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PREFACE

On behalf of the organizing committee, it is my great pleasure and honor to welcome you to Sapporo, Japan, for the 2015 International Conference on Solid State Devices and Materials (SSDM2015). The purpose of SSDM is to contribute to the promotion of science and industry related to solid-state electronics. This conference has been providing a forum for interaction among various fields-ranging from physics and material science to circuits, systems, and process technologies to discuss 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.

This year, 784 high-quality abstracts were submitted to SSDM2015 from 22 countries. Great effort by the technical program committee in selecting the abstracts has resulted in an excellent technical program consisting of 3 plenary talks, 60 invited papers, 266 contributed oral papers, 258 posters, and 32 late news papers. We are confident that the papers presented at SSDM2015 address in depth nearly all the key issues in the field and provide good stimulation and new perspectives to participants.

Historically, from SSDM1999, the program committee has been divided into sub-committees, since the fields relating to SSDM have been diversified from the conventional semiconductor device technologies to material science, process, manufacturing, circuit, and new technologies such as nano, organic, and bio. The number of submitted papers and participants has thus been increasing.

Last year, we were very pleased because Professors Isamu Akasaki, Hiroshi Amano, and Shuji Nakamura won the Nobel Prize in physics. Their excellent research related to GaN and their optical device applications are one of the main topics of SSDM.

This year, we have invited three plenary speakers. Dr Ryoji Chubachi from AIST will discuss “Building a Sustainable Society through Innovative Devices and Materials” with a more general point of view. Professor Hiroshi Amano from Nagoya University will discuss “Beyond Blue LED”. Finally, Professor Kang L. Wong will discuss “Low Power Electronics beyond 5 nm”.

We wish to express our sincere appreciation to all the contributors who submitted technical papers and all the committee members for their great patience in preparing the way for SSDM2015. We also express our sincere gratitude for the financial support provided by MEXT-JSPS and the other supporting corporations and foundations.

Your participation at SSDM2015 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 2015



Takashi Fukui
General Chair, Organizing Committee, SSDM2015
Professor, Hokkaido University

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Sponsoring Companies and Foundations:

Toshiba Corporation

Panasonic Corporation

Sony Corporation

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FUJITSU LIMITED

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Tokyo Electron Limited

Foundation for Promotion of Material Science and Technology of Japan

ULVAC, Inc.

as of August 31, 2015

Subsidizing Foundations and Organizations:

Ministry of Education, Culture, Sports, Science and Technology

City of Sapporo

The Murata Science Foundation

Inoue Foundation for Science

Support Center for Advanced Telecommunications Technology Research, Foundation

Nippon Sheet Glass Foundation for Materials Science and Engineering

as of August 31, 2015

COOPERATIVE ORGANIZATIONS

Technical-Co-Sponsor:

IEEE Electron Devices Society (EDS)

Cooperative Organizations:

IEEE EDS Japan Chapter

IEEE EDS Kansai Chapter

IEEE EDS Taipei Chapter

IEEE Taipei Section Sensors Council

The Institute of Electronics and Information Engineers

The Institute of Electronics, Information and Communication Engineers

The Korean Physical Society Semiconductor Physics Division

(in alphabetical order)

as of August 31, 2015

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[11] Sensors and Materials for Biology, Chemistry and Medicine

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[12] Spintronics Materials and Devices

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C. Song (Tsinghua Univ.)
A. Tulapurkar (IIT Mumbai)

[13] Applications of Nanotubes, Nanowires, and Graphene

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[14] Power Devices and Materials

Chair: H. Umezawa (AIST/Inst. Néel, CNRS)
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[15] Photovoltaic Materials and Devices

Chair: M. Isomura (Tokai Univ.)
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T. Okamoto (Kisarazu National College of Tech.)
H. Suzuki (Univ. of Miyazaki)
T. Taima (Kanazawa Univ.)

GENERAL INFORMATION

DATE

Short Courses: **September 27, 2015 (in English)**

Technical Sessions: **September 28-30, 2015**

CONFERENCE VENUE

Sapporo Convention Center

1-1-1 Higashi-Sapporo 6-jo, Shiroishi-ku, Sapporo, 003-0006, Japan

Phone: +81-11-817-1010, Fax: + 81-11-820-4300

<http://www.sora-scc.jp/>

SSDM2015 will be held at Sapporo Convention Center. The access map is available in the conference website.

SHORT COURSES:

Short Course lectures are scheduled on September 27, 14:00-18:30. Two Short Course lectures will be held each at Middle-Sized Hall A and B.

These two courses are designed for beginners such as young researchers, young engineers, and students.

A) Trends and Challenges of Non-Volatile Memory Technologies in the Big-Data Era

B) Fundamentals and Applications of Two-Dimensional Materials

*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 45.

TECHNICAL SESSIONS

Plenary Sessions:

Plenary Sessions are scheduled on September 28, 9:30-12:00 at Main Hall A, B.

Non-Technical Plenary Talk:

“Building a Sustainable Society through Innovative Devices and Materials”

by Ryoji Chubachi (National Institute of Advanced Industrial Science and Technology, Japan)

Technical Plenary Talk:

“Beyond blue LED”

by Hiroshi Amano (Nagoya University, Japan)

“Low Power Electronics beyond 5nm”

by Kang L. Wang (University of California, Los Angeles, USA)

Details can be found on page 11.

Oral and Poster Presentations:

Oral presentations will be held in the rooms located on 1st and 2nd floors of Sapporo Convention Center from September 28 to 30. Poster session will be held on September 29, 13:30-15:30 at Main Hall A, B.

Rump Session:

Rump Sessions are scheduled on September 29, 19:10-20:40 at Middle-Sized Hall A and B. Details can be found on page 44.

OTHER EVENTS

Welcome Reception:

Welcome Reception will be held on September 27, 18:30-20:00 at Restaurant, “SORA” (1st floor in the conference site: see floor guide on page 76).

Banquet:

Conference Banquet will be held on September 28, 19:00-21:00 at ROYTON Hall (3rd floor) of ROYTON SAPPORO HOTEL. 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.

Shuttle bus from the conference site to ROYTON SAPPORO HOTEL is available on September 28 18:00 - 18:40. Participants can take the shuttle bus in the outside of Entrance at the side of Main Hall C.

Award Ceremony:

Award Ceremony for SSDM Award /Paper Award will be held in Opening Session starting 9:00 on September 28 at Main Hall A, B. Young Researcher Award Ceremony will be held in the Banquet starting 19:00 on September 28 at ROYTON Hall (3rd floor) of ROYTON SAPPORO HOTEL.

REGISTRATION

The on-site registration desk will be open September 27 to 30 at the Entrance Hall (1st floor). Open hours are as follows:

September 27 th	16:00 – 19:00
September 28 th	08:10 – 17:30
September 29 th	08:30 – 17:30
September 30 th	08:30 – 11:00

SPECIAL ISSUE of JJAP

The Special Issue of Japanese Journal of Applied Physics will be published in April, 2016.

The online publication will start from February, 2016 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.

INTRODUCTION TO SSDM2015 Web & App

SSDM2015 Website and mobile app provide an easy way to view abstracts or schedule sessions you are planning to participate.

Web: <https://confit.atlas.jp/ssdm2015>

App: Search for "ssdm2015" in App Store or Google Play

A password is required to view abstracts. The password is "nezdwigif".

Non-Technical Plenary Talk

9:30-10:15

"Building a Sustainable Society through Innovative Devices and Materials"**Ryoji Chubachi**

National Institute of Advanced Industrial Science and Technology, Japan

Break (15 min.)

Technical Plenary Talk

10:30-11:15

"Beyond blue LED"**Hiroshi Amano**

Nagoya University, Japan

11:15-12:00

"Low Power Electronics beyond 5nm"**Kang L. Wang**

University of California at Los Angeles, USA

Opening & Plenary Sessions (Main Hall A, B)

Opening Session

Chair: S. Hara, Hokkaido Univ.

9:00

Welcome Address

T. Fukui, Hokkaido Univ.

9:05

Welcome Address

K. Masu, JSAP

SSDM Award

SSDM Paper Award Ceremony

Non-Technical Plenary Session

Chair: S. Hara, Hokkaido Univ.

9:30 PL-1-1

Building a Sustainable Society through Innovative Devices and Materials

R. Chubachi, AIST, Japan

10:15 Break

Technical Plenary Session

Chair: S. Fujita, Kyoto Univ.

10:30 PL-2-1

Beyond blue LED

H. Amano, Nagoya Univ., Japan

11:15 PL-2-2

Low Power Electronics beyond 5nm

K. L. Wang, UCLA, USA

Lunch

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-1: Light Sources and Related Technologies (14:00-15:45) Chairs: K. Kojima (Tohoku Univ.) T. Isu (Tokushima Univ.)		C-1: Organic and Perovskite Photovoltaics (14:00-15:45) Chairs: K. Tajima (RIKEN) T. Taima (Kanazawa Univ.)		E-1: Carbon Interconnects Chairs: S. Ogawa (AIST) M. Sato (Fujitsu Labs.)	F-1: Advanced Vision & Imaging Circuits (14:00-15:30) Chairs: T. Minotani (NTT TELECON) H. Lin (Nat. Chung-Hsing Univ.)	G-1: Wide-gap Materials (14:00-15:45) Chairs: T. Nagata (NIMS) T. Iwai (Fujitsu Labs.)
14:00 A-1-1 (Invited) Photonic Structures in LEDs and Solar Cells <i>U.T. Schwarz¹, O. Höhn², B. Bläsi³, C. Wiesmann³ and N. Linder⁴, ¹Univ. of Freiburg, ²Fraunhofer ISE, ³Osram OS and ⁴Osram GmbH (Germany)</i>		14:00 C-1-1 (Invited) Bandgap Science for Organic Solar Cells <i>M. Hiramoto^{1,2}, ¹Institute for Molecular Science and ²JST-CREST (Japan)</i>		14:00 E-1-1 (Invited) Functionalized Insulated Molecular Wires for Molecular Electronics <i>J. Terao, Kyoto Univ. (Japan)</i>	14:00 F-1-1 (Invited) VLSI Pulse-Coupled Phase Oscillator Networks and Their Emulator toward Spike-based Computation for Intelligent Processing <i>H. Tamukoh, Y. Suedomi, K. Matsuzaka and T. Morie, Kyushu Inst. of Tech. (Japan)</i>	14:00 G-1-1 (Invited) Ultrapure Diamond Growth by Chemical Vapor Deposition <i>T. Teraji, NIMS (Japan)</i>

Lunch

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
	J-1: Device and Characterization (14:00-15:30) Chairs: S. Matsumoto (Kyushu Inst. of Tech.) H. Umezawa (AIST)	K-1: Tunnel FET (14:00-15:50) Chairs: M. Masahara (AIST) M. Kobayashi (Univ. of Tokyo)	M-1: High-Speed & High-Frequency Devices (14:00-15:45) Chairs: S. Suzuki (Tokyo Tech) E. Y. Chang (NCTU)	N-1: Junction Technology (14:00-15:30) Chairs: S. Migita (AIST) T. Yamaguchi (Renesas Electronics)	O-1: CBRAM and IGZO Memory (14:00-15:30) Chairs: T. Sakamoto (NEC) Y. Sasago (Hitachi)	P-1: Spin-orbit Effect and Application for Sensors (14:00-15:45) Chairs: S. Mizukami (Tohoku Univ.) C. Song (Tsinghua Univ.)
	14:00 J-1-1 Self-Aligned Formation of the Trench Bottom Shielding Region in 4H-SiC UMOSFETs <i>T. Kojima^{1,2}, S. Harada^{1,3}, Y. Kobayashi^{1,2}, M. Sometani^{1,2}, K. Ariyoshi^{1,4}, J. Senzaki^{1,3}, M. Takei^{1,2}, Y. Tanaka^{1,3} and H. Okumura^{1,2}, R&D Partnership for Future Power Electronics Tech., ²Fuji Electric Co., Ltd., ³AIST and ⁴Toshiba Corp. (Japan)</i>	14:00 K-1-1 (Invited) Novel Steep-Slope Switch Device with Improved Figures of Merit (FOM) through Mechanism Engineering for Ultra-Low-Power Applications <i>R. Huang, Q. Huang, C. Wu, J. Wang, H. Zhu, C. Chen, L. Guo and Y. Wang, Peking Univ. (China)</i>	14:00 M-1-1 (Invited) InGaAs Channel for Low Supply Voltage <i>Y. Miyamoto, T. Kanazawa, Y. Yonai, K. Ohsawa, Y. Mishima, M. Fujimatsu, K. Ohashi, S. Nestu and S. Iwata, Tokyo Tech (Japan)</i>	14:00 N-1-1 (Invited) Annealing Techniques for Low Temperature Junctions Design in a 3D VLSI Integration <i>C. Fenouillet Beranger¹, P. Batude¹, S. Kerdiles¹, B. Mathieu¹, P. Acosta Alba¹, L. Pasini^{2,1}, V. Lu^{2,1}, F. Deprat¹, L. Brunet¹, B. Sklenard¹, P. Rivallin¹, O. Rozeau¹, M-P. Samson^{2,1}, B. Previtali¹, L. Hortemel¹, N. Rambal^{1,2}, V. Lapras^{1,2}, M. Casse¹, S. Reboh¹, F. Piegas Luce¹, P. Besson¹, R. Kachtouli¹, A. Royer¹, D. Lafond¹, H. Dansas¹, F. Aussenac¹, J-P. Barnes¹ and M. Vinet¹, ¹CEA-LETI and ²STMicroelectronics (France)</i>	14:00 O-1-1 (Invited) Conductive Bridge RAM (CBRAM): functionality, reliability and applications <i>G. Molas, J. Guy, M. Barci, F. Longnos, G. Palma, E. Vianello, P. Blaise, B. De Salvo and L. Perniola, CEA-LETI (France)</i>	14:00 P-1-1 (Invited) Observation of the Quantum Anomalous Hall Effect in a Magnetic Topological Insulator Electrically Tuned Magnetic Order and Magnetoresistance in a Topo-logical Insulator <i>S.-H. Ji, L.-L. Wang, X. Chen, K. He, Y. Wang, X.-C. Ma, Q.-K. Xue, Tsinghua Univ. (China)</i>

