** **Advanced Emission Properties and Lasing from (In,Ga) As Nanowires** *B. Mayer[1], J. Treu[1], S. Morkötter[1], D. Rudolph[1], G. Abstreiter[1,2], J.J. Finley[1] and G. Koblmüller[1], [1]WSI and [2]Technical Univ. Munich (Germany)*
10:00 H-6-2 **Towards Cavity QED with InSb spin qubits** *R.S. Deacon[1], Y. Yamazaki[1], T. Fuse[1], G. Allison[1], A. Oiwa[2], M.T. Deng[3], H.Q. Xu[3,4], S. Tarucha[1,5] and K. Ishibashi[1], [1]RIKEN, [2] Osaka Univ., [3] Lund Univ., [4] Peking Univ. and [5]Univ. of Tokyo (Japan)*	**10:00 J-6-2** **Strained $Si_{0.1}Ge_{0.9}$ on Strained-Si-on-Insulator (sSOI) pMOSFETs for Low-Power sSOI Based CMOS** *K. Ikeda, Y. Moriyama, T. Irisawa, M. Ono, Y. Kamimuta, M. Oda, T. Miyaki, E. Kurosawa and T. Tezuka, AIST (Japan)*	**10:00 K-6-2** **Measurement of Thermal Carrier de-Trapping in Double-Layer Organic Light-Emitting Diodes by Electric-Field-Induced Optical Second-Harmonic Generation** *D. Taguchi, T. Manaka and M. Iwamoto, Tokyo Tech (Japan)*	**9:50: M-6-2** **Withdrawn**		**10:00 P-6-2** **Lasing Oscillation in Multi-stacked InGaAs/GaAs Quantum Dots with a Single GaAs Nanowire Cavity** *J. Tatebayashi[1], S. Kako[1], J.F. Ho[2], S. Iwamoto[1,2] and Y. Arakawa[1,2], [1]NanoQUINE, Univ. of Tokyo and [2]IIS, Univ. of Tokyo (Japan)*
10:15 H-6-3 **Signature of Superconducting Density of States in Luminescence Spectra of InAs Quantum Dots** *S. S. Mou[1], H. Irie[2], K. Akahane[3], H. Kurosawa[1], H. Nakajima[1], H. Kumano[1], M. Sasaki[3] and I. Suemune[1], [1]Hokkaido Univ., [2] NTT Basic Res. Labs. and [3]Nat. Inst. of Info. Comm. Tech. (Japan)*	**10:20 J-6-3** **Study of Si- and SiGe-on-Insulator Ω-Gate Nanowire PMOS FETs by Low-frequency Noise Measurements** *M. Koyama[1,2], M. Cassé[1], S. Barraud[1], P. Nguyen[1,3], G. Ghibaudo[4], H. Iwai[5] and G. Reimbold[1], [1]CEA-LETI, [2] Tokyo Tech, [3] SOITEC and [4]IMEP-LAHC (France)*	**10:15 K-6-3** **Application of Silver Nanowire for Transparent Electrode of OLED Device** *A. Tadamasa, T. Matsui and A. Tsujimoto, Panasonic Corp. (Japan)*	**10:10 M-6-3** **An RF Energy Harvesting Power Management Circuit with Timing Detection** *A. Shirane, H. Ito, N. Ishihara and K. Masu, Tokyo Tech (Japan)*		**10:15 P-6-3** **Room-temperature Electroluminescence of Radial p-i-n InP Nanowires with InAsP Quantum Wells in the 1.5-μm Wavelength Region** *K. Kawaguchi[1,2], H. Sudo[1], M. Matsuda[1], M. Ekawa[1], T. Yamamoto[1] and Y. Arakawa[2,3], [1]Fujitsu Labs., [2] INQIE, Univ. of Tokyo and [3]IIS, Univ. of Tokyo (Japan)*
10:30 H-6-4 (Late News) **Electrically Driven Dynamic Nuclear Spin Polarization in Single Quantum Dot** *M. Kawamura, D. Gottwald, K. Ono and K. Kono, RIKEN (Japan)*		**10:30 K-6-4** **Improved Light-Emitting Properties of Bilayer Polymer Light-Emitting Transistors with Phosphorescent Dye Doped in Fluorene-Type Polymers** *H. Kajii, H. Tanaka, I. Ikezoe, M. Hara, T. Ohtomo and Y. Ohmori, Osaka Univ. (Japan)*	**10:30 M-6-4** **Improvement of Power Conversion Efficiency in Photovoltaic-Assisted UHF Rectifiers by Adopting Non-Silicide PV Cells** *K. Kotani and T. Bando, Tohoku Univ. (Japan)*		**10:30 P-6-4** **Strain Characterization of InAs Segment in Au-free InP/InAs Heterostructure Nanowires by Micro-Raman Measurement** *G. Zhang[1], K. Suzuki[2], S. Nakagawa[3], K. Tateno[1], T. Sogawa[1] and H. Gotoh[1], [1]Basic Res. Labs., NTT Corp., [2] Tokyo Denki Univ. and [3]Toyohashi Univ. of Tech. (Japan)*

Thursday, September 11

2F Conv. Hall 200

A-7: Non Volatile Memory and Logic II
(11:15-12:15)
Chairs: Y. Saito (Toshiba)
K. Takeuchi
(Chuo Univ.)

11:15 A-7-1
A Power-gated 32bit MPU with a Power Controller Circuit Activated by Deep-sleep-mode Instruction Achieving Ultra-low Power Operation
H. Koike[1], T. Ohsawa[1], S. Miura[1], H. Honjo[1], K. Kinoshita[2], S. Ikeda[1], T. Hanyu[1], H. Ohno[1] and T. Endoh[1], [1]Tohoku Univ. and [2]NEC Corp. (Japan)

11:35 A-7-2
Nonvolatile FPGA Using 2T-1MTJ-Cell-Based Multi-Context Array for Power and Area Efficient Dynamically Reconfigurable Logic
D. Suzuki and T. Hanyu, Tohoku Univ. (Japan)

11:55 A-7-3
CAAC-OS-based Nonvolatile Programmable Analog Device: Voltage Controlled Oscillator Realizing Instant Frequency Switching
Y. Okamoto[1], T. Nakagawa[1], T. Aoki[1], M. Kozuma[1], Y. Kurokawa[1], T. Ikeda[1], N. Yamade[1], Y. Okazaki[1], H. Miyairi[1], M. Fujita[2] and S. Yamazaki[1], [1]Semiconductor Energy Laboratory Co., Ltd. and [2]VLSI Design and Education Center, Univ. of Tokyo (Japan)

2F 201A

B-7: Optical Interconnection II
(11:15-12:15)
Chairs: Y. Ishikawa
(Univ. of Tokyo)
S. Itabashi (NTT-AT)

11:15 B-7-1 (Invited)
High-density Silicon Optical Interposer for Inter-chip Interconnect
T. Nakamura[1], Y. Urino[1] and Y. Arakawa[2], [1]PETRA and [2]Univ. of Tokyo (Japan)

11:45 B-7-2
Process Control for Silicon Photonics using 300mm SOI Wafers
F. Boeuf[1], S. Cremer[1], N. Vulliet[1], B. Orlando[1], F. Leverd[1], D. Ristoiu[1], C. Baudot[1], S. Joblot[1], D. Pelissier-Tanon[1], S. Jan[1], H. Petiton[1], A. Mekis[2], T. Pinguet[2] and L. Verslegers[2], [1]STMicroelectronics and [2]Luxtera (France)

12:00 B-7-3
Distribution of Refractive Indices of Si-Wire Waveguides Fabricated on a 300 mm SOI Wafer Using ArF Immersion Lithography
M. Soma[1], Y. Tanushi[1], T. Kita[1], M. Toyama[1,2], M. Seki[2], N. Yokoyama[2], M. Ohtsuka[2] and H. Yamada[1], [1]Tohoku Univ. and [2]AIST (Japan)

2F 201B

C-7: Properties of Oxides
(11:15-12:15)
Chairs: T. Kawae
(Kanazawa Univ.)
T. Nagata (NIMS)