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-1: Light Sources and Related Technologies		C-1: Organic and Perovskite Photovoltaics		E-1: Carbon Interconnects	F-1: Advanced Vision & Imaging Circuits	G-1: Wide-gap Materials
14:30 A-1-2 High Power and High Temperature Operation over 3W/85°C of an InGaN Laser using a Novel Double-heat-flow Packaging Technology <i>S. Nozaki¹, S. Yoshida², K. Yamanaka², O. Imafuji¹, S. Takigawa¹, T. Katayama¹ and T. Tanaka¹, ¹Panasonic Corp. and ²Panasonic Semiconductor Solutions Co., Ltd. (Japan)</i>		14:30 C-1-2 (Invited) Low Temperature Solution Processable n-i-p Perovskite Solar Cell <i>C.Y. Chu, C.Y. Chang and W.F. Su, National Taiwan Univ. (Taiwan)</i>		14:30 E-1-2 MEMS Ascorbic Acid Fuel Cells with Flexible Electrodes of Enzyme-Coated Graphene Carbon Fiber Cloth <i>K. Hoshi¹, F. Yudai¹, K. Muramatsu², H. Sumi², Y. Otani³, D. Kanakura³ and Y. Nishioka¹, ¹Nihon Univ., ²Incubation Alliance, Inc. and ³Inoue Mago Co. Ltd. (Japan)</i>	14:30 F-1-2 Reconfigurable Hybrid Parallel Vision Processor with Full-custom Compact Distributed Memory <i>Z. Chen, J. Yang, L. Liu and N. Wu, Chinese Academy of Sci. (China)</i>	14:30 G-1-2 Effect of Stacking Faults on Magnetic Flux Pinning in Boron-Doped Superconducting Diamond Films <i>M. Shibata^{1,2}, T. Kageura^{1,2}, T. Yamaguchi³, Y. Takano³ and H. Kawarada^{1,2}, ¹Waseda Univ., ²Kagami Memorial Res. Inst. for Materials Sci. and Tech. and ³NIMS (Japan)</i>
14:45 A-1-3 High Circular Dichroism Lasing Characteristics in Metal-GaN Spiral Cavity at Room Temperature <i>Y.H. Hsiao¹, S.W. Liao¹, K.J. Chen¹, M.H. Shih^{1,2} and H.C. Kuo¹, ¹NCTU and ²Research Center for Applied Sci., Academia Sinica (Taiwan)</i>		15:00 C-1-3 Suppression of Thermal Degradation in Perovskite Solar Cells by Robust Encapsulation <i>N. Hayashi, R. Uchida, M. Suzuka, K. Kawano and T. Sekiguchi, Panasonic Corp. (Japan)</i>		14:45 E-1-3 Interfacial Charge Transfer Behaviour of Conducting Polymers as Contact Electrode for Semiconductor Devices <i>J. Kawakita, Y. Fujikawa, T. Nagata and T. Chikyov, NIMS (Japan)</i>	14:50 F-1-3 Low Contrast Motion Capturing Vision Sensor with Crystalline Oxide Semiconductor FET-based In-Pixel Threshold Voltage Compensation Circuit <i>S. Maeda¹, T. Ohmaru¹, H. Inoue¹, T. Nakagawa¹, Y. Kurokawa¹, T. Ikeda¹, Y. Suzuki¹, N. Yamade¹, H. Miyairi¹, M. Ikeda² and S. Yamazaki¹, ¹Semiconductor Energy Lab. Co., Ltd. and ²Univ. of Tokyo (Japan)</i>	14:45 G-1-3 Beyond 10 µm Thick Crack-Free GaN Growth on Si for High Power Device Applications <i>A. Tanaka, R. Chen and S.A. Dayeh, Univ. of California, San Diego (USA)</i>
15:00 A-1-4 Room Temperature Operation of GaAs/AlGaAs Quantum Nanodisks Light Emitting Diodes Fabricated by Fusion of Bio-Template and Neutral Beam Etching <i>Y.C. Lai^{1,2}, A. Higo², C. Thomas², T. Kiba³, J. Takayama³, M. Sugiyama⁴, Y. Nakano¹, P. Yu¹, A. Murayama³ and S. Samukawa^{1,2}, ¹NCTU, ²Tohoku Univ., ³Hokkaido Univ. and ⁴Univ. of Tokyo (Taiwan)</i>		15:15 C-1-4 Degradation Mechanism for Planar Heterojunction Perovskite Solar Cells <i>K. Yamamoto, Md. Shahiduzzaman, Y. Furumoto, T. Kuwabara, K. Takahashi and T. Taima, Kanazawa Univ. (Japan)</i>		15:00 E-1-4 Effect of Current Stress during Thermal CVD of Multilayer Graphene on Cobalt Catalytic Layer <i>H. Ichikawa, T. Uchida and K. Ueno, Shibaura Inst. of Tech. (Japan)</i>	15:10 F-1-4 A CMOS SPAD Sensor Featuring Asynchronous Event-Extraction Readout Architecture for Faint Light Detection <i>X. Yang¹, H.Z. Zhu², T. Nakura², T. Iizuka¹ and K. Asada², ¹Univ. of Tokyo and ²VDEC Univ. of Tokyo (Japan)</i>	15:00 G-1-4 Electrical Characteristics of N-polar p-type GaN Schottky Contacts <i>T. Aoki¹, T. Tanikawa², R. Katayama², T. Matsuoka² and K. Shiojima¹, ¹Univ. of Fukui and ²IMR, Tohoku Univ. (Japan)</i>
15:15 A-1-5 Plate-Insertion Stacking Method for Three-Dimensional Photonic Crystal Fabrication <i>T. Tajiri¹, S. Takahashi², J. Tatebayashi², S. Iwamoto^{1,2} and Y. Arakawa^{1,2}, ¹IIS, Univ. of Tokyo and ²NanoQuine, Univ. of Tokyo (Japan)</i>		15:30 C-1-5 Single-walled Carbon Nanotube Film as Cathode in Flexible Indium-free Planar Heterojunction Perovskite Solar Cells <i>I. Jeon¹, T. Chiba¹, C. Delacou¹, Y. Guo¹, A. Kaskela², O. Reynaud², E. Kauppinen², S. Maruyama¹ and Y. Matsuo¹, ¹Univ. of Tokyo and ²Aalto Univ. (Japan)</i>		15:15 E-1-5 Intercalation Doping with Metal Chlorides in Low-Temperature-Grown Multilayer CVD Graphene for Interconnect Applications <i>H. Miyazaki^{1,2}, R. Matsumoto³, M. Katagiri^{1,2}, D. Nishide^{1,4}, R. Ifuku^{1,4}, M. Takahashi¹, Y. Yamazaki^{1,2}, T. Matsumoto^{1,4}, N. Sakuma^{1,2}, K. Ueno⁵, T. Sakai^{1,2} and A. Kajita^{1,2}, ¹LEAP, ²Toshiba Corp., ³Tokyo Polytechnic Univ., ⁴Tokyo Electron Ltd. and ⁵Shibaura Inst. of Tech. (Japan)</i>		15:15 G-1-5 Novel Evaluation Technique of GaN Surfaces Using Laser-induced Terahertz Emission <i>Y. Sakai¹, I. Kawayama¹, H. Nakanishi² and M. Tonouchi¹, ¹Osaka Univ. and ²SCREEN Holdings Co., Ltd. (Japan)</i>
15:30 A-1-6 Precise Coupling of Single Germanium Quantum Dot to Silicon Photonic Crystal Nanocavity <i>C. Zeng¹, Y. Ma², Y. Zhang¹, Z. Jiang², J. Yu¹ and J. Xia¹, ¹Huazhong Univ. of Sci. and Tech. and ²Fudan Univ. (China)</i>				15:30 E-1-6 Doped Carbon Nanotubes for Interconnects <i>J. Robertson¹, S. Esconjauregui¹, L. D'Arsie¹, J. Yang¹, H. Sugime¹, G. Zhong¹, S. Vollebregt², R. Ishihara², C. Cepek³, G. Duesberg¹, T. Hallam⁴ and Y. Guo¹, ¹Univ. of Cambridge, ²Delft Univ., ³TASC and ⁴Trinity College Dublin (UK)</i>		15:30 G-1-6 In Situ Synchrotron X-ray Diffraction Studies of Nitride Semiconductor Materials <i>T. Sasaki and M. Takahasi, JAEA (Japan)</i>

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
	J-1: Device and Characterization	K-1: Tunnel FET	M-1: High-Speed & High-Frequency Devices	N-1: Junction Technology	O-1: CBRAM and IGZO Memory	P-1: Spin-orbit Effect and Application for Sensors
	14:15 J-1-2 Characterization of Process-Induced Defects in SiC MOSFETs by Cross-Sectional Cathodoluminescence <i>R. Sugie, T. Uchida, K. Kosaka and K. Matsumura, Toray Research Center Inc. (Japan)</i>	14:30 K-1-2 Design of Complementary Raised-Drain Tunneling FET for Ultra-Low Voltage Applications <i>Y.B. Zhao, E.R. Hsieh, C.H. Chien and S.S. Chung, NCTU (Taiwan)</i>	14:30 M-1-2 Evaluation of InAs HEMT with Non-Alloyed Ohmic Contacts & Mesa Sidewall Etch for RF and Low-Power Logic Applications <i>K.C. Yang¹, J.N. Yao¹, H.H. Hsu¹, Y.C. Lin¹, H.T. Hsu², J.S. Maa¹, E.Y. Chang² and H. Iwai³, ¹NCTU, ²Yuan Ze Univ. and ³Tokyo Tech (Taiwan)</i>	14:30 N-1-2 Microwave Plasma Doping: As Activation and Transport in Ge and Si <i>H. Miyoshi¹, M. Oka¹, Y. Kobayashi¹, H. Ueda¹, P.L.G. Ventzek², Y. Sugimoto¹, G. Nakamura¹, Y. Hirota¹, T. Kaitsuka¹ and S. Kawakami¹, ¹Tokyo Electron Ltd. and ²Tokyo Electron America, Inc. (Japan)</i>	14:30 O-1-2 Visible-Light Effects on Nanoscale Conducting Filament in SiO₂/Cu CBRAM <i>T. Kawashima^{1,2}, K.S. Yew¹, Y. Zhou¹, M.K. Bera¹, H.Z. Zhang¹ and D.S. Ang¹, ¹NTU and ²Toshiba Corp. (Singapore)</i>	14:30 P-1-2 The Interfacial Dzyaloshinskii-Moriya Interaction on Pt/Co/AlO_x Multilayer with Ta Buffer Layer <i>N.H. Kim¹, J. Cho¹, J.S. Kim², H.J.M. Swagten² and C.Y. You¹, ¹Inha Univ. and ²Eindhoven Univ. of Tech. (Korea)</i>
	14:30 J-1-3 Effects of High-Temperature Diluted-H₂ Annealing on Effective Mobility of 4H-SiC MOSFETs with Thermally-Grown SiO₂ <i>H. Hirai and K. Kita, Univ. of Tokyo (Japan)</i>	14:50 K-1-3 Steep Subthreshold Swing Metal-Oxide-Semiconductor Field-Effect Transistors Utilizing Nonlinear Gate Dielectric Insulators <i>H. Ota^{1,3}, S. Migita^{1,3}, K. Fukuda¹ and A. Toriumi^{2,3}, ¹AIST, ²Univ. of Tokyo and ³JST-CREST (Japan)</i>	14:45 M-1-3 (Invited) 25nm InP HEMT TMIC Process with 1 THz Amplifier Circuit Gain <i>X.B. Mei, W. Yoshida, Z. Zhou, M. Lange, J. Lee, P.H. Liu, K. Leong, R. Lai and W.R. Deal, Northrop Grumman Corp (USA)</i>	14:50 N-1-3 Formation of n⁺Poly-Ge Films with High Electron Concentration and High Electron Mobility by Flash Lamp Annealing for Poly-Ge nMOSFETs <i>M. Koike^{1,3}, K. Usuda^{1,3}, T. Mori^{1,2}, T. Maeda^{1,2} and T. Tezuka^{1,3}, ¹GNC, AIST, ²AIST and ³Toshiba Corp. (Japan)</i>	14:50 O-1-3 A 32-kb Embedded SRAM Using 60-nm Crystalline Oxide Semiconductor Transistors and Power Gating with 45-ns 144-fI/bit Data Backup <i>W. Uesugi¹, T. Ishizu¹, K. Kato¹, T. Onuki¹, H. Tamura¹, A. Isobe¹, N. Tsutsui¹, Y. Suzuki¹, Y. Okazaki¹, M. Fujita², J. Koyama¹, Y. Yamamoto¹ and S. Yamazaki¹, ¹Semiconductor Energy Lab. Co., Ltd. and ²VDEC Univ. of Tokyo (Japan)</i>	14:45 P-1-3 Estimation of Spin-orbit Interaction Parameters with Drifting Spins in Semiconductor Quantum Wells <i>Y. Kunihashi¹, H. Sanada¹, H. Gotoh¹, K. Onomitsu¹, M. Kohda², J. Nitta² and T. Sogawa¹, ¹NTT BRL and ²Tohoku Univ. (Japan)</i>
	14:45 J-1-4 Transient Thermal Characteristics of Packaged SiC SBDs and Its Temperature Dependence <i>T. Kim and T. Funaki, Osaka Univ. (Japan)</i>	15:10 K-1-4 Variation Analysis for Ultra-Low Voltage 8T Tunnel FET SRAM Using Closed-Form Analytical Model of Static Noise Margin <i>H. Fuketa, S. O'uchi, K. Fukuda, T. Mori, Y. Morita, M. Masahara and T. Matsukawa, AIST (Japan)</i>	15:15 M-1-4 Wide Frequency Tuning in Resonant-Tunneling-Diode Terahertz Oscillator Using Forward-Biased Varactor Diode <i>S. Kitagawa, S. Suzuki and M. Asada, Tokyo Tech (Japan)</i>	15:10 N-1-4 Effects of Microwave Annealing on Ge pMOSFET with Hydrogen-treated Interfacial Layer <i>K.S. Chang Liao¹, C.C. Li¹, L.J. Liu¹, M.C. Li¹, W.F. Chi¹, T.M. Lee¹, T.H. Su¹, C.H. Fu¹ and Y.J. Lee², ¹National Tsing Hua Univ. and ²NDL, NARLabs (Taiwan)</i>	15:10 O-1-4 Analysis and Experimental Proof of Deterioration-free Memory Device Using CAAC-IGZO FET <i>M. Tsubuku, T. Takeuchi, K. Ohshima, T. Murakawa, M. Fujita, D. Shimada, S. Sambonsuge, T. Atsumi, M. Sakakura, K. Kato, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Lab. Corp. Ltd. (Japan)</i>	15:00 P-1-4 Electric Field Control of Induced Magnetic Moment in Pd on Co Layer <i>A. Obinata¹, D. Hayakawa¹, Y. Hibino¹, T. Koyama¹, K. Miwa², S. Ono² and D. Chiba¹, ¹Univ. of Tokyo and ²CRIEPI (Japan)</i>
	15:00 J-1-5 Turn-on Analysis of Si-IGBTs with Emitter Trenches <i>S. Machida and Y. Yamashita, Toyota Central R&D Labs., Inc. (Japan)</i>	15:30 K-1-5 Performance Improvement in Lattice Matched SiGeSn/GeSn P-Channel TFET with Type-II Staggered Tunneling Junction <i>H. Wang¹, G. Han^{1,2}, Y. Liu¹, C. Zhang² and Y. Hao², ¹Chongqing Univ. and ²Xidian Univ. (China)</i>	15:30 M-1-5 A Resonant Tunneling Super Regenerative Detector with Input/Output Isolation and Improved Sensitivity <i>K. Hu, J. Pan, M. Mori and K. Maezawa, Univ. of Toyama (Japan)</i>			15:15 P-1-5 Observation of the D'yakonov-Perel' Spin Relaxation in Epitaxial Pt Thin Film and Its Electrical Manipulation <i>J.C. Ryu, S. Takasuna, K. Yoshizumi, M. Kohda and J. Nitta, Tohoku Univ. (Japan)</i>
	15:15 J-1-6 RF Characteristics of LDMOS Transistors with Superjunction Structures <i>B.Y. Chen^{1,2}, K.M. Chen¹, G.W. Huang¹ and Edward Y. Chang², ¹NDL, NARLabs and ²NCTU (Taiwan)</i>					15:30 P-1-6 Highly Sensitive Magnetic Field Sensor Devices Based on Magnetic Tunnel Junctions with CoFeSiB Electrode <i>D. Kato¹, K. Oogane¹, K. Fujiwara¹, J. Jouno², H. Naganuma¹, H. Katsurada² and Y. Ando¹, ¹Tohoku Univ. and ²KONICA MINOLTA, Inc. (Japan)</i>

Monday, September 28

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-2: MO and EO Devices (16:05-17:50) Chairs: H. Shimizu (Tokyo Univ. of Agri. & Tech.) T. Shimizu (PETRA)			D-2: 2D Material-based Devices (16:05-17:50) Chairs: K. Nagashio (Univ. of Tokyo) Y. Ohno (Nagoya Univ.)	E-2: Interconnects and Bonding (16:05-18:05) Chairs: M. Kodera (Toshiba) M. Fujino (Univ. of Tokyo)	F-2: Advanced Imaging & Measurement Circuits for Bio and Medical Applications (16:05-17:55) Chairs: H. Takao (Kagawa Univ.) J. Ohta (NAIST)	
16:05 A-2-1 (Invited) Magneto-surface-plasmon Effect in Magnetic/Nonmagnetic Films <i>Y. Ashizawa and K. Nakagawa, Nihon Univ. (Japan)</i>			16:05 D-2-1 (Invited) Atomically-thin Semiconductors <i>K. Tsukagoshi, NIMS (Japan)</i>	16:05 E-2-1 (Invited) Ultra-Heat Resistant Interconnection for Wide Band Gap Semiconductors <i>K. Suganuma, S. Nagao, T. Sugahara and J. Jiu, Osaka Univ. (Japan)</i>	16:05 F-2-1 (Invited) Electronic Device from TFT Display for Applications on Biological Cells <i>A. Tixier Mita, S. Ihida, B.D. Segard, G.A. Cathcart, T. Takahashi, H. Fujita and H. Toshiyoshi, Univ. of Tokyo (Japan)</i>	
16:35 A-2-2 Spatially Resolved Pump-probe Magneto-optical Kerr Effect in Permalloy Films <i>S. Iihama¹, Y. Sasaki¹, Y. Ando¹ and S. Mizukami², ¹Tohoku Univ. and ²WPI-AIMR, Tohoku Univ. (Japan)</i>			16:35 D-2-2 Ultra-Sensitive 2D Photodetectors Based on Large-Scale Molybdenum Disulfide Crystals <i>Z.P. Ling¹, R. Yang¹, J.W. Chai², S.J. Wang¹, Y. Tong¹, D. Lei¹, Q. Zhou¹, X. Gong¹, D.Z. Chi² and K.W. Ang¹, ¹SNDL, NUS and ²Inst. of Material Res. and Eng. (Singapore)</i>	16:35 E-2-2 (Invited) Nanomechanical Characterization of Intermetallic Compounds in Miniaturized Interconnections <i>J.M. Song, Natl. Chung Hsing Univ. (Taiwan)</i>	16:35 F-2-2 A CMOS Image Sensor with Lateral Electric Field Modulation Pixels for Sub Nano-Second Time Response Fluorescence Lifetime Imaging Microscopy <i>Z. Li, M.W. Seo, K. Kagawa, K. Yasutomi and S. Kawahito, Univ. of Shizuoka (Japan)</i>	
16:50 A-2-3 Magneto-Optical Switching Devices Based on Si Photonic Resonators <i>K. Noda, K. Okada, Y. Amemiya and S. Yokoyama, Hiroshima Univ. (Japan)</i>			16:50 D-2-3 Source/Drain Contact Engineering of Molybdenum Disulphide (MoS₂) Devices <i>W.S. Leong, X. Luo, Y. Li, K.H. Khoo, S.Y. Quek and J.T.L. Thong, NUS (Singapore)</i>	17:05 E-2-3 Wafer Bonding of SiC-SiC and SiC-Si by Modified Surface Activated Bonding Method <i>F. Mu¹, M. Fujino¹, T. Suga¹, K. Iguchi², H. Nakazawa² and Y. Takahashi², ¹Univ. of Tokyo and ²Fuji Electric Co., Ltd. (Japan)</i>	16:55 F-2-3 Improvement of Power Consumption and SNR of Self-reset Pixels for an Implantable CMOS Image Sensor <i>T. Yamaguchi, Y. Sunaga, M. Haruta, H. Takehara, T. Noda, K. Sasagawa, T. Tokuda and J. Ohta, NAIST (Japan)</i>	
17:05 A-2-4 Electro-Optic Polymer/TiO₂ Slot Waveguide Modulators and Enhanced Electro-Optic Coefficient of 260 pm/V <i>Y. Enami¹, Y. Jouane¹, J. Luo² and A. Jen², ¹Kochi Univ. of Tech. and ²Washington State Univ. (Japan)</i>			17:05 D-2-4 Tolerance to UV-O₃ Exposure of CVD and Mechanically Exfoliated MoS₂ & Fabrication of Top-Gated CVD MoS₂ FETs <i>S. Kurabayashi¹ and K. Nagashio^{1,2}, ¹Univ. of Tokyo and ²JST-PRESTO (Japan)</i>	17:25 E-2-4 Transfer Methods of Ultrathin Piezoelectric Strain Sensor to Flexible Printed Circuits <i>T. Yamashita¹, S. Takamatsu¹, H. Okada¹, T. Itoh² and T. Kobayashi¹, ¹AIST and ²Univ. of Tokyo (Japan)</i>	17:15 F-2-4 Wireless Data Transmission in a Brain Tissue with Intra-Body Communication by a Micro-Sized Image Sensor <i>H. Hayami, K. Nagata, M. Haruta, H. Takehara, T. Noda, K. Sasagawa, T. Tokuda and J. Ohta, NAIST (Japan)</i>	
17:20 A-2-5 (Late News) Stimulated Emission with Nearly 100% Circular Polarization at RT in GaAs-based DHs with Fe/Crystalline AlO_x Spin Injectors <i>N. Nishizawa, K. Nishibayashi and H. Munekata, Tokyo Tech (Japan)</i>			17:20 D-2-5 HfS₂ Electron Double Layer Transistor with High Drain Current <i>T. Kanazawa¹, T. Amemiya^{1,2}, A. Ishikawa^{2,3}, V. Upadhyaya¹, T. Tanaka², K. Tsuruta³ and Y. Miyamoto¹, ¹Tokyo Tech, ²RIKEN and ³Okayama Univ. (Japan)</i>	17:45 E-2-5 3D Sequential Integration via Direct Bonding of Highly Conductive Sputtered Tungsten Films <i>L. Benaissa^{1,2}, P. Gondcharton^{1,2}, B. Imbert^{1,2}, C. Sabbione^{1,2}, G. Rodriguez^{1,2}, D. Mariolle^{1,2} and D. Lafond^{1,2}, ¹Univ. Grenoble Alpes and ²CEA-LETI (France)</i>	17:35 F-2-5 Area-Efficient and Wide-Range Impedance Analysis Circuit for Multichannel High Quality Brain Signal Recording System <i>T. Iwagami¹, T. Tani¹, K. Ito¹, S. Nishino¹, T. Harashima¹, K. Kiyoyama² and T. Tanaka¹, ¹Tohoku Univ. and ²Nagasaki Inst. of Applied Sci. (Japan)</i>	

Monday, September 28

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
	J-2: Process and Characterization (16:05-17:05) Chairs: S. Harada (Nagoya Univ.) T. Uesugi (Toyota Central R&D Labs.)	K-2: Ge / III-V (16:05-17:50) Chairs: O. Weber (CEA-LETI) G. Tsutsui (IBM)	M-2: GaN FETs (16:05-17:50) Chairs: T. Hashizume (Hokkaido Univ.) M. Kuzuhara (Univ. of Fukui)	N-2: Process for Fully-Depleted Devices (16:05-17:05) Chairs: H. Morioka (SOCIONEXT) T. Aoyama (Toshiba)	O-2: Nano Engineered Thin Oxide Film (16:05-17:55) Chairs: N. Fujimura (Osaka Pref. Univ.) H. Saito (Fujitsu Semicon.)	
	16:05 J-2-1 Al Doping of 4H-SiC by Laser Irradiation to Coated Film and Its Application to Junction Barrier Schottky Diode <i>A. Ikeda, R. Sumina, H. Ikenoue and T. Asano, Kyushu Univ. (Japan)</i>	16:05 K-2-1 (Invited) Ge CMOS Devices and Logic Circuits <i>H. Wu and P.D. Ye, Purdue Univ. (USA)</i>	16:05 M-2-1 (Invited) GaN Metal-Oxide-Semiconductor HEMTs: Selected Physical Aspects and Characterization <i>M. Tapajna, D. Gregusova and J. Kuzmik, Institute of Electrical Engineering, Slovak Academy of Sciences (Slovakia)</i>	16:05 N-2-1 Optimization of Extension Doping Condition of FinFETs for Ultra-Low-Power Applications <i>T. Matsukawa, Y.X. Liu, T. Mori, Y. Morita, S. O'uchi, H. Fuketa, S. Otsuka, S. Migita and M. Masahara, AIST (Japan)</i>	16:05 O-2-1 (Invited) Scaling and Optimization of Ferroelectric Hafnium Oxide for Memory Applications and Beyond <i>J. Mueller, P. Polakowski and S. Riedel, Fraunhofer IPMS (Germany)</i>	
	16:20 J-2-2 4H-SiC Vertical Gate Trench with a Well-Controlled Shape Uniformly Formed by High Rate Etching and Annealing with Solid Source <i>H. Kitai, H. Shiomi, H. Tamaso and K. Fukuda, AIST (Japan)</i>	16:35 K-2-2 Impact of Bandstructure Effects in III-V nMOSFETs <i>G. Hiblot^{1,3}, Q. Rafhay³, G. Mugny^{1,2}, T. Ferrotti^{1,2}, G. Ghibaudo³ and F. Boeuf¹, ¹STMicroelectronics, ²CEA-LETI and ³IMEP-LAHC (France)</i>	16:35 M-2-2 (Late News) Highly Reduced Current Collapse in AlGaIn/GaN HEMTs by Combined Application of Oxygen Plasma Treatment and Field-plate Structures <i>J. Asubar, S. Yoshida, H. Tokuda and M. Kuzuhara, Univ. of Fukui (Japan)</i>	16:25 N-2-2 Ω-Gate Nanowire Transistors Realized by Sidewall Image Transfer Patterning: 35nm Channel Pitch and Opportunities for Stacked-Nanowires Architectures <i>L. Gaben^{1,2,3}, S. Barraud¹, P. Pimenta-Barros¹, Y. Morand¹, J. Pradelles¹, M.P. Samson³, B. Previtali¹, P. Besson², F. Alain¹, S. Monfray², F. Boeuf¹, T. Skotnicki², F. Balestra³ and M. Vinet¹, ¹CEA-LETI, ²STMicroelectronics and ³IMEP-LAHC (France)</i>	16:35 O-2-2 Effect of Stress on Ferroelectricity of (Hf_{0.5}Zr_{0.5})O₂ Thin Films <i>H. Funakubo¹, T. Shiraishi¹, T. Shimizu¹, T. Yokouchi¹, T. Oikawa¹ and H. Uchida², ¹Tokyo Tech and ²Sophia Univ. (Japan)</i>	
	16:35 J-2-3 Fabrication of Nitrogen-vacancy Centers in Diamond Power Devices for Electric-Field Sensing <i>W. Naruki¹, K. Tahara¹, T. Iwasaki^{1,3}, H. Kato^{2,3}, T. Makino^{2,3}, M. Ogura^{2,3}, D. Takeuchi^{2,3}, S. Yamasaki^{2,3} and M. Hatano^{1,3}, ¹Tokyo Tech, ²AIST and ³JST-CREST (Japan)</i>	16:55 K-2-3 High Performance Low Thermal Budget Ge n- and p-MOSFETs by using Ion Implantation after Germanidation Technique <i>W.H. Chang, H. Ota and T. Maeda, AIST (Japan)</i>	16:50 M-2-3 AlGaIn/GaN MOS-HFETs Exhibiting Improved Hysteresis in Transfer Characteristics with Recessed Gate Structures Formed by Selective Regrowth <i>S. Nakazawa, N. Shiozaki, N. Negoro, N. Tsurumi, Y. Anda, M. Ishida and T. Ueda, Panasonic Corp. (Japan)</i>	16:45 N-2-3 A New Method to Induce Local Tensile Strain in SOI Wafers: First Strain Results of the "BOX Creep" Technique <i>A. Bonneville^{1,2,3}, C. Le Royer², Y. Morand¹, S. Rebol^{1,2}, J.M. Pedini¹, A. Roule², D. Marseilhan², P. Besson¹, D. Rouchon², N. Bernier², C. Tabone², C. Plantier² and M. Vinet², ¹STMicroelectronics and ²CEA-LETI (France)</i>	16:55 O-2-3 Switching Mechanism in GeSbTe Phase Change Memory Superlattices <i>J. Robertson and X. Yu, Cambridge Univ. (UK)</i>	
	16:50 J-2-4 Evaluation of Temperature Dependence of Surface Recombination Velocities for n-type 4H-SiC <i>K. Kohama, Y. Mori, M. Kato and M. Ichimura, Nagoya Inst. of Tech. (Japan)</i>	17:15 K-2-4 Steep-Slope Tunnel FET using InGaAs-InP Core-Shell Nanowire/Si Heterojunction <i>K. Tomioka^{1,2}, F. Ishizaka¹, J. Motohisa¹ and T. Fukui¹, ¹Hokkaido Univ. and ²JST-PRESTO (Japan)</i>	17:05 M-2-4 MOS Characteristics on Homoepitaxial GaN Layer <i>S. Takashima¹, K. Ueno¹, H. Matsuyama¹, M. Edo¹, J. Suda² and K. Nakagawa¹, ¹Fuji Electric Co., Ltd., ²Kyoto Univ. and ³Univ. of Yamanashi (Japan)</i>		17:15 O-2-4 Topotactic Reductive Synthesis of A-site Cation-Ordered Perovskite YBaCo₂O_x (x = 4.5-5.5) Epitaxial Thin Films <i>T. Katayama¹, A. Chikamatsu^{1,2}, T. Fukumura^{2,3} and T. Hasegawa^{1,2,4}, ¹Univ. of Tokyo, ²JST-CREST, ³Tohoku Univ. and ⁴KAST (Japan)</i>	
		17:35 K-2-5 (Late News) Investigation of FOM of Tunnel FET Devices and OTA Design for Analog/Mixed-Signal Applications <i>Y.N. Chen¹, P. Su¹, J.C.S. Woo² and C.T. Chuang¹, ¹NCTU and ²UCLA (Taiwan)</i>	17:20 M-2-5 Low-Frequency Noise in AlTiO/AlGaIn/GaN Metal-Insulator-Semiconductor Heterojunction Field-Effect Transistors <i>S.P. Le, T. Ui, T.Q. Nguyen, H.A. Shih and T. Suzuki, JAIST (Japan)</i>		17:35 O-2-5 Formation of Ge Oxide Film by Neutral Beam Post Oxidation using Al Metal Film <i>T. Ohno^{1,2}, D. Nakayama³ and S. Samukawa^{1,3}, ¹WPI-AIMR, Tohoku Univ., ²JST-PRESTO and ³IFS, Tohoku Univ. (Japan)</i>	

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1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-2: MO and EO Devices			D-2: 2D Material-based Devices			
17:35 A-2-6 (Late News) Electrical Manipulation of Exchange Spring in Antiferromagnetic Metals <i>C. Song¹, Y.Y. Wang¹, S.M. Zhou² and F. Pan¹, ¹Tsinghua Univ. and ²Tongji Univ. (China)</i>			17:35 D-2-6 Schottky Barrier Heights and Band Alignments in Transition Metal Dichalcogenides <i>J. Robertson and Y. Guo, Cambridge Univ. (UK)</i>			