11:15 C-7-1
High Proton Conductivity in Highly Defected Perovskite-Type Oxide Thin Films
Y. Zenitani, T. Nishihara, T. Asano, H. Adachi, A. Itou, H. Takeuchi, S. Badar and E. Fujii, Panasonic Corp. (Japan)

11:30 C-7-2
$BaTiO_3$ Based Relaxor Ferroelectric Epitaxial Thin-films for High-temperature Operational Capacitors
S. Kumaragurubaran[1], T. Nagata[1], K. Takahashi[2], S.G. Ri[2], Y. Tsunekawa[2], S. Suzuki[2] and T. Chikyow[1], [1]NIMS and [2]COMET Inc. (Japan)

11:45 C-7-3
Luminescence Properties of Pr-doped La-GPS Grown by the Floating Zone Method
R. Murakami[1], S. Kurosawa[1,2], T. Shishido[1,2], A. Suzuki[1], Y. Shoji[1,4], Y. Ohashi[1], J. Pejchal[2,3], K. Kamada[2,4], Y. Yokota[2] and A. Yoshikawa[1,2,4], [1]IMR, Tohoku Univ., [2]NICHe, Tohoku Univ., [3]Inst. of Phys. AS CR and [4]C&A Corp. (Japan)

12:00 C-7-4 (Late News)
Novel Vertical AlGaN Deep Ultra Violet Photo–detector on n+Si Substrate using Spontaneous Via Holes Growth Technique
K. Ozeki[1], N. Kurose[1], N. Iwata[2], K. Shibano[1], T. Araki[1], I. Kamiya[2] and Y. Aoyagi[1], [1]Ritsumeikan Univ. and [2]Toyota Technological Inst. (Japan)

2F 202A

D-7: Microdevices for Biomedical Applications
(11:15-12:30)
Chairs: J. Ohta (Nara Inst. of Sci. & Tech.)
C. -S. Lai
(Chang Gung Univ.)

11:15 D-7-1
An Implantable Subminiature PWM Image Sensor Based on Body Channel Communication
H. Hayami, K. Sasagawa, H. Takehara, T. Noda, T. Tokuda and J. Ohta, Nara Inst. of Sci. and Tech. (Japan)

11:30 D-7-2
Lower Invasive in vivo Brain Insertion of the Si Neural Probe with Triangular Shank and Sharpened Tip
T. Harashima[1], T. Tani[2], H. Kino[2], N. Katayama[3] and T. Tanaka[1,2], [1]Dept. of Bioengineering and Robotics, Tohoku Univ., [2]Dept. of Biomedical Engineering, Tohoku Univ. and [3]Dept. of Applied Information Sciences, Tohoku Univ. (Japan)

11:45 D-7-3
A Multi-Modal Implantable CMOS Imaging Device with Two-Color Light Source for Intrinsic Signal Detection in a Brain
M. Haruta, Y. Sunaga, T. Yamaguchi, H. Takehara, T. Noda, K. Sasagawa, T. Tokuda and J. Ohta, Nara Inst. of Sci. and Tech. (Japan)

12:00 D-7-4
Intraocular Pressure Monitoring Using Moiré Patterns Generated from a Contact Lens
P.C. Lin, C.S. Ho, L.A. Wang, I.J. Wang and J.Y. Yen, National Taiwan Univ. (Taiwan)

12:15 D-7-5
Improvement of dynamic range on filter-less fluorescence sensor with body biasing technique
Y. Moriwaki[1], K. Takahashi[1], I. Akita[1], M. Ishida[1,2] and K. Sawada[1,2], [1]Toyohashi Univ. of Tech. and [2]Electronics-Inspired Interdisciplinary Res. Inst. (Japan)

4F 405

E-7: Oxide Devices
(11:15-12:30)
Chairs: N. Hara
(Fujitsu Labs.)
E. Y. Chang
(NCTU)

11:15 E-7-1
High-speed and Low-leakage Characteristics of 60-nm C-axis Aligned Crystalline Oxide Semiconductor FET with GHz-ordered Cutoff Frequency
Y. Yakubo[1], S. Nagatsuka[1], S. Matsuda[1], S. Hondo[1], Y. Hata[1], Y. Okazaki[1], Y. Yamamoto[1], M. Nagai[1], S. Sasagawa[1], T. Atsumi[1], M. Sakakura[1], T. Nakura[2], Y. Yamamoto[1] and S. Yamazaki[1], [1]Semiconductor Energy Lab. Corp., Ltd. and [2]Univ. of Tokyo (Japan)

11:30 E-7-2
A Novel Method for Fabrication of Sub-100nm IGZO TFTs
B.S. Shie[1], H.C. Lin[1,2] and T.Y. Haung[1], [1]NCTU and [2]National Nano Device Labs. (Taiwan)

11:45 E-7-3
All Solution Processed High Performance In-Ga-Zn-O Thin Film Transistor Fabricated at Low Temperature using Microwave irradiation
K.W. Jo and W.J. Cho, Kwangwoon Univ., Department of Electronic Materials Engineering (Korea)

12:00 E-7-4
Fabrication of IGZO Thin-Film Transistors with Film Profile Engineering
R.J. Lyu[1], H.C. Lin[1,2] and T.Y. Huang[1], [1]NCTU and [2]National Nano Device Labs. (Taiwan)

12:15 E-7-5
Impact of Oriented Crystalline InGaZnO Semiconductor on Electrical Properties of Thin Film Transistor
S.S. Yen[1], H.H. Hsu[1], P. Chiou[1], C.H. Cheng[2], C.Y. Chang[1], Y.C. Lai[3], C.P. Chang[3], H.H. Lu[3], C.S. Chuang[3] and Y.H. Lin[3], [1]NCTU, [2]National Taiwan Normal Univ. and [3]AU Optronics Corp. (Taiwan)

4F 406

F-7: Ge Channel Devices
(11:15-12:35)
Chairs: T. Aoyama
(Toshiba)
H. Morioka
(Fujitsu Semicon.)

11:15 F-7-1
Fermi-level Unpinning at Sn/Ge Interfaces; First-principles Calculation
K. Kobinata and T. Nakayama, Chiba Univ. (Japan)

11:35 F-7-2
Impact of $YScO_3$ on Ge Gate Stack in Terms of EOT Reduction as Well as Interface
C. Lu[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)

11:55 F-7-3
Origin of Self-limiting Oxidation of Ge in High-Pressure O_2 at Low Temperature
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)

12:15 F-7-4
Very Low EOT in Ge MOS Devices with High Oxidation State Interfacial Layer
C.H. Lin, K.S. Chang-Liao, C.C. Li, L.J. Liu and T.M. Lee, National Tsing Hua Univ. (Taiwan)

4F 403

G-7: New Concepts
(11:15-12:30)
Chairs: Y. Kurokawa
(Tokyo Tech)
N. Kojima
(Toyota Tech. Inst.)

11:15 G-7-1
Photoelectrochemical CO_2 conversion system with 3C-SiC photo-anode and Pt counter electrode
J.T. Song, T. Iwasaki and M. Hatano, Tokyo Tech (Japan)

11:30 G-7-2
Improvement in Solar Cell Efficiency via Addition of Luminescent Down-shifting Phosphors as Spectral Converters
W.Y. Lin[1], H.V. Han[1], T.L. Shen[1], Y.L. Tsai[1], C.C. Lin[2], H.C. Kuo[1] and P.C. Yu[1], [1]Department of Photonics and Institute of Electro-Optical Engineering, NCTU and [2]Institute of Photonic System, NCTU (Taiwan)

11:45 G-7-3
Photovoltaic effect in organically surface-modified nanocrystalline porous 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)

12:00 G-7-4
Fabrication And Optical Characterization Of α-Germanium Nano Disk Structure Using Bio-Template And Neutral Beam Etching for Solar Cell Application
M.T. Chentir[1,2], T. Fujii[1,3], T. Okada[1], T. Isoda[4], K. Itoh[2,4], H. Endo[3], Y. Hoshi[5], N. Usami[5] and S. Samukawa[1,2,6], [1]Inst. of Fluid Sci., Tohoku Univ., [2]CREST Japan Sci. and Tech. Agency, [3]Honda R&D Co., Ltd., [4]Keio Univ., [5]Nagoya Univ. and [6]WPI-Advanced Inst. for Materials Res., Tohoku Univ. (Japan)