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

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-3: Optical Interconnection (9:00-10:45) Chairs: H. Fukuda (NTT) S. Itabashi (NTT-AT)		C-3: Thin-film Photovoltaics (9:00-10:30) Chairs: K. Ohdaira (JAIST) T. Negami (Panasonic)	D-3: Nanocarbon-based Devices (9:00-10:30) Chairs: T. Kawai (NEC) K. Maehashi (Tokyo Univ. of Agri. & Tech.)		F-3: Microfluidics (9:00-10:45) Chairs: J. Ohta (NAIST) C.-H. Liu (National Tsing Hua Univ.)	G-3: Dots and Non-structures (9:00-10:45) Chairs: T. Iwai (Fujitsu Labs.) T. Nagata (NIMS)
9:00 A-3-1 (Invited) High-Density Optical Interconnection Based on Silicon Photonics <i>Y. Tanaka, S. Sekiguchi and K. Morito, PETRA (Japan)</i>		9:00 C-3-1 (Invited) Thin-Film Solar Cells Based on Liquid Phase Crystallized Silicon on Glass <i>D Amkreutz¹, J Haschke², S Kuehnappel¹, P. Sonntag¹ and B Rech¹, ¹Helmholtz-Zentrum Berlin fuer Materialien und Energie GmbH and ²Ecole Polytechnique Federale de Lausanne (Germany)</i>	9:00 D-3-1 Development of Highly Sensitive Tactile Sensor using Multi-Walled Carbon Nanotube Arrays <i>K. Suzuki, T. Nozaki and H. Miura, Tohoku Univ. (Japan)</i>		9:00 F-3-1 (Invited) Label-Free Integrated Plasmonic Biosensors for Cytokine Immunodiagnosics <i>M.T. Chung, P. Chen, B.R. Oh and K. Kurabayashi, Univ. of Michigan (USA)</i>	9:00 G-3-1 High-density Self-assembled Quantum Dots of InGaAs for Ultrafast and Efficient Spin Injection <i>J. Takayama¹, T. Kiba², T. Yamamura¹, D. Yamazaki¹, S. Chen¹ and A. Murayama¹, ¹Hokkaido Univ. and ²Kitami Inst. of Tech. (Japan)</i>
9:30 A-3-2 High-Performance MOS Capacitor Type Si Optical Modulator, and Surface Illumination-type Ge Photodetector for Optical Interconnection <i>J. Fujikata¹, S. Takahashi¹, M. Takahashi², M. Noguchi¹, M. Miura¹, T. Nakamura¹ and Y. Arakawa³, ¹PETRA, ²AIST and ³Univ. of Tokyo (Japan)</i>		9:30 C-3-2 Development of Nearly Crystallized P-type Hydrogenated Amorphous Silicon Oxide as Window Layer in a-Si:H Single-junction and a-Si:H/a-Si_{1-x}Ge_x:H Tandem Solar cells <i>P.L. Chen, W.H. Tu, C.H. Hsu and C.C. Tsai, NCTU (Taiwan)</i>	9:15 D-3-2 Micro-Supercapacitors with Carbon Nanotubes and Flexible Components <i>F. Tanaka¹, A. Sekiguchi¹, K.U. Laszczyk¹, K. Kobashi², S. Sakurai², D.N. Futaba², T. Yamada² and K. Hata², ¹TASC and ²AIST (Japan)</i>		9:30 F-3-2 (Invited) Molecular Analysis in Biological Samples by Actuator-Integrated Microfluidic Chips <i>Y. Takamura^{1,2}, ¹JAIST and ²JST-CREST (Japan)</i>	9:15 G-3-2 (Late News) Fabrication and Magnetic Properties of Co-doped La_{0.5}Sr_{0.5}TiO₃ Nanofibers <i>S. Maensiri¹, W. Ponhan² and Y. Amornkitbamrung², ¹Suranaree Univ. of Tech. and ²Khon Kaen Univ. (Thailand)</i>
9:45 A-3-3 Ultra-Compact 100Gb/s Coherent Receiver Monolithically Integrated on Silicon <i>Z. Tu, P. Gong, Z. Zhou and X. Wang, Peking Univ. (China)</i>		9:45 C-3-3 (Invited) Development of CTS-Based Thin Film Solar Cells <i>H. Araki¹, A. Kanai¹, A. Takeuchi¹, K. Jimbo¹ and H. Katagiri¹, Nat. Inst. of Tech., Nagaoka Coll. (Japan)</i>	9:30 D-3-3 Wafer-Scale Statistical Characterization of Carbon Nanotube Thin-Film Transistors <i>J. Hirotani, S. Kishimoto and Y. Ohno, Nagoya Univ. (Japan)</i>		10:00 F-3-3 Detection of Amyloid-Beta Proteins during Fibrillization Process by Liposome-Immobilized Microcantilevers in Microfluidic Channel <i>M. Sohgawa¹, Z. Zhang², Y. Abe¹, T. Abe¹, K. Yamashita² and M. Noda², ¹Niigata Univ. and ²Kyoto Inst. of Tech. (Japan)</i>	9:30 G-3-3 Characteristics of Highly Stacked InAs Quantum-dot Laser Grown on Vicinal (001)InP Substrate <i>K. Akahane¹, N. Yamamoto¹, T. Umezawa¹, A. Matsumoto¹ and T. Kawanishi^{1,2}, ¹NICT and ²Waseda Univ. (Japan)</i>
10:00 A-3-4 Suppression of Void Generation in Direct Wafer Bonding for Si High-k MOS Optical Modulators using Al₂O₃/HfO₂ Bonding Interface <i>J.H. Han^{1,2}, M. Takenaka^{1,2} and S. Takagi^{1,2}, ¹Univ. of Tokyo and ²JST-CREST (Japan)</i>		10:15 C-3-4 Crystallographic and Optical Properties, and Band-diagrams of CuInSe₂, CuIn₂Se₃, and CuIn₃Se₈ Phases in Cu-poor Cu₂Se-in₂Se₃ Pseudo-binary System <i>T. Maeda, W. Gong and T. Wada, Ryukoku Univ. (Japan)</i>	9:45 D-3-4 PMMA Dry Transfer of Graphene on h-BN using Heating/Cooling System <i>T. Uwanno¹, K. Watanabe², T. Taniguchi² and K. Nagashio^{1,3}, ¹Univ. of Tokyo, ²NIMS and ³JST-PRESTO (Japan)</i>		10:15 F-3-4 A Microfluidic Labchip For Angiogenesis Studies Using Multi-Gradients Generator and Cell Trapping Structures <i>C.H. Liu¹, C.H. Chin¹, Y.L. Chiu¹ and K.Y. Lee², ¹National Tsing Hua Univ. and ²Shuang Ho Hospital (Taiwan)</i>	9:45 G-3-4 Selective Epitaxy of Ge on Nano-tip Patterned Si (001): Towards Defect-free Ge Islands <i>G. Niu¹, G. Capellini^{1,2}, T. Niermann³, M. Salvalaglio¹, A. Marzegalli¹, M.A. Schubert¹, P. Zaumseil¹, H.M. Krause¹, O. Skibitzki¹, M. Lehmann³, F. Montalenti⁴, Y.H. Xie⁵ and T. Schroeder^{1,6}, ¹IHP, ²Univ. Roma Tre, ³TU Berlin, ⁴Univ. degli Studi di Milano-Bicocca, ⁵UCLA and ⁶BTU (Germany)</i>
10:15 A-3-5 Monolithically Integrated Quantum Dot Optical Modulator with Semiconductor Optical Amplifier for T-Band Optical Communication <i>N. Yamamoto¹, K. Akahane¹, T. Umezawa¹, A. Matsumoto¹ and T. Kawanishi^{1,2}, ¹NICT and ²Waseda Univ. (Japan)</i>			10:00 D-3-5 Fluorinated Graphene as Passivation Layer of Graphene Field Effect Transistor <i>Y.P. Ho, K.I. Ho, B. Liu and C.S. Lai, Chang Gung Univ. (Taiwan)</i>		10:30 F-3-5 (Late News) An Integrated One-chip-sensor System for MiRNA Quantitative Analysis Based on Digital Droplet PCR <i>M. Tsukuda¹, R.S. Wiederkehr², Q. Cai³, B. Majeed³, P. Fiorini³, T. Stakenborg³ and T. Matsuno¹, ¹Panasonic Corp. Advanced Research Lab., ²Panasonic Corp. AIS Company and ³IMEC vzw (Japan)</i>	10:00 G-3-5 Miniband Formulation in Ge/Si Quantum Dot Array <i>Y.C. Tsai¹, M.Y. Lee¹, Y. Li¹ and S. Samukawa², ¹NCTU and ²Tohoku Univ. (Taiwan)</i>

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2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
H-3: Novel Functional Devices (9:00-10:45) Chairs: T. Machida (Univ. of Tokyo) T. Ota (NTT BRL)		K-3: Characterization I (9:00-10:30) Chairs: K. Maekawa (Renesas Electronics) N. Planes (STMicroelectronics)	M-3: SiC & GaN Power Devices (9:00-10:30) Chairs: H. Umezawa (AIST) R. Hattori (Mitsubishi Electric)	N-3: Advanced Process and Characterization (9:00-10:30) Chairs: T. Nakayama (Chiba Univ.) S. Migita (AIST)	O-3: ReRAM 1 (9:00-10:50) Chairs: M.-H. Lee (Macronix) K. Yamamoto (Toshiba)	P-3: Semiconductor and RF Spintronics (9:00-10:45) Chairs: J. Nitta (Tohoku Univ.) Y. Saito (Toshiba)
9:00 H-3-1 (Invited) Gigahertz Single-Electron Pump Towards a Representation of the New Ampere <i>A. Fujiwara, G. Yamahata and K. Nishiguchi, NTT BRL (Japan)</i>		9:00 K-3-1 (Invited) Impacts of RDF, RTN, and Shot Noise on Nanowire Transistor Performance Studied by Ensemble Monte Carlo / Molecular Dynamics Simulation <i>T. Watanabe, Waseda Univ. (Japan)</i>	9:00 M-3-1 (Invited) SiC Power Electronics - Current and Future Prospects of SiC Devices <i>P. Friedrichs, Infineon AG (Germany)</i>	9:00 N-3-1 (Invited) High Performance Poly-Ge p- and nMOSFETs Fabricated by Flash Lamp Annealing <i>K. Usuda^{1,2}, Y. Kamata^{1,2}, Y. Kamimuta^{1,2}, M. Koike^{1,2}, T. Mori^{2,3}, T. Maeda^{2,3} and T. Tezuka^{1,2}, ¹Toshiba Corp., ²GNC-AIST and ³AIST (Japan)</i>	9:00 O-3-1 (Invited) TMO-ReRAM Based Synaptic Device for Neuromorphic Computing <i>J.F. Kang, B. Gao, Z. Chen, P. Huang, Y.D. Zhao, L.F. Liu and X.Y. Liu, Peking Univ. (China)</i>	9:00 P-3-1 (Invited) Graphene as a Versatile Spin Tunnel Barrier <i>E. Cobas, US Naval Res. Lab. (USA)</i>
9:30 H-3-2 Formation of Coupled Triple Silicon Quantum Dot with a Compact Device Structure <i>T. Uchida¹, A. Fukuchi¹, M. Arita¹, A. Fujiwara¹ and Y. Takahashi¹, ¹Hokkaido Univ. and ²NTT BRL (Japan)</i>		9:30 K-3-2 Effect of 3D Current Distribution in the Characterizing Parasitic Resistance of FinFETs <i>P.Y. Lin¹, Y.L. Chiu¹, F.H. Meng¹, K.H. Chen², S. Hao², B.Z. Tien², T.S. Chang², C.J. Lin¹ and Y.C. King¹, ¹National Tsing Hua Univ. and ²TSMC (Taiwan)</i>	9:30 M-3-2 Development of Novel 1200V-Class 4H-SiC Implantation and Epitaxial Trench MOSFETs with Low On-resistance <i>H. Shiomi, H. Kitai, H. Tamaso and K. Fukuda, AIST (Japan)</i>	9:30 N-3-2 Direct Evidence of Free-carrier Induced Band-gap Narrowing in Ge <i>S. Kabuyanagi, T. Nishimura, T. Yajimia and A. Toriumi, Univ. of Tokyo (Japan)</i>	9:30 O-3-2 Microstructural Change in Cu/WO₃/TiN during Resistive Switching <i>M. Arita, A. Takahashi, Y. Ohno, A. Nakane, A. Tsurumaki Fukuchi and Y. Takahashi, Hokkaido Univ. (Japan)</i>	9:30 P-3-2 Suppression of Spin Transport in Ferromagnet/Oxide/ Semiconductor Junctions by Inserting Magnetic Impurities <i>A. Spiesser, H. Saito, S. Yuasa and R. Jansen, AIST (Japan)</i>
9:45 H-3-3 Solid-State Operation of Mott Transistors with Ultra-Thin VO₂ Channels <i>T. Yajima^{1,2}, T. Nishimura^{1,2} and A. Toriumi^{1,2}, ¹Univ. of Tokyo and ²JST-CREST (Japan)</i>		9:50 K-3-3 Quantitative Understanding of Scanning Spreading Resistance Microscopy with Schottky Contact Model <i>S. Itai, L. Zhang, K. Matsuzawa, M. Ono and T. Ishihara, Toshiba Corp. (Japan)</i>	9:45 M-3-3 A High Current Operation in a 1.6 kV GaN-based Trenched Junction Barrier Schottky (JBS) Diode <i>R. Kajitani, H. Handa, S. Ujita, D. Shibata, K. Tanaka, M. Ogawa, H. Ishida, S. Tamura, M. Ishida and T. Ueda, Panasonic Corp. (Japan)</i>	9:50 N-3-3 Incorporated Nitrogen Behavior in Plasma-nitrided Silicon Oxides Formed by Chemical Vapor Deposition Method <i>N. Shinoda, H. Itokawa, R. Fujitsuka, K. Sekine, S. Onoue and J. Tonotani, Toshiba Corp. (Japan)</i>	9:50 O-3-3 Defect Properties and Materials Selection for Oxide RRAM <i>J. Robertson and Y. Guo, Cambridge Univ. (UK)</i>	9:45 P-3-3 Phonon-Assisted Efficient Spin Injection in InGaAs Quantum Well-Quantum Dot Tunnel-Coupled Structures <i>S.L. Chen¹, T. Kiba², J. Takayama¹ and A. Murayama¹, ¹Hokkaido Univ. and ²Kitami Inst. of Tech. (Japan)</i>
10:00 H-3-4 Experimental Demonstration and Modeling of GeTe₂ Oscillators and Threshold Switches for Emerging Architectures and Memory <i>A.A. Sharma, Y.E. Kesim, J.A. Bain, M. Skowronski and J.A. Weldon, Carnegie Mellon Univ. (USA)</i>		10:10 K-3-4 Assessment of GIDL Reduction and V_{th} Modulation with Plasma Doped FinFETs <i>J.M. Lee^{1,2}, K.H. Cho², H.J. Bae², D.W. Kim², S. Paak² and I. Chung¹, ¹Sungkyunkwan Univ. and ²Samsung Electronics Co. Ltd. (Korea)</i>	10:00 M-3-4 Investigation of Breakdown Characteristics in High-voltage GaN-HEMTs <i>T. Suwa, W. Saito, T. Uchihara, T. Naka and T. Kobayashi, Toshiba Corp. (Japan)</i>	10:10 N-3-4 Comprehensive Understanding of SiO₂-IL Scavenging in HfO₂/SiO₂/Si Stack <i>X. Li, T. Yajima, T. Nishimura and A. Toriumi, Univ. of Tokyo (Japan)</i>	10:10 O-3-4 Reproducing Resistive Switching Effect by Soret and Fick Diffusion in Resistive Random Access Memory (ReRAM) <i>K. Kinoshita^{1,2}, R. Koishi¹, T. Moriyama^{1,2}, K. Kawano¹, H. Miyashita^{1,2}, S.S. Lee^{1,2} and S. Kishida^{1,2}, ¹Tottori Univ. and ²Tottori Integrated Frontier Res. Center (Japan)</i>	10:00 P-3-4 Magnetic Properties and Intrinsic Ferromagnetism in Narrow-gap Ferromagnetic Semiconductor (Ga,Fe) Sb <i>N.T. Tu¹, P.N. Ha², L.D. Anh¹ and M. Tanaka¹, ¹Univ. of Tokyo and ²Tokyo Tech (Japan)</i>
10:15 H-3-5 Novel Field Emission Emitters with Nanoscale Tips Based on Mo Oxide Fabricated by Electrochemical Methods <i>T. Tsukamoto, T. Sato, S. Kitamura, O. Kubota, A. Kitao, E. Ozaki and T. Motoi, Canon INC. (Japan)</i>			10:15 M-3-5 A Robust 600V GaN HEMT Technology on GaN-on-Si with 400V, 5μsec Load-Short-Circuit Withstand Capability <i>H. Ichijoh¹, T. Nagahisa¹, M. Kubo¹ and A.O. Adan², ¹Sharp Corp. and ²Consultant (Japan)</i>		10:30 O-3-5 A Study of Array Resistance Distribution and a Novel Operation Algorithm for WO₃ ReRAM Memory <i>K.C. Hsu, F.M. Lee, Y.Y. Lin, E.K. Lai, J.Y. Wu, D.Y. Lee, M.H. Lee, H.L. Lung, K.Y. Hsieh and C.Y. Lu, Macronix Int'l. Corp., Ltd. (Taiwan)</i>	10:15 P-3-5 Millimeter-Wave Detector Using Magnetic Tunnel Junctions With Perpendicularly Magnetized L₁-Ordered FePd Free Layer <i>K. Mukaiyama¹, H. Naganuma¹, T. Yu¹, H. Kubota², A. Fukushima², M. Oogane¹ and Y. Ando¹, ¹Tohoku Univ. and ²AIST (Japan)</i>

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1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-3: Optical Interconnection			D-3: Nanocarbon-based Devices			G-3: Dots and Non-structures
10:30 A-3-6 MEMS Optical Switches Using Slot Ring Resonator for Low Voltage Operation <i>Y. Amemiya, K. Noda, T. Sennichi and S. Yokoyam, Hiroshima Univ. (Japan)</i>			10:15 D-3-6 (Late News) Direct Evidence of Defect-defect Correlation in Atomically Thin MoS₂ Layer by Random Telegraphic Signals Observed in Back-gated FETs <i>N. Fang, K. Nagashio and A. Toriumi, Univ. of Tokyo (Japan)</i>			10:15 G-3-6 Formation and Characterization of High Density FePt Nanodots on SiO₂ Induced by Remote Hydrogen <i>K. Makihara, Y. Kabeya, A. Ohta, T. Kato, A. Iwata and S. Miyazaki, Nagoya Univ. (Japan)</i>
						10:30 G-3-7 In Situ TEM Observation of Dynamic Behavior of Metal-Based Nanoparticles in Ionic Liquid <i>K. Kogure, J. Ishioka, K. Ofuji, R. Mirza, S. Yatsu, T. Shibayama and S. Watanabe, Hokkaido Univ. (Japan)</i>

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2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
H-3: Novel Functional Devices						P-3: Semiconductor and RF Spintronics
10:30 H-3-6 STDP Behavior Realization in BiFeO₃- based Artificial Synapses with Short and Simplified Spike Sequences <i>N. Du¹, C. Mayr², T. You¹,</i> <i>D. Buerger¹, I. Skorupa^{1,3},</i> <i>M. Di Ventra⁴, O.G.</i> <i>Schmidt^{1,5} and H. Schmidt¹,</i> <i>¹TU Chemnitz, ²Univ. of</i> <i>Zurich and ETH Zurich,</i> <i>³Helmholtz-Zentrum</i> <i>Dresden-Rossendorf, ⁴</i> <i>UCSD and ⁵IFW Dresden</i> <i>(Germany)</i>						10:30 P-3-6 Generation of Highly Stable Microwave from a Spin Torque Oscillator by Phase Locked Loop <i>S. Tamaru, H. Kubota, K.</i> <i>Yakushiji, S. Yuasa and A.</i> <i>Fukushima, AIST (Japan)</i>

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-4: Group-IV Optical Devices I (15:40-16:55) Chairs: S. Saito (Univ. of Southampton) Y. Ishikawa (Univ. of Tokyo)	B-4: 2D Materials I (15:40-16:55) Chairs: T. Machida (Univ. of Tokyo) K. Terabe (NIMS)	C-4: Organic Devices I (15:40-17:10) Chairs: T. Hayashi (NTT BRL) H. Murata (JAIST)	D-4: Nanowire Devices & Characterization (15:40-16:55) Chairs: G. Zhang (NTT BRL) K. Kawaguchi (Univ. of Tokyo)	E-4: MEMS and Sensor (15:40-16:55) Chairs: H. Kanaya (Kyushu Univ.) M. Fujino (Univ. of Tokyo)		G-4: Growth of Germanium-based Semiconductors I (15:40-16:55) Chairs: T. Suemasu (Univ. of Tsukuba) N. Watanabe (NTT)
15:40 A-4-1 (Invited) Ge/SiGe Quantum Well Optical Modulator <i>D. Marris Morini¹, V. Vakarini¹, P. Chaisakul^{1,2}, J. Frigerio³, M. Rouifed⁴, X. Le Roux¹, D. Chrastina³, L. Vivien¹ and G. Isella¹, ¹Univ. Paris Sud / IEF, ²Univ. of Tokyo and ³L-Ness, Politecnico Di Milano (France)</i>	15:40 B-4-1 (Invited) Growth and Applications of Surface Oxides on Two-Dimensional Transition Metal Dichalcogenides <i>M. Yamamoto, NIMS (Japan)</i>	15:40 C-4-1 (Invited) Development of New Soft Actuator using Piezoelectric Polymer Film <i>Y. Tajitsu, Kansai Univ. (Japan)</i>	15:40 D-4-1 (Invited) Template-Assisted Selective Epitaxy (TASE) of III-V Nanoscale Devices for Heterogeneous Integration with Si <i>H. Schmid, M. Borg, K. Moselund, D. Cutaia and H. Riel, IBM Research - Zurich (Switzerland)</i>	15:40 E-4-1 Mechanical Properties of Cu-Ni-Si alloy Evaluated by Micro-Tensile Test for Application in MEMS <i>S. Yanagida^{1,2}, A. Araki¹, T.F.M. Chang^{1,2}, C.Y. Chen^{1,2}, T. Nagoshi³, E. Kobayashi¹, H. Hosoda¹, T. Sato¹ and M. Sone^{1,2}, ¹Tokyo Tech, ²JST-CREST and ³AIST (Japan)</i>		15:40 G-4-1 (Invited) Crystal Growth of GeSn-related Group-IV Thin Films for Integrating on Si Nanoelectronics Platform <i>S. Zaima^{1,2}, O. Nakatsuka², T. Asano^{2,3}, T. Yamaha^{2,3}, S. Ike^{3,4}, A. Suzuki², M. Kurosawa^{1,2,4}, W. Takeuchi² and M. Sakashita², ¹EcoTopia Sci. Inst., Nagoya Univ., ²Grad. Sc. Eng., Nagoya Univ., ³JSPS Reserach Fellow and ⁴Inst. Adv. Res., Nagoya Univ. (Japan)</i>
16:10 A-4-2 Ge/graded-SiGe Multiplication Layers for Low-voltage and Low-noise Ge Avalanche Photodiodes on Si <i>Y. Miyasaka¹, T. Hiraki^{2,3}, K. Okazaki^{2,3}, K. Takeda^{2,3}, T. Tsuchizawa^{2,3}, K. Yamada^{2,3}, K. Wada¹ and Y. Ishikawa¹, ¹Univ. of Tokyo, ²NTT Device Tech. Labs. and ³NTT Nanophotonics Center (Japan)</i>	16:10 B-4-2 Josephson Coupling in NbSe₂/NbSe₂ Van Der Waals Junction <i>R. Moriya¹, N. Yabuki¹, M. Arai¹, Y. Sata¹, S. Morikawa¹, S. Masubuchi¹ and T. Machida^{1,2}, ¹IIS, Univ. of Tokyo and ²INQIE, Univ. of Tokyo (Japan)</i>	16:10 C-4-2 Controllable n- to p-type Doping of MEH-PPV Films by Evaporative Spray Deposition using Ultra-Dilute Solution Method <i>N. Mizutani¹, S. Sakiyama² and K. Fujita^{1,2}, ¹IMCE, Kyushu Univ. and ²JGSES Kyushu Univ. (Japan)</i>	16:10 D-4-2 Highly Tunable Multiple Quantum Dots Made in InAs Nanowires by Local Finger Gates <i>J. Wang¹, S. Huang¹, D. Pan², J. Zhao² and H.Q. Xu^{1,3}, ¹Peking Univ., ²CAS and ³Lund Univ. (China)</i>	16:00 E-4-2 The CeO₂ Sensing Membrane with NH₃ Plasma Treatment in Biosensor Applications <i>C.F. Lin, C.H. Kao, S.W. Chang, C.W. Chang, C.L. Chang, Y.L. Su and Y.X. Huang, Chang Gung Univ. (Taiwan)</i>		16:10 G-4-2 Sn-doped Al-induced Layer Exchange for Large-grained GeSn Thin Films on Insulators <i>N. Oya, K. Toko and T. Suemasu, Univ. of Tsukuba (Japan)</i>
16:25 A-4-3 Low Dark Current Ge Photodetector with Selectively Grown Si Capping Layer <i>S. Okumura, K. Kinoshita, J. Fujikata, T. Simoyama, H. Ono, Y. Tanaka, K. Morito, T. Horikawa and T. Mogami, PETRA (Japan)</i>	16:25 B-4-3 In Situ and Nonvolatile Tuning of Sp²/Sp³ Fraction in Graphene Oxide For All-Solid-State Multifunctional Devices <i>T. Tsuchiya, T. Tsuruoka, K. Terabe and M. Aono, NIMS (Japan)</i>	16:25 C-4-3 Study of Discharging Process of Double Layer Organic Diodes Using Displacement Current Measurement Coupled with Electric-Field-Induced Optical Second-Harmonic Generation Measurement <i>T. Noma, D. Taguchi, T. Manaka and M. Iwamoto, Tokyo Tech (Japan)</i>	16:25 D-4-3 Growth and Characterization of Vertical Nanocavity Using Core-multishell Nanowires <i>T. Wada, S. Hara and J. Motohisa, Hokkaido Univ. (Japan)</i>	16:20 E-4-3 Reliability Results of 4 million Micro Bump Interconnections of 3D Stacked 16 M Pixel Image Sensor <i>Y. Takemoto, N. Takazawa, M. Tsukimura, H. Saito, T. Kondo, H. Kato, J. Aoki, K. Kobayashi, S. Suzuki, Y. Gomi, S. Matsuda and Y. Tadaki, Olympus Corp. (Japan)</i>		16:25 G-4-3 Low-Temperature (~ 150°C) Solid-Phase Epitaxy of a-GeSn/c-Ge for High Non-Equilibrium Substitutional Sn-Concentration GeSn <i>T. Sadoh, A. Ooato, J. Park and M. Miyao, Kyushu Univ. (Japan)</i>
16:40 A-4-4 Influences of Metal/Ge Contact and Surface Passivation on Light Emission and Detection for Asymmetric Metal/Ge/Metal Diodes <i>T. Maekura, D. Wang, K. Yamamoto and H. Nakashima, Kyushu Univ. (Japan)</i>	16:40 B-4-4 N-type Doping Effect of Transferred MoS₂ and WSe₂ Monolayer <i>C.P. Lin¹, P.S. Liu¹, L.S. Lyu¹, M.Y. Li², C.C. Cheng¹, T.H. Lee², W.H. Chang¹, L.J. Li³ and T.H. Hou¹, ¹NCTU, ²Academia Sinica and ³KAUST (Taiwan)</i>	16:40 C-4-4 Realizing Mechanically Robust ITO and PEDOT:PSS by Reducing Substrate Thickness to as Thin as 1.4 μm <i>S. Harimurti¹, N. Matsuhisa¹, P. Zalar^{1,2}, T. Yokota^{1,2} and T. Someya^{1,2}, ¹Univ. of Tokyo and ²JST-ERATO (Japan)</i>	16:40 D-4-4 Study of Heat Conduction in Corrugated Si Nanowires Using Raman Mapping <i>V. Poborchii¹, Y. Morita¹, J. Hattori¹, T. Tada¹ and P. Geshev², ¹AIST and ²Inst. of Thermophysics of the Russian Academy of Sciences (Japan)</i>	16:40 E-4-4 (Late News) Robustness of Integrated Stoppers for MEMS Accelerometer Fabricated by Multi-layered Metal Technology <i>D. Yamane^{1,4}, T. Konishi², M. Takayasu^{1,4}, T. Safu², H. Toshiyoshi^{3,4}, M. Sone^{1,4}, K. Masu^{1,4} and K. Machida^{1,2,4}, ¹Tokyo Tech, ²NTT Adv. Tech. Corp., ³Univ. of Tokyo and ⁴JST-CREST (Japan)</i>		16:40 G-4-4 Influence of Precursor Gas on SiGe Epitaxial Material Quality in Terms of Structural and Electrical Defects <i>S. Ike^{1,2,3}, E. Simoen², Y. Shimura^{3,4,5}, A. Hikavy³, W. Vandervorst^{3,4}, R. Loo², W. Takeuchi¹, O. Nakatsuka¹ and S. Zaima^{1,6}, ¹Nagoya Univ., ²JSPS Research Fellow, ³IMEC, ⁴KU Leuven, ⁵FWO Pegasus Marie Curie Fellow and ⁶EcoTopia Sci. Inst., Nagoya Univ. (Japan)</i>