12:15 G-7-5
Built-in Low Pressure Drop Liquid Cooling with Internal Graphene Fins on PV/T and CPV modules: Parametric Analysis and Experimental Study
P. Jarumongkonsak and Y.Y. Yan, Univ. of Nottingham (UK)

Thursday, September 11

4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
H-7: Quantum Transport (2) (11:15-12:15) Chairs: T. Ota (NTT) T. Nakaoka (Sophia Univ.)	**J-7: Noise** (11:15-12:15) Chairs: Y. Fukuzaki (SONY) M. Masahara (AIST)	**K-7: Characterization** (11:15-12:30) Chairs: M. Kitamura (Kobe Univ.) H. Kajii (Osaka Univ.)			**P-7: Nanocarbon Based FETs & ICs** (11:15-12:15) Chairs: Y. Ohno (Nagoya Univ.) K. Maehashi (Osaka Univ.)
11:15 H-7-1 **Thermal-Noise Suppression in Nanometer-Scale Si Field-Effect Transistors by Feedback Control with Single-Electron Resolution** *K. Chida, K. Nishiguchi, G. Yamahata and A. Fujiwara, NTT BRL (Japan)*	**11:15 J-7-1** **Ultra Low-Frequency Noise in Vertical MOSFETs Having Tunable Threshold Voltage Fabricated with 60 nm CMOS Technology on 300 mm Wafer Process** *T. Imamoto[1,2] and T. Endoh[1,2,3], [1]Graduate School of Engineering, Tohoku Univ., [2]ACCEL, JST and [3]Center for Innovative Integrated Electronic Systems, Tohoku Univ. (Japan)*	**11:15 K-7-1 (Invited)** **Exciplex Forming Co-Hosts as a Platform for OLEDs with Ultimate Efficiency** *J.-J. Kim, Seoul National Univ. (Korea)*			**11:15 P-7-1 (Invited)** **Carbon Nanotube FETs for Robust Digital Logic Systems** *M. Shulaker, G. Hills, H. Wei, H.-Y. Chen, H.-S.P. Wong and S. Mitra, Stanford Univ. (USA)*
11:30 H-7-2 **Charge Manipulations in Si-Based Quantum Dot Qubit Devices with Single Electron Transistors: Theory and Experiment** *A. Andreev[1], T. Ferrus[1], S. Das[1], T.Y. Yang[1], T. Kodera[2], S. Ihara[2], K. Horibe[2], S. Oda[2] and D. Williams[1], [1]Hitachi Cambridge Lab. and [2]Tokyo Tech (UK)*	**11:35 J-7-2** **Comprehensive Studies on the Accuracy of Traps Characterization by Using Advanced Random Telegraph Noise Simulator** *Y. Higashi, K. Matsuzawa and T. Ishihara, Toshiba Corp. (Japan)*	**11:45 K-7-2** **Evaluation of Layer-by-layer Thin Film of PDADMAC:Alcian Blue and PSS Using Surface Plasmon Resonance and Optical Waveguide Spectroscopies** *M. Ishigooka, T. Ito, K. Shinbo, Y. Ohdaira, A. Baba, K. Kato and F. Kaneko, Niigata Univ. (Japan)*			**11:45 P-7-2** **Sub-10 μm Top-Gate Carbon Nanotube Thin-Film Transistors Fabricated by Flexographic Printing Process** *M. Maeda[1], K. Higuchi[1], S. Kishimoto[1], T. Tomura[2], M. Takesue[2], K. Hata[2] and Y. Ohno[1], [1]Nagoya Univ. and [2]Bando Chemical Indus. Ltd. (Japan)*
11:45 H-7-3 **Effect of Phase Inversion on Quantum Transport in Group IV Two-Dimensional U-shape Device** *M. Sadi, G. Gupta and G. Liang, NUS (Singapore)*	**11:55 J-7-3** **Experiment Study on Random Telegraph Signal Noise in (110) pMOSFETS with 1 nm EOT** *J. Chen and Y. Mitani, Toshiba Corp. (Japan)*	**12:00 K-7-3** **Establishing pn Junction of Doped Organic Semiconductors by Wet Process** *K. Fujita, N. Mizutani and T. Hayashida, Kyushu Univ. (Japan)*			**12:00 P-7-3** **Wafer Scale Fabrication of Transistors using CVD-Grown Graphene and its Application to Inverter Circuit** *S. Nakaharai[1,2], T. Iijima[2], S. Ogawa[2], K. Yagi[2], N. Harada[2], K. Hayashi[2], D. Kondo[2], M. Takahashi[2], S.L. Li[1], K. Tsukagoshi[1], S. Sato[2] and N. Yokoyama[2], [1]NIMS and [2]AIST (Japan)*
12:00 H-7-4 (Late News) **Gate-Controlled Semimetal-Topological Insulator Transition in an InAs/GaSb Heterostructure** *K. Suzuki, Y. Harada, K. Onomitsu and K. Muraki, NTT Basic Research Labs., NTT Corp. (Japan)*		**12:15 K-7-4** **Hybridization of HOMO and Next HOMO in Organic Semiconductor Crystals Revealed by Band Calculations** *H. Matsui[1], T. Okamoto[1,2], C. Mitsui[1], M. Yamagishi[1,3], H. Sato[4], A. Yamano[4] and J. Takeya[1], [1]Univ. of Tokyo, [2]PRESTO, JST, [3]Toyama National College of Technology and [4]Rigaku Corp. (Japan)*			

Thursday, September 11

2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-8: MTJ/MRAM (14:00-15:10) Chairs: T. Endoh (Tohoku Univ.) S. Shuto (Toshiba)		**C-8: Growth of Germanium Based Semiconductors** (14:00-15:15) Chairs: N. Fujimura (Osaka Pref. Univ.) Y. Hotta (Univ. of Hyogo)		**E-8: III-V MOS Technologies** (14:00-15:15) Chairs: M. Kuzuhara (Univ. of Fukui) N. Hara (Fujitsu Labs.)		**G-8: Silicon Photovoltaics** (14:00-15:15) Chairs: K. Ohdaira (JAIST) S. Yata (Panasonic)
14:00 A-8-1 (Invited) **Switching current and thermal stability of perpendicular magnetic tunnel junction with MgO/CoFeB/Ta/CoFeB/MgO recording structure scaling down to 1X nm** *H. Sato[1,2], T. Yamamoto[1,3], E.C.I. Enobio[1,4], M. Yamanouchi[1,4], S. Ikeda[1,2,4], S. Fukami[1,2], K. Kinoshita[1], F. Matsukura[5,1,4], N. Kasai[1] and H. Ohno[1,2,4,5], [1]CSIS, Tohoku. Univ., [2] CIIES, Tohoku Univ., [3] ULVAC, Inc., [4] Lab. for Nanoelectronics and Spintronics, RIEC, Tohoku Univ. and [5]WPI-AIMR, Tohoku Univ. (Japan)*		**14:00 C-8-1** **Growth of Two Inch $Si_{0.5}Ge_{0.5}$ Bulk Single Crystals** *K. Kinoshita[1], Y. Arai[1], O. Nakatsuka[2], K. Taguchi[3], H. Tomioka[3], R. Tanaka[3] and S. Yoda[1], [1]Japan Aerospace Exploration Agency, [2] Nagoya Univ. and [3]Advanced Engineering Services Co. Ltd. (Japan)*		**14:00 E-8-1 (Invited)** **High Performance III-V MOS Technologies** *M.J.W. Rodwell[1], S. Lee[1], C.-Y. Huang[1], D. Elias[1], V. Chobpattana[2], B.J. Thibeault[1], W. Mitchell[1], S. Stemmer[2] and A.C. Gossard[2], [1]ECE Dept. Univ. of California, Santa Barbara and [2]Materials Dept. Univ. of California, Santa Barbara (USA)*		**14:00 G-8-1 (Invited)** **Development of Heterojunction Back Contact Si Solar Cells** *J. Nakamura, Sharp Corp. (Japan)*
14:30 A-8-2 **Impact of Sub-Volume Excitation for Improving Overdrive Delay Product in Sub-40nm p-MTJ and Its Beyond** *S. Ohuchida[1], K. Ito[2] and T. Endoh[1,2], [1]Graduate School of Engineering, Tohoku Univ. and [2]Center for Innovative Integrated Electronic Systems, Tohoku Univ. (Japan)*		**14:15 C-8-2** **Formation and Energy Band Engineering of Ternary Alloy $Ge_{1-x-y}Sn_xC_y$ Layers** *T. Yamaha[1], H. Oda[1], M. Kurosawa[1,2], W. Takeuchi[1], N. Taoka[1], O. Nakatsuka[1] and S. Zaima[1], [1]Nagoya Univ. and [2]JSPS Research Fellow (Japan)*		**14:30 E-8-2** **Hole Mobility Enhancements in Strained $In_xGa_{1-x}Sb$ Heterostructure PMOSFET** *P.Y. Chang[1], X.Y. Liu[2], L. Zeng[2] and G. Du[2], [1]School of Electronic and Computer Eng., Peking Univ. and [2]Inst. of Microelectronics, Peking Univ. (China)*		**14:30 G-8-2** **Surface Passivation of c-Si by Nanoengineered AlOx toward Low-Cost, High-Efficiency c-Si Solar Cells** *H. Lee[1,4], N. Sawamoto[1], K. Ueda[2], Y. Enomoto[2], K. Arafune[2,4], H. Yoshida[2,4], S. Satoh[2,4], T. Nagata[3], T. Chikyow[3] and A. Ogura[1,4], [1]Meiji Univ., [2] Univ. of Hyogo, [3] NIMS and [4]CREST, JST (Japan)*
14:50 A-8-3 **A 500ps/8.5ns Array Read/Write Latency 1Mb Twin 1T1MTJ STT-MRAM designed in 90nm CMOS/40nm MTJ Process with Novel Positive Feedback S/A Circuit** *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)*		**14:30 C-8-3** **Impact of Hydrogen Surfactant Epitaxy and Annealing on Crystallinity of Epitaxial $Ge_{1-x}Sn_x$ Layers** *T. Asano[1,2], N. Taoka[3], K. Hozaki[1], W. Takeuchi[1], M. Sakashita[1], O. Nakatsuka[1] and S. Zaima[1], [1]Nagoya Univ., [2] JSPS Research Fellow and [3]IHP (Japan)*		**14:45 E-8-3** **Body Width Dependence of Subthreshold Slope and On-Current in GaAsSb/InGaAs Double-Gate Vertical Tunnel FETs** *K. Ohashi, M. Fujimatsu and Y. Miyamoto, Tokyo Tech (Japan)*		**14:45 G-8-3** **Epitaxial Growth of Germanium Thin Films on Crystal Silicon Substrates by Solid Phase Crystallization** *M. Kanai and M. Isomura, Tokai Univ. (Japan)*
		14:45 C-8-4 **Melting-Sn Induced Seeding-Processing for Low-Temperature Lateral-Crystallization of a-GeSn on Insulating Substrate** *H. Chikita[1], R. Matsumura[1,2], Y. Kai[1], T. Sadoh[1] and M. Miyao[1], [1]Kyushu Univ. and [2]JSPS Research Fellow (Japan)*		**15:00 E-8-4** **RF Modeling of III-V FINFETs** *E. Lind, C.B. Zota and L.E. Wernersson, Lund Univ. (Sweden)*		**15:00 G-8-4** **Degradation by Acetic Acid for Crystalline Si Photovoltaic Modules** *N. Uchiyama and A. Masuda, AIST (Japan)*
		15:00 C-8-5 **Formation of Large-Grain Ge-Based Group-IV Crystals on Insulator by Seedless Rapid-Melting Growth in Solid-Liquid-Coexisting Temperature Region** *R. Matsumura[1,2], Y. Kai[1], H. Chikita[1], Y. Sadoh[1] and M. Miyao[1], [1]Kyushu Univ. and [2]JSPS Research Fellow (Japan)*				

Thursday, September 11

4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
		K-8: OTFT (14:00-15:00) Chairs: J. Takeya (Univ. of Tokyo) H. Endoh (NEC)	**M-8: Wireless Circuits** (14:00-15:10) Chairs: K. Okada (Tokyo Tech) T. Minotani (NTT TELECON)	**N-8: Device Modeling and Characterization** (14:00-15:15) Chairs: C. -F. Huang (National Tsing Hua Univ.) H. Umezawa (AIST)	**P-8: Nanocarbon Growth & Applications** (14:00-15:00) Chairs: K. Nagashio (Univ. of Tokyo) S. Nakaharai (NIMS)
		14:00 K-8-1 **Pentacene Thin-Film Transistors with Controlled Threshold Voltages and Their Application to Pseudo CMOS Inverters** *Y. Kimura[1], M. Kitamura[1,2] and Y. Arakawa[2], [1]Kobe Univ. and [2]Univ. of Tokyo (Japan)*	**14:00 M-8-1 (Invited)** **Ultra-Wideband Technology for Short-Range Communications** *W. Rhee, X. Chen, D. Liu, F. Chen and Z. Wang, Tsinghua Univ. (China)*	**14:00 N-8-1 (Invited)** **Accurate physical compact models of high-voltage/ power semiconductor devices for efficient design of performance-optimized circuits and systems** *H.J. Mattausch, T. Umeda, H. Kikuchihara and M. Miura-Mattausch, Hiroshima Univ. (Japan)*	**14:00 P-8-1** **Development of Two-dimensional Tactile Sensor Using Carbon Nanotubes** *M. Ohnishi, M. Yang, T. Nozaki, K. Suzuki and H. Miura, Tohoku Univ. (Japan)*
		14:15 K-8-2 **Single-Crystal Structure and Transport Analyses of Rubrene under High Pressure** *J. Tsurumi[1], K. Sakai[1], H. Matsui[1], Y. Okada[1], T. Okamoto[1], H. Sato[2], A. Yamano[2], K. Sugimoto[3], A. Fujiwara[3] and J. Takeya[1], [1]Univ. of Tokyo, [2]Rigaku Corp. and [3]JASRI (Japan)*	**14:30 M-8-2** **A 0.5-V 5.8-GHz Highly Linear VCO with Back-Gate Tuning Technique** *S. Ikeda, S. Lee, H. Ito, N. Ishihara and K. Masu, Tokyo Tech (Japan)*	**14:30 N-8-2** **Two-component model for threshold voltage shifts of SiC MOSFETs under negative bias stress** *M. Matsumura, K. Kobayashi, Y. Mori, N. Tega, A. Shima, D. Hisamoto and Y. Shimamoto, Hitachi, Ltd., (Japan)*	**14:15 P-8-2** **Enhancement of Carrier Injection in OLEDs Utilizing Field Concentration to Carbon Nanotubes** *T. Yamada, S. Kishimoto and Y. Ohno, Nagoya Univ. (Japan)*
		14:30 K-8-3 **Estimating the Density of Trap States in the Middle of the Bandgap using Ambipolar Organic Field-Effect Transistors** *R. Haeusermann[1], S. Chauvin[1], A. Facchetti[2], Z. Chen[2] and B. Batlogg[1], [1]ETH Zurich and [2]Polyera Corp. (Switzerland)*	**14:50 M-8-3** **A Varactor-Less and Dither-Less LC-Digitally Controlled Oscillator with 9-bit Fine Bank, 0.26 mm^2 Area, and 6.7 kHz Frequency Resolution** *Z. Xu, M. Sugawara, K. Mori, M. Miyahara and A. Matsuzawa, Tokyo Tech (Japan)*	**14:45 N-8-3** **High-temperature and High-voltage characteristics of Cu/ diamond Schottky diodes** *K. Ueda, K. Kawamoto, S. Aichi, M. Nishiwaki and H. Asano, Nagoya Univ. (Japan)*	**14:30 P-8-3** **Graphene Synthesis by Laser-Annealing Technique Using Co Catalyst** *Y. Ishibashi, K. Koshida, Y. Kanai, Y. Ohno, K. Maehashi, K. Inoue and K. Matsumoto, Osaka Univ. (Japan)*
		14:45 K-8-4 **Effects of Deposition Pressure on the Characteristics of Organic Thin-Film Transistors Fabricated with Film Profile Engineering** *M.H. Wu[1], H.C. Lin[1,2] and T.Y. Huang[1], [1]NCTU and [2]National Nano Device Lab. (Taiwan)*		**15:00 N-8-4** **Microwave reflectivity from 4H-SiC in the high injection condition: Impacts of the electron-hole scattering** *M. Kato, Y. Mori and M. Ichimura, Nagoya Inst. of Tech. (Japan)*	**14:45 P-8-4 (Late News)** **Subthreshold transport in mono- and multi-layered MoS2 FETs** *F. Nan, K. Nagashio and A. Toriumi, The Univ. of Tokyo (Japan)*