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
		K-4: CMOS (15:40-16:50) Chairs: Y. Fukuzaki (SONY) K. Sukegawa (SOCIONEXT)	M-4: GaN Power Devices (15:40-16:55) Chairs: T. Tanaka (Panasonic) T. Uesugi (Toyota Central R&D Labs.)	N-4: Interface and Material Science (15:40-17:00) Chairs: S. Yoshida (SONY) K. Kakushima (Tokyo Tech)	O-4: Advanced Processing Circuits with Functional Materials (15:40-17:10) Chairs: R. Kuroda (Tohoku Univ.) K. Ito (Tohoku Univ.)	
		15:40 K-4-1 (Invited) High Performance 14nm SOI FinFET Technology <i>C.-H. Lin, IBM T.J. Watson Research Center (USA)</i>	15:40 M-4-1 (Invited) Vertical Power Electronic Devices based on Bulk Gallium Nitride Substrates <i>I.C. Kizilyalli and O. Aktas, Avogy Inc. (USA)</i>	15:40 N-4-1 Beyond GeO₂ on Ge: Network Modification of GeO₂ for Reliable Ge Gate Stacks <i>C. Lu, C.H. Lee, T. Nishimura and A. Toriumi, Univ. of Tokyo (Japan)</i>	15:40 O-4-1 (Invited) Spintronics Memory Devices for Ultralow-power and High-performance Integrated Circuits <i>S. Fukami, H. Sato and H. Ohno, Tohoku Univ. (Japan)</i>	
		16:10 K-4-2 Stacked-Nanowire and FinFET Transistors: Guidelines for the 7nm Node <i>L. Gaben¹, S. Barraud², M.A. Jaud³, S. Martinie², O. Rozeau³, J. Lacord², G. Hibel¹, S. Monfray¹, F. Boeuf¹, T. Skotnicki¹, F. Balestra³ and M. Vinet², ¹STMicroelectronics, ²CEA-LETI and ³IMEP-LAHC (France)</i>	16:10 M-4-2 Embedded Source Field-Plate for Reduced Parasitic Capacitance of AlN/GaN MIS-HEMTs on Si Substrate <i>K. Chikamatsu, M. Akutsu, T. Tanaka, S. Takado, K. Sakamoto, N. Ito and K. Nakahara, ROHM Co., Ltd. (Japan)</i>	16:00 N-4-2 Understanding on the Impact of Interface Reactions on Dipole Strengths at MgO/SiO₂ and Y₂O₃/SiO₂ Interfaces <i>J. Fei and K. Kita, Univ. of Tokyo (Japan)</i>	16:10 O-4-2 A 600-μW Ultra-Low-Power Associative Processor for Image Pattern Recognition Employing Magnetic Tunnel Junction (MTJ) Based Nonvolatile Memories with Novel Intelligent Power-Gating (IPG) Scheme <i>Y. Ma, S. Miura, H. Honjo, S. Ikeda, T. Hanyu, H. Ohno, T. Shibata and T. Endoh, Tohoku Univ. (Japan)</i>	
		16:30 K-4-3 W and Copper Interconnection Stability for 3D VLSI CoolCube Integration <i>C. Fenouillet Beranger¹, S. Kerdiles¹, F. Deprat^{1,3}, P. Batude¹, M.P. Samson^{2,1}, B. Previtali¹, N. Rambal^{1,2}, V. Lapras^{1,2}, L. Emery², C. Euvrard Colnat¹, A. Seignard^{1,2}, P. Besson^{2,1}, R. Kachtouli¹, A. Roman^{2,1}, C. Ribiere¹, V. Lu^{2,1}, L. Brunet¹, E. Gourves¹, G. Druais², Y. Loquer², L. Arnaud¹, Y. Le Fric², O. Pollet¹, V. Benevent¹, F. Aussenac¹, H. Denis¹, V. Jousseume¹, S. Maitrejean¹ and M. Vinet¹, ¹CEA-LETI, ²STMicroelectronics and ³IMEP-LAHC (France)</i>	16:25 M-4-3 Analysis of GaN-HEMT Switching Characteristics for High-Power Applications <i>T. Mizoguchi¹, T. Naka¹, Y. Tanimoto², Y. Okada², W. Saito¹, M. Miura Mattausch² and H.J. Mattausch², ¹Toshiba Corp. and ²Hiroshima Univ. (Japan)</i>	16:20 N-4-3 Positive and Negative Dipole Layer Formation at High-k/SiO₂ Interfaces Simulated by Classical Molecular Dynamics <i>K. Shimura¹, R. Kunugi¹, A. Ogura^{2,5}, S. Satoh^{3,5}, J. Fei¹, K. Kita¹ and T. Watanabe^{1,5}, ¹Waseda Univ., ²Meiji Univ., ³Univ. of Hyogo, ⁴Univ. of Tokyo and ⁵JST-CREST (Japan)</i>	16:30 O-4-3 180-mV Subthreshold Operation of Crystalline Oxide Semiconductor FPGA Realized by Overdriving Programmable Power Switch and Programmable Routing Switch <i>M. Kozuma¹, Y. Okamoto¹, T. Nakagawa¹, T. Aoki¹, Y. Kurokawa¹, T. Ikeda¹, Y. Ieda¹, N. Yamade¹, H. Miyairi¹, M. Ikeda², M. Fujita² and S. Yamazaki¹, ¹Semiconductor Energy Lab. Co., Ltd. and ²Univ. of Tokyo (Japan)</i>	
			16:40 M-4-4 Effect of Drain Conductance in Equivalent Circuit Model for GaN GIT Bidirectional Switch <i>T. Ide¹, M. Shimizu¹, X.Q. Shen¹, T. Morita², N. Otsuka² and T. Ueda², ¹AIST and ²Panasonic Corp. (Japan)</i>	16:40 N-4-4 Thermodynamic Knob for High Performance SiGe Gate Stack Formation <i>C.T. Chang, T. Nishimura and A. Toriumi, Univ. of Tokyo (Japan)</i>	16:50 O-4-4 Area-Efficient Non-volatile Carry Chain Based on Pass-Transistor/Atom-Switch Hybrid Logic <i>X. Bai, Y. Tsuji, A. Morioka, M. Miyamura, T. Sakamoto, M. Tada, N. Banno, K. Okamoto, N. Iguchi and H. Hada, NEC Corp. (Japan)</i>	

Tuesday, September 29

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
		C-4: Organic Devices I				
		16:55 C-4-5 Enhanced Performance in Organic Light-emitting Diode by Surface Modification of ITO with Graphene Oxide <i>D. Yamaguchi¹, H. Sakai¹ and H. Murata¹, JAIST (Japan)</i>				

Tuesday, September 29

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-5: Group-IV Optical Devices II (17:25-18:40) Chairs: Y. Ishikawa (Univ. of Tokyo) S. Saito (Univ. of Southampton)	B-5: 2D Materials II (17:25-18:40) Chairs: H. Miyazaki (Toshiba) S. Sato (Fujitsu Labs.)	C-5: New Concepts (17:25-18:25) Chairs: H. Suzuki (Univ. of Miyazaki) Y. Kurokawa (Nagoya Univ.)			F-5: Nano Devices for Chemical & Biosensing (17:25-18:40) Chairs: T. Sakata (Univ. of Tokyo) H.-M. Chen (NCTU)	G-5: Growth of Germanium-based Semiconductors II (17:25-18:40) Chairs: A. Kikuchi (Sophia Univ.) Y. Hotta (Univ. of Hyogo)
17:25 A-5-1 Tensile Strain of Germanium Micro-Disks on Freestanding SiO₂ Beams <i>A. Alattili¹, S. Kako², M. Husain¹, F. Gardes¹, S. Iwamoto², Y. Arakawa² and S. Saito¹, ¹Univ. of Southampton and ²Univ. of Tokyo (UK)</i>	17:25 B-5-1 (Invited) Transport Studies in Graphene and Black Phosphorus Field Effect Transistors <i>B. Özyilmaz, NUS (Singapore)</i>	17:25 C-5-1 (Invited) A New Concept of Solar Energy Harvesting Using Solar-Pumped Lasers Coupled with Monochromatic Photovoltaics <i>S. Mizuno¹, K. Hasegawa¹, T. Ichikawa¹ and H. Ito², ¹Toyota CRDL, Inc. and ²Nagoya Univ. (Japan)</i>			17:25 F-5-1 (Invited) Acquiring Biological Information of Individuals Using Quantum Mechanics <i>M. Taniguchi, Osaka Univ. (Japan)</i>	17:25 G-5-1 High Quality GeSn Layer Formation Due to Well-controlled Sn Migration at High Temperature <i>N. Taoka¹, G. Capellini^{1,2}, P. Zaumseil¹, I. Costina¹, M.A. Schubert¹ and T. Schroeder^{1,3}, ¹IHP, ²Univ. Roma Tre and ³BTU (Germany)</i>
17:40 A-5-2 Suspended Ge Cross-shaped Microstructures for Enhancing Biaxial Tensile Strain <i>S. Ishida¹, S. Kako¹, K. Oda², T. Ido², S. Iwamoto¹ and Y. Arakawa¹, ¹Univ. of Tokyo and ²Hitachi Ltd. (Japan)</i>	17:55 B-5-2 Band-to-Band Graphene Resonant Tunneling Field Effect Transistor <i>S. Suzuki¹, M. Muruganathan¹, S. Oda² and H. Mizuta^{1,3}, ¹JAIST, ²Tokyo Tech and ³Univ. of Southampton (Japan)</i>	17:55 C-5-2 Surface Passivation Studies on Vertical Junction Silicon Microwire Solar Cells <i>Y.G. Ro¹, R. Chen¹ and S.A. Dayeh¹, Univ. of California San Diego (USA)</i>			17:55 F-5-2 Vertical Nano-Junction Organic Diode as Sensitive Sensing Array <i>M.Y. Chuang¹, J.N. Chen², H.W. Zan¹ and C.J. Lu³, ¹NCTU, ²National Tsing Hua Univ. and ³National Taiwan Normal Univ. (Taiwan)</i>	17:40 G-5-2 Heavily Ga-doped Germanium-Tin Alloys by Molecular Beam Epitaxy <i>W. Wang, V.R. D' Costa, S.L. Lim, Q. Zhou, E.S. Tok and Y.C. Yeo, NUS (Singapore)</i>
17:55 A-5-3 Crystallinity Improvement of Ge Waveguides Fabricated by Epitaxial Lateral Overgrowth and Chemical Mechanical Polishing <i>K. Oda¹, T. Okumura¹, J. Kasai¹, S. Kako², S. Iwamoto² and Y. Arakawa², ¹Hitachi Ltd. and ²Univ. of Tokyo (Japan)</i>	18:10 B-5-3 Influence of Local Electric Field on Electronic States of Graphene Nanoribbons <i>A. Yamanaka and S. Okada, Univ. of Tsukuba (Japan)</i>	18:10 C-5-3 Photo-Assisted Impedance Spectroscopy for Quantum Dot Solar Cell <i>T. Hoshii¹, S. Naitoh¹ and Y. Okada¹, Univ. of Tokyo (Japan)</i>			18:10 F-5-3 Ammonia Gas Sensor Based on Surface Modified Poly-Si Nanowires Field Effect Transistor <i>J.S. Hsu and H.M.P. Chen, NCTU (Taiwan)</i>	17:55 G-5-3 Thermally-Stable High Sn Concentration (~ 9%) GeSn on Insulator by Ultra-Low Temperature (~ 180°C) Solid-Phase Crystallization Triggered by Laser-Anneal Seeding <i>R. Matsumura^{1,2}, K. Moto¹, Y. Kai¹, T. Sadoh¹, H. Ikenoue¹ and M. Miyao¹, ¹Kyushu Univ and ²JSPS Research Fellow (Japan)</i>
18:10 A-5-4 Temperature Dependent Electroluminescence from GeSn Heterojunction Light Emitting Diode on Si Substrate <i>C. Chang, H. Li, S.H. Huang and H.H. Cheng, National Taiwan Univ. (Taiwan)</i>	18:25 B-5-4 Back Gate Bias-Temperature Instability in Single-Layer Double-Gated Graphene Field-Effect Transistors <i>Y.Y. Illarionov^{1,2}, M. Walt¹, A.D. Smith³, S. Vaziri³, M. Ostling³, M. Lemme⁴ and T. Grasser¹, ¹TU Wien, ²Ioffe Physical-Techn. Inst., ³KTH Royal Inst. of Tech. and ⁴Univ. of Siegen (Austria)</i>				18:25 F-5-4 Biosensing by Differential Si Ring Resonators Robust to Process Variations <i>T. Taniguchi, S. Yokoyama, Y. Amemiya, T. Ikeda, A. Kuroda and S. Yokoyama, Hiroshima Univ. (Japan)</i>	18:10 G-5-4 Au Induced Low Temperature Formation of (111) Preferential Oriented Crystalline Ge on Insulator <i>H. Okamoto, K. Kudo, T. Nomitsu, K. Takakura and I. Tsunoda, Kumamoto College (Japan)</i>
18:25 A-5-5 Sharp and Intense Si-vacancy Center Emission from Diamond Cube Selective-grown on Si (100) Substrate <i>H. Isshiki, K. Komiya and R. Kojima, Univ. of Electro-Communications (Japan)</i>						18:25 G-5-5 Enhancement of Au Induced Lateral Crystallization in Electron Irradiated Amorphous Ge on SiO₂ <i>K. Moto¹, S. Sakiyama², H. Okamoto¹, H. Hara², H. Nishimura², K. Takakura¹ and I. Tsunoda¹, ¹Kumamoto College and ²Bruker BioSpin K.K. (Japan)</i>