Thursday, September 11

2F Conv. Hall 200	2F 201A	2F 201B	2F 202A	4F 405	4F 406	4F 403
A-9: Flash Memory (15:30-16:40) Chairs: S. Shuto (Toshiba) M. -H. Lee (Macronix)		**C-9: Growth Prosessing of Group IV Semiconductors** (15:30-16:15) Chairs: Y. Hotta (Univ. of Hyogo) N. Fujimura (Osaka Pref Univ.)				
15:30 A-9-1 (Invited) Trends on Advanced Semiconductor Memories *A. Nitayama, Tohoku Univ. (Japan)*		**15:30 C-9-1 Deposition of Thin Si, Ge, and SiGe Films by Ballistic Hot Electron Reduction** *M. Yagi[1], R. Suda[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)*				
16:00 A-9-2 Substrate Doping Concentration Dependence on Random Telegraph Noise Spatial and Statistical Distribution in 30nm NAND Flash Memory *T. Tomita and K. Miyaji, Shinshu Univ. (Japan)*		**15:45 C-9-2 Grain Growth Control by Micro-Thermal-Plasma-Jet Irradiation to Very Narrow Amorphous Silicon Strips and Its Application to Thin Film Transistors** *S. Yamamoto, S. Morisaki, S. Hayashi, T. Nakatani and S. Higashi, Hiroshima Univ. (Japan)*				
16:20 A-9-3 Comparative Study of Floating Gate Type 3D Fin-Channel Flash Memories with Different Channel Shapes and Interpoly Dielectric Layers *Y.X. Liu[1], T. Nabatame[2], N. Nguyen[2], T. Matsukawa[1], K. Endo[1], S. O'uchi[1], J. Tsukada[1], H. Yamauchi[1], Y. Ishikawa[1], W. Mizubayashi[1], Y. Morita[1], S. Migita[1], H. Ota[1], T. Chikyow[2] and M. Masahara[1], [1]AIST and [2]NIMS (Japan)*		**16:00 C-9-3 Versatile Doping Technique for Diamond by Solid Dopant Immersion During Microwave Plasma CVD** *T. Tamura[1], T. Yanase[1], T. Nagahama[1], S. Sato[2] and T. Shimada[1], [1]Hokkaido Univ. and [2]Arios Inc. (Japan)*				

Thursday, September 11

4F 404	1F 101	2F 202B	3F 304	4F 401	4F 402
			M-9: Image Sensors (15:30-16:45) Chairs: K. Kagawa (Shizuoka Univ.) K. Takeuchi (Chuo Univ.)		**P-9: 2D Materials & Devices** (15:30-16:30) Chairs: H. Miyazaki (Toshiba) T. Kawai (NEC)
			15:30 M-9-1 **300 µs Short Interval Continuous Capturing Image Sensor with C-axis Aligned Crystalline Oxide Semiconductor FET/ p-channel Silicon FET Stacked CMOS Structure** *S. Yoneda, Y. Okamoto, T. Nakagawa, S. Maeda, T. Aoki, M. Kozuma, T. Ohmaru, H. Inoue, S. Nagatsuka, Y. Kurokawa, T. Ikeda, Y. Suzuki, N. Yamade, H. Miyairi and S. Yamazaki, Semiconductor Energy Lab. Corp., Ltd. (Japan)*		**15:30 P-9-1** **Multi-Layered MoS_2 Thin Film Formed by High-Temperature Sputtering for Enhancement-Mode nMOSFETs** *T. Ohashi[1], K. Suda[2], S. Ishihara[2], N. Sawamoto[2], S. Yamaguchi[1], K. Matsuura[1], K. Kakushima[1], N. Sugii[1], A. Nishiyama[1], Y. Kataoka[1], K. Natori[1], K. Tsutsui[1], H. Iwai[1], A. Ogura[2] and H. Wakabayashi[1], [1]Tokyo Tech and [2]Meiji Univ. (Japan)*
			15:50 M-9-2 **A Platform for Backside Illuminated CMOS Image Sensors for UV and Visible Applications** *B. Vereecke, C. Cavaco, K. De Muynck, L. Haspeslagh, K. Minoglou, D. Sabuncuoglu, K. Tack and H. Osman, imec (Belgium)*		**15:45 P-9-2** **Direct Deposition of High-k Y_2O_3 on h-BN by Atomic Layer Deposition** *N. Takahashi[1], K. Watanabe[2], T. Taniguchi[2] and K. Nagashio[1], [1]Univ. of Tokyo and [2]NIMS (Japan)*
			16:10 M-9-3 **A Micro-Machined IR Thermal Detector Using Torsional Oscillation: Improvement of Resonator Profile for High Sensitivity** *J.H. Jeong[1], S. Kumagai[1, 3], I. Yamashita[2, 3], Y. Uraoka[2, 3] and M. Sasaki[1, 3], [1]Toyota Tech. Inst., [2]NAIST and [3]CREST-JST (Japan)*		**16:00 P-9-3** **Epitaxial Graphene Devices for Scanning Probe Measurements** *A. Iagallo[1], S. Tanabe[2], S. Roddaro[1], M. Takamura[2], Y. Sekine[2], H. Hibino[2], V. Miseikis[3], C. Coletti[3], V. Piazza[3], F. Beltram[1] and S. Heun[1], [1]NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore, [2]NTT Basic Res. Lab., NTT Corp. and [3]Center for Nanotechnology Innovation @ NEST, Istituto Italiano di Tecnologia (Italy)*
			16:30 M-9-4 (Late News) **Leakage-Delay Analysis of Monolithic 3D Logic Circuits using Ultra-Thin-Body InGaAs/Ge MOSFETs considering Interlayer Electrical Coupling** *K.-C. Yu, M.-L. Fan, P. Su and C.-T. Chuang, National Chiao Tung Univ. (Taiwan)*		**16:15 P-9-4** **Low Pull-in Voltage Graphene Contact Switch Fabricated without Acid-Etching** *J. Sun[1], W.Z. Wang[1], M. Muruganathan[1] and H. Mizuta[1,2], [1]AIST and [2]Univ. of Southampton (Japan)*

RUMP SESSION A (Room 201A+B):

"Beyond wearable electronics"

The communication tools that can be worn like clothes are called wearable devices ("wearables"), and they are eyed by the global researchers as detonators that lead ICT in the next generation. Recently, global companies introduce wearable computers which resemble standard eyeglasses or watches one after another. The market eye them for their potentials to sweep over smart phones or tablet PCs. New services of wearable are actively brought up or brain stormed in the world as well. For example, wearable devices are not just downsized communication tools, but, additional unique features of wearables, such as health-monitoring, are being combined. The strength of wearables that they do not impair the movement of the user allows new service concepts to arose; the new services are body condition monitoring during exercises or technical instructional supports during maintenances.
Though, various neo-wearables are introduced and gain global attentions, their goals or directions are somewhat not clear. Furthermore, just reducing electricity consumption and downsizing, such trends in conventional information communication terminals, are not enough for this new apparatuses. Some specific requirements imposed for the wearables are their softness and designs, nonetheless, what is expected of the devices and their materials remain less well-defined.
In this Rump session, we name the new wearables "Beyond wearable electronics" as they exceed the present eyeglass-types or watch-types. Our main focus is to determine the direction of electronic materials and devices, especially on the possibilities of flexible devices and stretchable materials, since this discussion is inevitable for realizing "Beyond wearable electronics".

Organizer:	Akira Fujiwara (NTT Basic Res. Labs.)
Moderator:	Takao Someya (The University of Tokyo)
Panelists:	Magnus Berggren (Linköping University), Motoki Nakano (Activelink Co., Ltd) Hiroshi Onodera (The University of Tokyo), Koji Sumitomo (NTT Basic Res. Labs.) Tsutomu Terada (Kobe University)

RUMP SESSION B (Room 202A+B):

"Change the future through the strong collaborations among our society"

An information communication technology (ICT), based on a solid state device and materials, has been rapidly and globally changing the society. To accelerate the innovations more, the collaborations among industry and academia are strongly expected. In this rump session, we invited the excellent panelists, who have managed the one of the COI program to change the future society.
(COI: Center-of-Innovation program led by MEXT and JST of Japan)

Organizer / Moderator:	Hitoshi Wakabayashi (Tokyo Institute of Technology)
Panelists:	Yoshinobu Baba (Nagoya University), Tetsuo Endoh (Tohoku University) Chris Van Hoof (imec), Shoji Kawahito (Shizuoka University) Kazuhiko Matsumoto (Osaka University), Shunri Oda (Tokyo Institute of Technology)

Short Course A (Convention Hall 300): "Trends for Future Power Devices"

Organizer: Shizuo Fujita (Kyoto University)

Evolution of power devices is undoubtfully inevitable for supporting future sustainable society, but we have not clearly drawn a roadmap which devices (materials and structures) should take which application fields; this may be due to the continuing competition between Si-based and wide band gap semiconductor-based devices both in their performance and cost. In this course we intend the participants to learn the issues on which especially the wide band gap semiconductors are, or might be facing for their future wide applications, based on their most up-to-date achievements and science lying, so that they can imagine their own roadmap for the future of power devices.

13:00-14:20 "Basic Requirements and Physics of Power Devices"
Prof. Jun Suda (Kyoto University)

Break (10 min.)

14:30-15:30 "Trends in the Development of SiC Power Devices by Manufactures"
Prof. Hidekazu Yamamoto (Chiba Institute of Technology)

Break (10 min.)

15:40-16:40 "High-speed switching operation of wide band-gap semiconductor and its circuit application"
Prof. Nobuo Satoh (Chiba Institute of Technology)

16:40-17:20 "Gallium oxide-based electronics: Present status and future prospects"
Dr. Masataka Higashiwaki (NICT)

Short Course B (Convention Hall 200): "Functional Devices in Integrated Systems"

Organizer: Hitoshi Wakabayashi (Tokyo Institute of Technology)

Evolution of functional device has been strongly expected to achieve in integrated systems, such as a smart phone, wearable electronics and beyond. In this short course, the SSDM has invited five excellent lecturers not only more Moore but also more than Moore areas to discuss in the same room.

13:00-13:05 Introduction on topics

13:05-13:55 "Multigate Transistors: Pushing Moore's law to the limit"
Dr. Jean-Pierre Colinge (TSMC)

13:55-14:45 "Volatile and Non-volatile Semiconductor Memories: Past, Present and Future Outlook"
Dr. Toshiharu Watanabe (Toshiba Corporation)

Break (15 min.)

15:00-15:50 "Co-designs of Devices and Circuits to improve performances of RF/Analog and High voltage I/Os in SoC/MCUs"
Dr. Yoshihiro Hayashi (Renesas Electronics Corporation)

15:50-16:40 "Recent Challenges and Solutions in Image Sensor Technology"
Dr. Hideo Nomura (Sony Corporation)

16:40-17:30 "Integrated MEMS Technology for Construction of Diverse Functional Devices"
Prof. Hidekuni Takao (Kagawa University)

INSTRUCTION FOR SPEAKERS

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 SSDM2014:
* LCD projector
* PC (laptop computer), Windows 7 Professional, PowerPoint 2007-2013 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 Wednesday, September 10 from 14:00 to 16:00 at Multi-Purpose Hall and Conference Room 102 on the 1st floor. Poster boards will be available with identifying labels from 11:00 on September 10. Authors are requested to prepare and set-up their posters by 14:00 on September 10. After the session, authors must immediately remove their posters by 17:30 on September 10. Please note that after 17:30 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 10. 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.
Short oral presentations will be held as follows:

Area 1(PS-1) 4F 406	Area 6(PS-6) 4F 405	Area 11(PS-11) 2F 202A
Area 2 & 13 (PS-2, PS-13) 4F 402	Area 7(PS-7) 2F 201A	Area 14(PS-14) 4F 401
Area 3(PS-3) 1F 101	Area 8(PS-8) 2F 201B	Area 15(PS-15) 4F 403
Area 4(PS-4) 2F Convention Hall 200	Area 9(PS-9) 4F 404	
Area 5 & 12 (PS-5, PS-12) 3F 304	Area 10(PS-10) 2F 202B	

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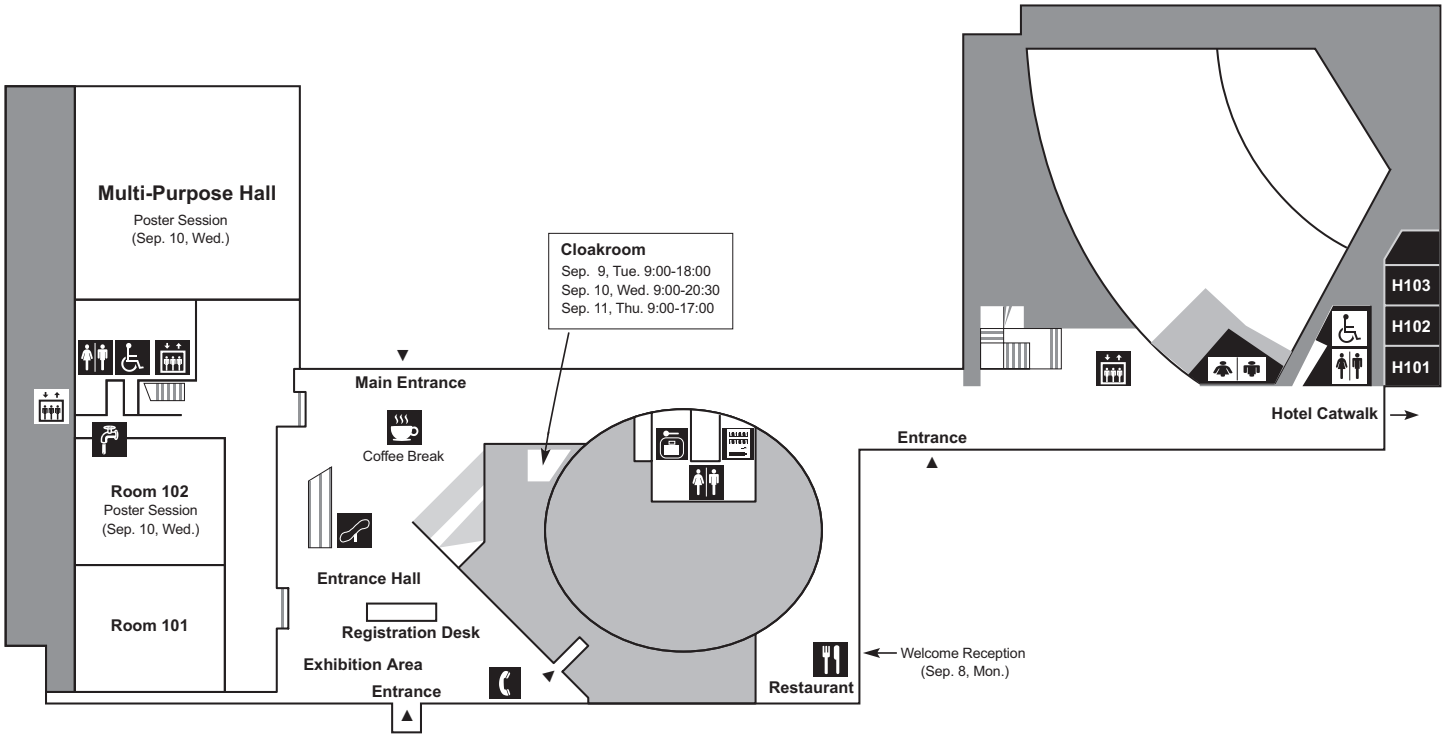
1F