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
		K-5: Noise (17:25-18:25) Chairs: F.-L. Yang (Academia Sinica) K. Kokubun (Toshiba)	M-5: Novel Widegap Devices (17:25-18:40) Chairs: C.-F. Huang (National Tsing Hua Univ.) N. Hara (Fujitsu Labs.)	N-5: Gate Stack Characterization (17:25-18:55) Chairs: H. Nohira (Tokyo City Univ.) G. Nakamura (Tokyo Electron)	O-5: MRAM and Spintronics Logic (17:25-18:55) Chairs: K. Ito (Tohoku Univ.) H. Saito (Fujitsu Semicon.)	
		17:25 K-5-1 Transistor-level Characterization of SRAM Bit Failures Induced by Random Telegraph Noise <i>T. Mizutani, T. Saraya, K. Takeuchi, M. Kobayashi and T. Hiramoto, Univ. of Tokyo (Japan)</i>	17:25 M-5-1 (Invited) Diamond Electronics for Power Devices and Sensing Applications <i>M. Hatano^{1,2}, T. Iwasaki^{1,2} and S. Yamasaki^{2,3}, ¹Tokyo Tech, ²JST-CREST and ³AIST (Japan)</i>	17:25 N-5-1 (Invited) Engineering high-k/ InGaAs Interface for Extremely Scaled Gate Stacks <i>D. H. Zadeh¹, H. Oomine², K. Kakushima² and H. Iwai¹, ¹NTT Device Tech. Labs. and ²Tokyo Tech (Japan)</i>	17:25 O-5-1 (Invited) Harvesting the Physics of Spin and Magnetism for Low Power Logic <i>I. Young, S. Manipatruni and D. Nikonov, Intel Corp. (USA)</i>	
		17:45 K-5-2 1/f Noise in Submicron Top-Gate Crystalline Oxide Semiconductor FET <i>A. Hirose, T. Aoki, S. Maeda, F. Akasawa, Y. Kurokawa, T. Ikeda, M. Tsubuku, T. Ishihara, Y. Kobayashi and S. Yamazaki, Semiconductor Energy Lab. Co. Ltd. (Japan)</i>	17:55 M-5-2 High Voltage Diamond MESFET with V_{BR} > 1.5kV <i>H. Umezawa^{1,2,3}, T. Matsumoto¹, S. Ohmagari¹, Y. Kato¹ and Y. Mokuno¹, ¹AIST, ²Univ. Grenoble Alpes, Inst. Neel and ³CNRS, Inst. Neel (Japan)</i>	17:55 N-5-2 Impact of La₂O₃ Interfacial Layers on InGaAs MOS Interface Properties in ALD Al₂O₃/ La₂O₃/InGaAs Gate Stacks <i>C.Y. Chang^{1,2}, M. Takenaka^{1,2} and S. Takagi^{1,2}, ¹Univ. of Tokyo and ²JST-CREST (Japan)</i>	17:55 O-5-2 10 nm p-MTJ Array Design for Suppressing Switching Delay Induced by Interference Due to Magnetic Dipole Interaction for High Density STT-MRAM <i>S. Ohuchida^{1,3}, K. Ito², M. Muraguchi^{1,2,3} and T. Endoh^{1,2,3}, ¹Tohoku Univ., ²CIES, Tohoku Univ. and ³JST-ACCEL (Japan)</i>	
		18:05 K-5-3 Using Sub-microsecond Measurement to Monitor AC NBTI and Dividing Trap Types into N_{IT}, N_{HT} and N_{FT} through Adjustable Stress Frequency and Measure Frequency <i>C.H. Chiang, N. Ke, S.N. Kuo, A. Juan and K.C. Su, UMC (Taiwan)</i>	18:10 M-5-3 1.7 KV Breakdown C-H Diamond MOSFETs with High Drain Current Density <i>Y. Kitabayashi, T. Yamada, D. Xu, T. Saito, D. Matsumura, A. Hiraiwa and H. Kawarada, Waseda Univ. (Japan)</i>	18:15 N-5-3 First Demonstration of 300mm InGaAs-On-Insulator Substrates Fabricated using the Smart Cut™ Technology <i>J. Wlodek^{1,2}, S. Sollier^{1,2}, T. Baron^{1,3}, M. Martin^{1,3}, G. Gaudin⁴, F. Mazen^{1,2}, F. Madeira^{1,2}, S. Favier^{1,2}, A. Salaun^{1,2}, S. Arnaud^{1,3}, S. David^{1,3}, E. Beche^{1,2}, H. Grampeix^{1,2}, C. Veytizou¹, D. Delprat¹ and T. Signamarcheix^{1,2}, ¹Univ. Grenoble Alpes, ²CEA-LETI, ³CNRS-LTM and ⁴SOITEC (France)</i>	18:15 O-5-3 Universal Damage Recovery Scheme using the Oxygen Showering Post-treatment (OSP) Process for Sub-20nm High Density STT-MRAM Devices <i>J.H. Jeong^{1,2} and T. Endoh^{1,3,4}, ¹Tohoku Univ., ²Samsung Electronics Co. Ltd, ³CIES, Tohoku Univ. and ⁴JST-ACCEL, Tohoku Univ. (Japan)</i>	
			18:25 M-5-4 First Demonstration of β-Ga₂O₃ Schottky Barrier Diode with Field Plate Edge Termination <i>K. Sasaki^{1,2}, M. Higashiwaki², K. Goto¹, K. Nomura³, Q.T. Thieu³, R. Togashi², H. Murakami², Y. Kumagai³, B. Monemar^{3,4}, A. Koukitu³, A. Kuramata¹ and S. Yamakoshi¹, ¹Tamura Corp., ²NICT, ³Tokyo Univ. of Agri. & Tech. and ⁴Linköping Univ. (Japan)</i>	18:35 N-5-4 High Mobility N-MOSFETs on GeSn Film Formed by Solid Phase Epitaxy with Surface Passivation by Oxygen Plasma Treatment <i>Y.H. Wu, C.C. Su, Y.C. Fang and C.H. Hsieh, National Tsing Hua Univ. (Taiwan)</i>	18:35 O-5-4 Optimization of CoFeB Capping Layer Thickness for Characterization of Leakage Spot in MgO Tunneling Barrier of Magnetic Tunnel Junction <i>S. Sato^{1,6}, H. Honjo^{1,6}, S. Ikeda^{1,2,3,6}, H. Ohno^{1,2,3,4}, T. Endoh^{1,2,3,6} and M. Niwa^{1,6}, ¹CIES, Tohoku Univ., ²CSIS, Tohoku Univ., ³RIEC, Tohoku Univ., ⁴WPI-AIMR, Tohoku Univ., ⁵Tohoku Univ. and ⁶JST-ACCEL (Japan)</i>	

POSTER SESSION (13:30-15:30, Main Hall A, B)

All poster presenters must give the short oral presentations in Short Presentation Session scheduled on September 29, 11:00 - 12:00.
Each Area Session Room; see page 46.

Area 1: Advanced LSI Processing & Materials Science (20 papers)

PS-1-1
Low Interface Trap Density in In_{0.53}Ga_{0.47}As Metal-Oxide-Semiconductor Capacitors with Molecular Beam Deposited HfO₂/La₂O₃ High-κ Dielectrics
T.W. Lin¹, J.N. Yao¹, Y.C. Lin¹, K.C. Yang¹, W.H. Wu¹, K. Kakushima², J.S. Maa¹, E.Y. Chang¹ and H. Iwai², ¹NCTU and ²Tokyo Tech (Taiwan)

PS-1-2
Impact of in situ Plasma Enhanced Atomic Layer Deposition on the Electrical Properties of HfO₂/In_{0.53}Ga_{0.47}As MOSCAPs for Low EOT and Low Interface State Density
Q.H. Luc, H.B. Do, S.P. Cheng, J.H. Chen, S.H. Huynh, P.C. Chang, Y.C. Lin and E.Y. Chang, NCTU (Taiwan)

PS-1-3
Improving Performance of In_{0.53}Ga_{0.47}As Metal-Oxide-Semiconductor Field-Effect-Transistors using in situ Post Remote-Plasma Treatment with N₂/H₂ Gases
Q.H. Luc, S.P. Cheng, J.H. Chen, G.Y. Lin, H.B. Do, P.C. Chang, G.W. Huang, K.M. Chen, Y.C. Lin and E.Y. Chang, NCTU (Taiwan)

PS-1-4
Improved Interface of HfO₂/InGaAs MOS by Employing Thin SiN_x Interfacial Layer using Plasma Enhanced Atomic Layer Deposition
S.K. Eom¹, R.S. Ki¹, D.H. Kim¹, H.Y. Cha² and K.S. Seo¹, ¹Seoul National Univ. and ²Hongik Univ. (Korea)

PS-1-5
Sub-0.2V Switching Voltage of Negative Capacitance Double Gate Tunnel FET using Ferroelectric Gate
M.H. Lee¹, C. Liu¹, P.G. Cheng¹, C.C. Cheng¹, K.Y. Chu¹, M.J. Xie¹, S.N. Liu¹, J.W. Lee¹, S.J. Huang¹ and M.H. Liao², ¹National Taiwan Normal Univ. and ²National Taiwan Univ. (Taiwan)

PS-1-6
Fabrication of Low-Temperature (< 400 °C) Germanium MOSCAPs by Microwave Thermal Oxidation
W.C. Chi¹, C.C. Hsu^{1,2}, C.H. Chou¹, A.S. Shih¹, Y.J. Lee² and C.H. Chien¹, ¹NCTU and ²NDL, NARLabs (Taiwan)

PS-1-7
High-Performance P-Channel Polycrystalline-Germanium Thin Film Transistors via Excimer Laser Crystallization and Counter Doping
C.Y. Liao, C.Y. Huang, M.H. Huang, C.H. Chou and H.C. Cheng, NCTU (Taiwan)

PS-1-8
UV Raman and Multiwavelength Photoluminescence Characterization of Ion Implanted Silicon for In-Line Dopant Activation Process Monitoring Applications
W.S. Yoo¹, T. Ishigaki¹, T. Ueda¹, K. Kang¹, N. Hasuike², H. Harima² and M. Yoshimoto², ¹WaferMasters, Inc. and ²KIT (USA)

PS-1-9
Influence of in-situ Sb-Doping on Crystalline and Electrical Characteristics of n-type Ge_{1-x}Sn_x Epitaxial Layer
J. Jeon¹, T. Asano^{1,2}, W. Takeuchi¹, M. Kurosawa^{1,3}, O. Nakatsuka¹ and S. Zaima^{1,3}, ¹Nagoya Univ., ²JSPS Research Fellow and ³EcoTopia Sci. Inst., Nagoya Univ. (Japan)

PS-1-10
n⁺/pGe Cross Heterojunctions Fabricated by Narrow Membrane Bonding
T.C. Liu^{1,2}, S. Kabuyanagi^{1,2}, T. Nishimura^{1,2} and A. Toriumi^{1,2}, ¹Univ. of Tokyo and ²JST-CREST (Japan)

PS-1-11
PtGe-Source/Drain Ge p-MOSFET with High On/Off Ratio and Low Parasitic Resistance
S. Tanaka, Y. Nagatomi, Y. Nagaoka, K. Yamamoto, D. Wang and H. Nakashima, Kyushu Univ. (Japan)

PS-1-12
Impact of Ultra-high Sn Content Sn₂Ge_{1-x} Interlayer on Reducing Schottky Barrier Height at Metal/n-Ge Interface
A. Suzuki¹, O. Nakatsuka¹, S. Shibayama^{1,2}, M. Sakashita¹, W. Takeuchi¹, M. Kurosawa^{1,3} and S. Zaima^{1,3}, ¹Nagoya Univ., ²JSPS Research Fellow and ³EcoTopia Sci. Inst., Nagoya Univ. (Japan)

PS-1-13
Introduction of SiGe/Si Heterojunction into Novel Multilayer Tunnel FinFETs
Y. Morita, T. Mori, K. Fukuda, W. Mizubayashi, S. Migita, K. Endo, S. O'uchi, Y.X. Liu, M. Masahara, T. Matsukawa and H. Ota, AIST (Japan)

PS-1-14
Observation of Plastic and Elastic Deformations in Ge Films of Bonded GeOI
T. Nishimura, T. Nakamura, T. Yajima and A. Toriumi, Univ. of Tokyo (Japan)

PS-1-15
Formation of Single Crystalline Silicon with Midair Cavity for Meniscus Force-Mediated Local Layer Transfer and Fabrication of High-Performance MOSFETs on Insulator
M. Akazawa, S. Takeshima, A. Nakagawa, K. Hiramatsu and S. Higashi, Hiroshima Univ. (Japan)

PS-1-16
Comprehensive Characterization of Generated Trap Sites in Gate Insulator using Advanced Stress-induced Leakage Current Simulator
Y. Higashi, J. Chen and T. Ishihara, Toshiba Corp. (Japan)

PS-1-17
First-Principles Study on Hydrogen Annealing Effect in Si/SiO₂ Interface by Thermal Oxidation
S. Kawachi¹, H. Hiroki¹, M. Araidai¹, H. Kageshima^{2,4}, T. Endoh^{3,4} and K. Shiraishi^{1,4}, ¹Nagoya Univ., ²Shimane Univ., ³Tohoku Univ. and ⁴JST-ACCEL (Japan)

PS-1-18
Angle-resolved Photoelectron Spectroscopy Studies of Initial Stage of Thermal Oxidation on 4H-SiC (0001)
H. Arai and H. Nohira, Tokyo City Univ. (Japan)

PS-1-19 (Late News)
Investigation and Comparison of Quantum-Capacitance Induced Inversion-Charge Loss for Ultra-Thin-Body and Double-Gate III-V n-MOSFETs
S.L. Shen, H.H. Shen, C.H. Yu and P. Su, NCTU (Taiwan)

PS-1-20 (Late News)
New Structural Properties of Ferroelectric Y₂O₃-doped HfO₂ Films Probed by Microscopic Raman Spectroscopy Measurements
K. Izukashi^{1,2}, T. Nishimura^{1,2}, S. Migita^{2,3} and A. Toriumi^{1,2}, ¹Univ. of Tokyo, ²AIST and ³JST-CREST (Japan)

Area 2: Interconnect Technologies and 3D Integration/ Sensor/ MEMS Integration/ Materials and Characterization (18 papers)

PS-2-1
Mechanical Properties of Electrodeposited Gold for MEMS Device
M. Yoshiba^{1,2}, C.Y. Chen^{1,2}, T.F.M. Chang^{1,2}, D. Yamane^{1,2}, K. Machida^{1,2,3}, K. Masu^{1,2} and M. Sone^{1,2}, ¹Tokyo Tech, ²JST-CREST and ³NTT AT (Japan)

PS-2-2
Proposal of a Simple MEMS Phase Shifter Based on Effective Dielectric Constant Modulation
D. Nakano¹, M. Mori¹, K. Maezawa¹, H. Ishii² and H. Ando³, ¹Univ. of Toyama, ²Toyohashi Univ. of Tech. and ³National Inst. of Tech., Toyota College (Japan)

PS-2-3
Study on Ti/Au Two-Layered Cantilevers with Different Aspect Ratio for MEMS Devices
M. Teranishi^{1,2}, T.F.M. Chang^{1,2}, C.Y. Chen^{1,2}, T. Konishi³, K. Machida^{1,2,3}, H. Toshiyoshi^{1,4}, D. Yamane^{1,2}, K. Masu^{1,2} and M. Sone^{1,2}, ¹JST-CREST, ²Tokyo Tech, ³NTT AT and ⁴Univ. of Tokyo (Japan)

PS-2-4
Micro-Texture Dependence of the Strength of Electroplated Copper Fine Bumps Used for 3-Dimensional Integration
M. Gotoh, K. Suzuki and H. Miura, Tohoku Univ. (Japan)

PS-2-5
Local Stress Effect Due to Operation-Heating-Induced Adhesive Expansion on Transistor Performances in 3D IC
H. Kino, H. Hashiguchi, S. Tanikawa, Y. Sugawara, S. Ikegaya, T. Fukusima, M. Koyanagi and T. Tanaka, Tohoku Univ. (Japan)

PS-2-6
Combined Surface-Activated Bonding Technique for Low-Temperature Hydrophilic Wafer Bonding with Interfacial Water Management
R. He¹, M. Fujino¹, A. Yamauchi² and T. Suga¹, ¹Univ. of Tokyo and ²Bondtech Co., Ltd. (Japan)

PS-2-7
Transient Liquid-Phase Sintering using Tin and Silver Powder Mixture for Die Bonding
M. Fujino¹, H. Narusawa¹, Y. Kuramochi¹, E. Higurashi¹, T. Suga¹, T. Shiratori² and M. Mizukoshi³, ¹Univ. of Tokyo, ²ALPHA DESIGN CO., LTD. and ³SYNDEO (Japan)

PS-2-8
A Novel Hybrid Strategy of via-first Bare TSVs for Enhanced Signal Integrity in 3-D Integrated Systems
R. Fang¹, X. Sun¹, M. Miao² and Y. Jin¹, ¹Peking Univ. and ²Beijing Info. Sci.&Tech. Univ. (China)

PS-2-9
Capacitance Characteristics of Low-κ Low-Cost CVD Grown Polyimide Liner for High-Density Cu-TSVs in 3D-LSI
M. Murgesan, J.C. Bea, T. Fukushima, H. Hashimoto, K.W. Lee and M. Koyanagi, Tohoku Univ. (Japan)

PS-2-10
Improving Step Coverage of PVD Barrier/Seed through Bias Power Alternation for High Aspect Ratio TSVs
S. Yang¹, W. Cheng¹, H. Wu¹, C. Song^{1,2} and W. Zhang^{1,2}, ¹NCAP China and ²IMECAS (China)

PS-2-11
Thermal Mechanical Behavior of TSVs with WN/Ni as Barrier/Seed Layer System for 2.5D Integration
X.M. Jing, NCAP China (China)