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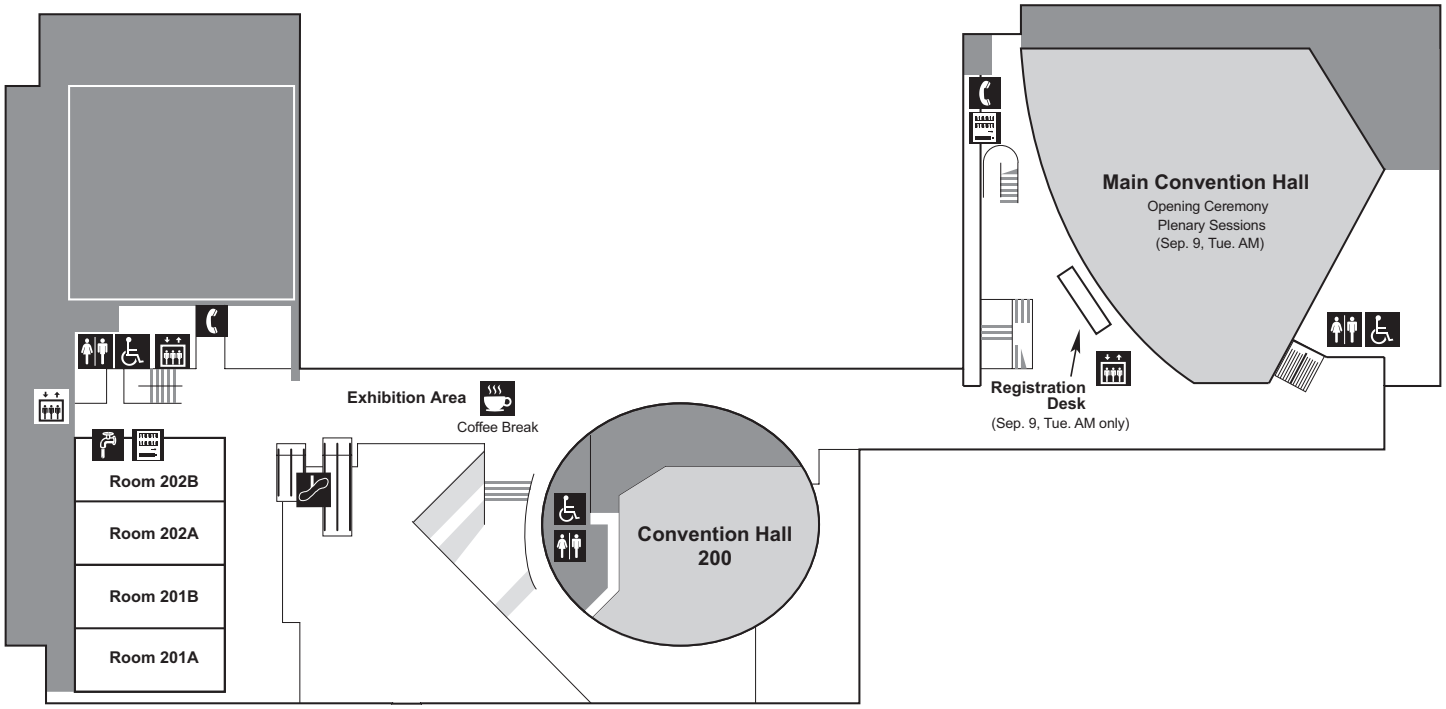

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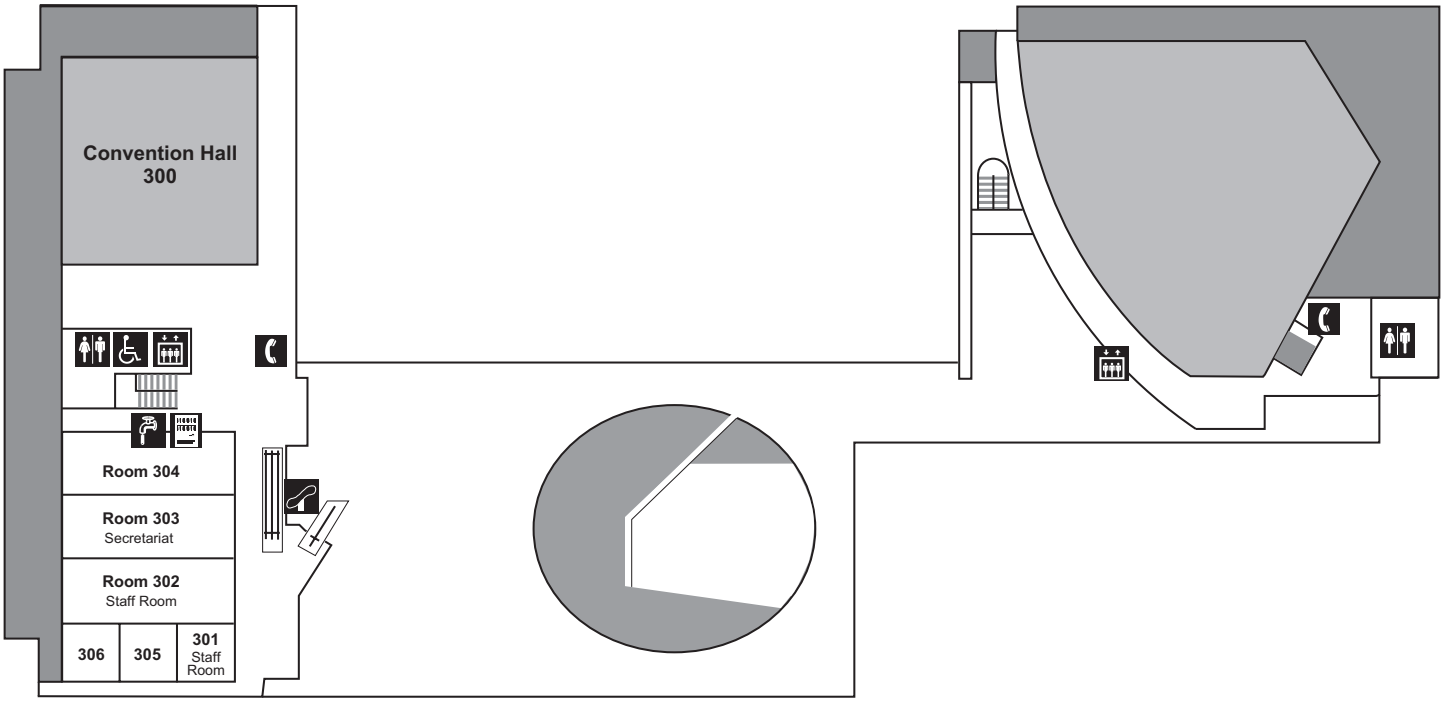
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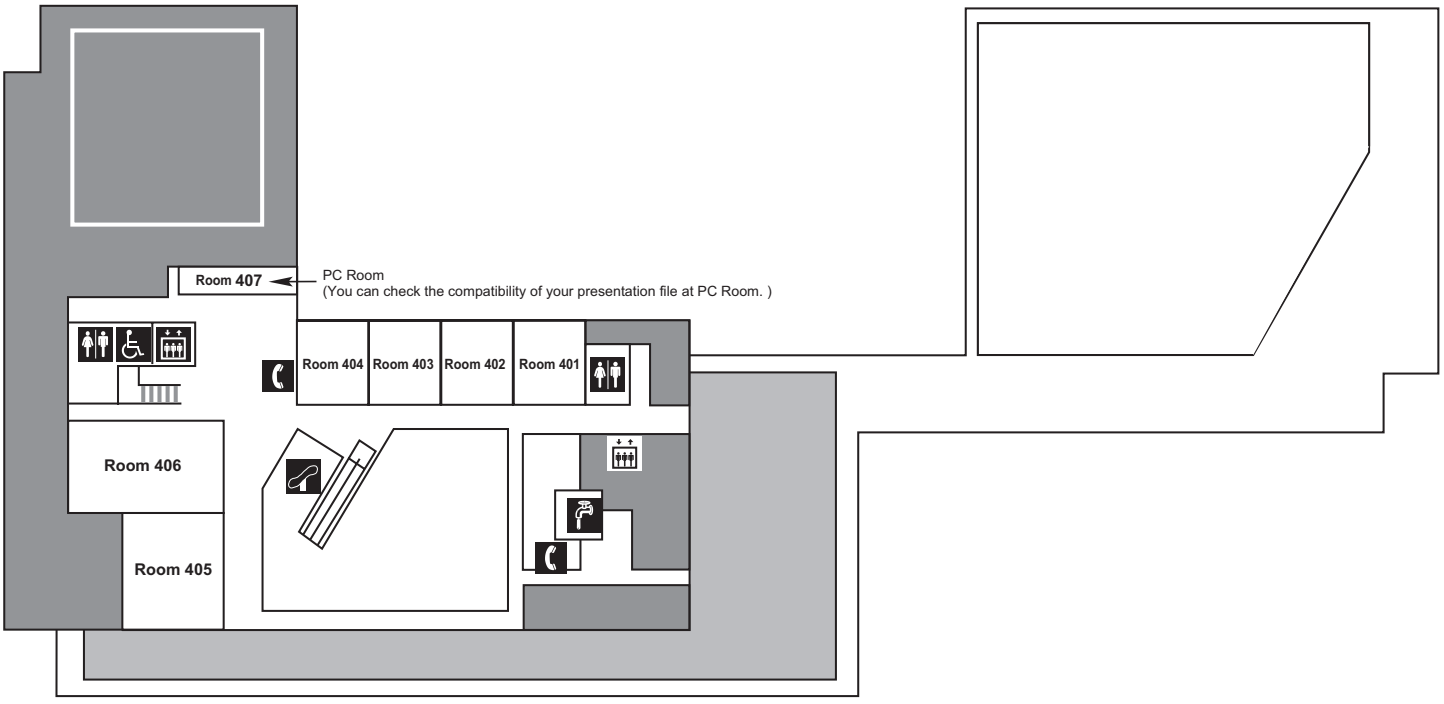
Room 407
PC Room
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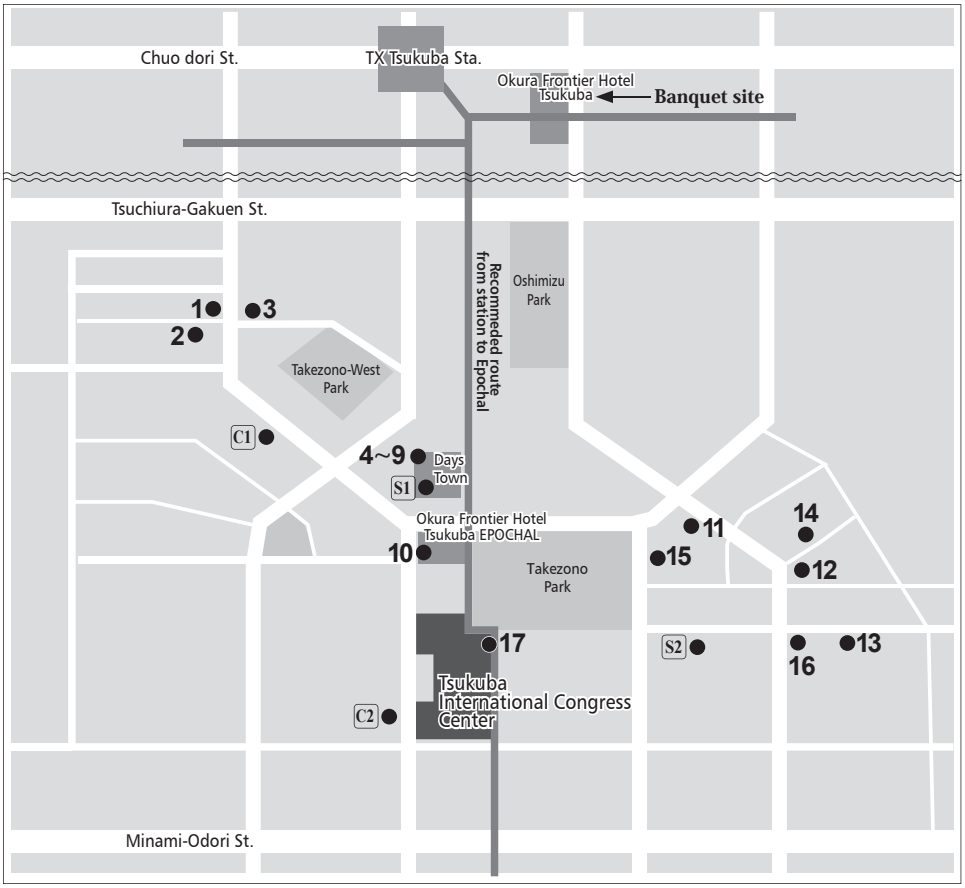
Room 404
Room 403
Room 402
Room 401
Room 406
Room 405

Lunch Map
Recommended by SSDM



			OPEN	CLOSED	
1	Korean Barbecue	**Takarajima** 宝島	11：00 ～ 25：00		☎ 029-850-1061
2	Korean Barbecue	**Shu-en** 秀苑	11：30 ～ 14：00　17：00 ～ 23：00		☎ 029-861-1129
3	Sushi	**YAGURA** やぐら	11：30 ～ 14：00　17：00 ～ 22：30	Mon	☎ 029-852-6222
4	Ethnic food	**MONSTAR** 門星	11：30 ～ 15：00　17：30 ～ 26：00		☎ 029-859-5566
5	Noodle	**AOBA** 青葉	11：00 ～ 24：00		☎ 029-859-6090
6	Pub	**KAGARI** 季彩かがり	11：30 ～ 26：00		☎ 029-875-7219
7	Pub	**Sennen no utage** 千年の宴	11：00 ～ 24：00		☎ 029-852-7788
8	Cafe	**Minna no Italian** みんなのイタリアン	11：00 ～ 24：00		☎ 029-896-3131
9	Shabu shabu	**Musubi** むすび	11：30 ～ 14：30　18：00 ～ 24：00		☎ 029-856-0107
10	Restaurant	**CASA**	7：00 ～ 23：00		☎ 029-861-7626
11	Curry	**Himalaya** ヒマラヤ	11：00 ～ 15：00　17：00 ～ 22：00		☎ 029-856-5640
12	Noodle	**MIYABI-YA** 雅屋	11：30 ～ 14：30　17：30 ～ 21：00	Mon	☎ 029-869-9638
13	Pub	**HANA Q** 花Q	11：30 ～ 25：00		☎ 029-855-6468
14	Pub	**TOYOCHO** とよ長	11：30 ～ 23：00	Tue	☎ 029-855-7011
15	Noodle	**AOI** 蒼	11：00 ～ 14：30　17：30 ～ 21：00	Wed	☎ 029-856-5585
16	Chinese food	**Kouenken** 廣源軒	11：00 ～ 15：00　17：00 ～ 24：00		☎ 029-858-3040
17	Restaurant	**Espoir** (EPOCHAL TSUKUBA 1F)	9：00 ～ 17：00		☎ 029-850-3266

Bento Boxes are available at

S1 **SEIYU (supermarket)**
S2 **KASUMI (supermarket)**
C1 **7 Eleven (convenience store)**
C2 **MINI STOP (convenience store)**

MEMO

ssdm 2015

2015 International Conference on Solid State Devices and Materials

Sep. 27-30, 2015

Sapporo Convention Center

Sapporo, Japan

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