PS-2-12
Electroless Nickel Barrier/Seed Layer Deposition on Dielectric Liners for Advanced Cu-TSV Applications
T. Fukushima¹, K. Taniguchi², S. Watariguchi², M. Murugesan¹, C. Nagai¹, A. Nakamura¹, H. Hiroyuki¹, J. Bea¹, T. Tanaka¹, M. Koyanagi³ and K. Lee¹, ¹Tohoku Univ. and ²Meltex Inc. (Japan)

PS-2-13
A Novel Low Temperature (<500°C) and Low-κ (3.8) Boron Nitride PECVD Offset Spacer Featuring 3D VLSI Integration
C.M.V. Lu^{1,2}, C. Bout¹, C. Fenouillet Beranger¹, A. Roule¹, M.P. Samson^{1,2}, B. Previtali¹, C. Arvet^{1,2}, A. Michallet^{1,2}, N. Rochat¹, S. Favier^{1,2}, R. Kachtouli¹, V. Loup¹, P. Besson^{1,2}, M. Garcia Barros^{1,2}, N. Posseme¹, F. Pierre¹, P. Maury², D. Benoit¹, P. Batude¹, M. Vinet¹ and T. Skotnicki², ¹CEA-LETI and ²STMicroelectronics (France)

PS-2-14
Impact and Improvement of Resistor Process Variation on RF Passive Circuit Design in Integrated Passive Devices (IPD) Technology
Y.C. Chang^{1,2}, P.Y. Wang¹, S.H. Hsu¹, Y.T. Chang³, C.K. Chen³ and D.C. Chang², ¹National Tsing Hua Univ., ²CIC, NARLabs and ³BSMI, MOEA (Taiwan)

PS-2-15
Preparation of High Performance SiN_x Films Deposited by Reactive Sputtering and PECVD at Low Temperatures
M. Sato¹, M.B. Takeyama¹, Y. Nakata², Y. Kobayashi², T. Nakamura² and A. Noya¹, ¹Kitami Inst. of Tech. and ²Fujitsu Labs. Ltd. (Japan)

PS-2-16
In Situ FTIR Spectroscopic and Kinetic Studies of Cu Surface Reduction by Using Formic Acid Treatment with Pt Catalysts
P.W. Chou¹, C.C. Kuo¹, J.Y. Lin² and J.M. Song¹, ¹National Chung Hsing Univ. and ²ITRI (Taiwan)

PS-2-17
Measurement of the Strength at Grain Boundaries in Electroplated Copper Thin-Film Interconnections
T. Nakanishi, T. Kato, Y. Ichikawa, K. Suzuki and H. Miura, Tohoku Univ. (Japan)

PS-2-18 (Late News)
Radio Frequency Characteristics in Tantalum Nitride Thin Film Resistor
S.H. Kwon¹, M. Nam¹, A. Kim¹, K. Kang¹, S.J. Chae¹, S.J. Lee¹, W.S. Sul¹ and S.G. Pyo¹, ¹Chung-Ang Univ. and ²NNFC (Korea)

Area 3: CMOS Devices / Device Physics

(17 papers)

PS-3-1
Discrete Dopant Impact on the 7 nm Nanowire Transistor Performance
X. Wang¹, Y. Wang², C. Ridder¹, E. Towie², B. Cheng³, X. Liu² and A. Asenov^{1,3}, ¹Univ. of Glasgow, ²Peking Univ. and ³Gold Standard Simulations Ltd. (UK)

PS-3-2
Proposal of Tunneling and Diffusion Current Hybrid MOSFET
K. Furukawa, R. Kuroda, T. Suwa, K. Hashimoto, A. Teramoto and S. Sugawa, Tohoku Univ. (Japan)

PS-3-3
RF Characteristics of Poly-Si TFTs with HfO₂ Gate Dielectric Fabricated by Microwave Annealing
J.J. Tsai and H.H. Hu, National Taipei Univ. of Tech. (Taiwan)

PS-3-4
Trap-Assisted Tunneling Effects on Gate-Induced Drain Leakage in Silicon-Germanium Channel pFET
V.A. Tiwari¹, A. Scholze², R. Divakaruni² and D.R. Nair¹, ¹Indian Inst. of Tech. Madras and ²IBM SRDC (India)

PS-3-5
Low Frequency Noise and Mobility Correlation from RT to Low Temperatures for n-Channel Ge MOSFETs
S. Ghosh, P. Bhatt, Y. Tiwari and S. Lodha, IIT Bombay (India)

PS-3-6
Comparison of Gate Structures of P-channel Poly-Si Nanowire Trench Ultra-thin Channel Junctionless Field-Effect Transistors
Y.C. Wu¹, K.W. Lin¹, M.S. Yeh¹, Y.R. Lin¹, M.H. Wu¹ and Y.H. Lin², ¹National Tsing Hua Univ. and ²National United Univ. (Taiwan)

PS-3-7
1/f Noise Performances and Noise Sources of Accumulation Mode Si(100) n-MOSFETs
P. Gaubert, A. Teramoto and S. Sugawa, Tohoku Univ. (Japan)

PS-3-8
ON Current Enhancement of Nanowire Schottky Barrier Tunnel FET
K. Takei¹, S. Hashimoto¹, J. Sun¹, X. Zhang¹, S. Asada¹, T. Xu¹, T. Wakamizu¹, T. Matsukawa², M. Masahara² and T. Watanabe¹, ¹Waseda Univ. and ²AIST (Japan)

PS-3-9
Novel 5-State Latch Using Double-Peak Negative Differential Resistance (NDR) and Standard Ternary Inverter (STI)
S. Shin and K.R. Kim, UNIST (Korea)

PS-3-10
Impacts of Threshold Voltage Design for Monolithic 3D 6T SRAM with Si and InGaAs-n/Ge-p Devices considering Interlayer Coupling
K.C. Yu, C.H. Yu, V.P.H. Hu, P. Su and C.T. Chuang, NCTU (Taiwan)

PS-3-11
Multi-Threshold Voltages in Ultra-thin-body Devices by Asymmetric Dual-Gate Structure
H. Kim, J. Park, M.W. Kwon, S. Hwang and B.G. Park, Seoul National Univ. (Korea)

PS-3-12
Investigation of Trap Properties in High-k/Metal Gate pMOSFETs of Higher Al Energy and Concentration Ion Implantation on Random Telegraph Noise
T.H. Kao¹, S.J. Chang¹, Y.K. Fang¹, P.C. Huang¹, Y.K. Su¹, Y.J. Shen¹, C.Y. Wu² and S.L. Wu², ¹NCKU and ²Cheng Shiu Univ. (Taiwan)

PS-3-13
The Limits of Applicability of the Analytic Model for Hot Carrier Degradation
M. Jech¹, P. Sharma¹, S. Tyaginov^{1,2}, F. Rudolf¹ and T. Grasser¹, ¹TU Wien and ²Ioffe Physical-Techn. Inst. (Austria)

PS-3-14
Investigation of Backgating Effect on Superlinear Onset of Output Characteristics for UTB III-V Heterojunction Tunnel FET
S.E. Huang, M.L. Fan and P. Su, NCTU (Taiwan)

PS-3-15
Optimized Nanowire Diameter for III-V Homojunction and Heterojunction Gate-All-Around Tunnel FETs
Y.W. Wang and P. Su, NCTU (Taiwan)

PS-3-16
Transmission Line Model and Transconductance Method for Layout Dependent Source Resistance Extraction in Multi-Finger MOSFETs
Y.Z. Lo and J.C. Guo, NCTU (Taiwan)

PS-3-17
Comparative Study of Tunnel Field Effect Transistors with Dopant-Segregated Schottky Source/Drain
Y.B. Zhang, L. Sun, H. Xu and J.W. Han, Peking Univ. (China)

Area 4: Advanced Memory Technology

(13 papers)

PS-4-1
Si-based Nonvolatile Field Effect Transistor using Low Temperature Process
Y. Miyata, A. Ashida, T. Yoshimura and N. Fujimura, Osaka Prefecture Univ. (Japan)

PS-4-2
Transition Metal Complex Reaction Etching for MRAM Applications using Neutral Beam and Its Mechanism Investigated by First-Principles Calculation
T. Kubota¹, Y. Kikuchi^{1,2}, T. Nozawa² and S. Samukawa^{1,3}, ¹IFS, Tohoku Univ., ²Tokyo Electron Ltd. and ³WPI-AIMR, Tohoku Univ. (Japan)

PS-4-3
A 16-Level-Cell Memory with 0.24mV/°C Temperature Characteristics Comprising Crystalline In-Ga-Zn Oxide FET
T. Matsuzaki, T. Onuki, S. Nagatsuka, H. Inoue, T. Ishizu, Y. Ieda, N. Yamade, H. Miyairi, M. Sakakura, Y. Shionoiri, K. Kato, T. Okuda, J. Koyama, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Lab. Corp. Ltd. (Japan)

PS-4-4
High-performance In-Ga-Zn-O TFT Memory with Pt Nanocrystals
S.B. Qian, W.P. Zhang, W.J. Liu and S.J. Ding, Fudan Univ. (China)

PS-4-5
Resistance Switching Memory Operation of CaF₂/Si/CaF₂ Resonant-tunneling Quantum-well Structures using Nanocrystalline-Si Secondary Barrier Layers
K. Suda, Y. Kuwata and M. Watanabe, Tokyo Tech (Japan)

PS-4-6
Switching Kinetics of VCM-based Memristor: Evolution and Positioning of Nanofilament
J.Y. Chen, C.W. Huang, C.H. Chiu, Y.T. Huang and W.W. Wu, NCTU (Taiwan)

PS-4-7
Impact of Film Morphology on the Switching Characteristics of Ta₂O₅-Based Atomic Switches
C. Mannequin¹, T. Tsuruoka¹, T. Hasegawa² and M. Aono¹, ¹NIMS and ²Waseda Univ. (Japan)

PS-4-8
Guideline Model for the Bias-Scheme-Dependent Power Consumption of a ReRAM Crossbar Array
W.K. Sun, H. Lim, S.J. Choi and H.S. Shin, Ewha Womans Univ. (Korea)

PS-4-9
Properties of SiC Resistive Memory for Harsh Environments
K. Morgan, J. Fan, R. Huang, L. Zhong, R. Gowers, L. Jiang and K. De Groot, Univ. of Southampton (UK)

PS-4-10
Understanding of the Abnormal Unipolar Resistance Switching Behavior in CBRAM
H.T. Sun, Q. Liu, D.L. Xun, K.K. Zhang, H.B. Lv, W. Banerjee, S.B. Long and M. Liu, IMECAS (China)

PS-4-11
SONNOS Nonvolatile Memory Based on Ultra-Thin Body Poly-Si Junctionless Field-Effect Transistor with Excellent Retention
Y.R. Lin¹, W.C. Wang¹, Y.H. Lin² and Y.C. Wu¹, ¹National Tsing Hua Univ. and ²National United Univ. (Taiwan)

PS-4-12 (Late News)
Concept of a SOT-MRAM Based on 1Transistor-1MTJ-Cell Structure
A. Makarov, T. Windbacher, V. Sverdlov and S. Selberherr, TU Wien (Austria)

PS-4-13 (Late News)
Theoretical Study of SET Operation in Nantero Memory Cell
M. Stopa^{1,2} and T. Rueckes¹, ¹MIT and ²Nantero Inc. (USA)

Area 5: Advanced Circuits and Systems

(12 papers)

PS-5-1
Associative Memory for Nearest Neighbor Search with High Flexibility of Reference-Vector Number Due to Configurable Dual-Storage Space
F. An, K. Mihara, S. Yamasaki, L. Chen and H.J. Mattausch, Hiroshima Univ. (Japan)

PS-5-2
Memory-based LVQ Neural Network with Dedicated Learning Circuit
X. Zhang, F. An, L. Chen and H.J. Mattausch, Hiroshima Univ. (Japan)

PS-5-3
Non-volatile and Volatile Hybrid Memories Embedded in the Standard CMOS Process
H. Lin, Y.L. Chiou, H.J. Chiu and C.Y. Wu, National Chung Hsing Univ. (Taiwan)

PS-5-4
A Compact 0.3-to-1.125GHz Self-Biased PLL for System-on-Chip Clock Generation in 0.18μm CMOS
Z. Zhang, L. Liu, P. Feng, J. Liu and N. Wu, Chinese Academy of Sciences (China)

PS-5-5
A DC-balanced Bus-invert Coding for Stabilizing the Intermediate Power Level in Stacked-Vdd LSIs
Y. Kohara, N. Kubo, M. Alimudin, A. Rahmat and K. Nakamura, Kyushu Inst. of Tech. (Japan)

PS-5-6
A Wireless Power Transfer System for Small-Sized Sensor Applications
Y. Akihara¹, T. Hirose¹, Y. Tanaka¹, N. Kuroki¹, M. Numa¹ and M. Hashimoto², ¹Kobe Univ. and ²Osaka Univ. (Japan)

PS-5-7
Batteryless Transmitter for Biomedical Implant
H.C. Chen, C.Y. Kao and S.C. Yang, National Taiwan Univ. of Sci. and Tech. (Taiwan)

PS-5-8
A Fully On-Chip Switched-Capacitor DC-DC Power Converter with Startup/Fail-Safe Circuit
Y. Kojima, T. Hirose, K. Tsubaki, T. Ozaki, H. Asano, N. Kuroki and M. Numa, Kobe Univ. (Japan)

PS-5-9
A Fully Integrated Boost Power Supply with On-Chip Photovoltaic Device
A. Watanabe, D. Orihara, Y. Minami and N. Nakano, Keio Univ. (Japan)

PS-5-10
Discharging-Phototransistor-Integrated High-Voltage Si Photovoltaic Cells for Fast Driving of an Electrostatic MEMS Actuator by Wavelength Modulation
I. Mori and Y. Mita, Univ. of Tokyo (Japan)

PS-5-11
Design and Characteristics of a MEMS Human Body Hardness Sensor Aimed to Diagnosis of Lesion Size
Y. Maeda, K. Terao, F. Shimokawa and H. Takao, Kagawa Univ. (Japan)

PS-5-12
CMOS Temperature Sensor Using a Modified Bandgap Reference Voltage Circuit with a Low-Temperature-Coefficient Resistor Structure
R.L. Wang¹, J.L. Shi¹, Y.F. Hao¹, K.B. Lee¹, X.J. Yang¹, W.D. Wu¹, H.H. Liao², H.H. Tsai² and Y.Z. Juang², ¹National Kaohsiung Normal Univ. and ²NARLabs (Taiwan)

Area 6: Compound Semiconductor Electron Devices & Related Technologies

(27 papers)

PS-6-1
Accuracy of Recessed Gate for GaN Power FETs and High Temperature Capability of Diamond Heat Sink
Y.T. Kim¹, J.H. Lee² and Y.M. Jhon¹, ¹Korea Inst. of Sci. & Tech. and ²KNU (Korea)

PS-6-2
Enhancement Mode AlGaIn/GaN MIS-HEMTs Using Multilayer HfO₂/La₂O₃ Gate Insulator for High Power Application
Y.X. Huang¹, W.C. Shih¹, T.W. Lin¹, C.H. Wu¹, Y.C. Lin¹, J.S. Maa¹, E.Y. Chang¹, K. Kakushima² and H. Iwai², ¹NCTU and ²Tokyo Tech (Taiwan)

PS-6-3
Improved Linearity and Reliability in GaN MOS-HEMTs Using Nanolaminate La₂O₃/SiO₂ Gate Dielectric
W.C. Shih¹, H.H. Hsu¹, Y.X. Huang¹, T.W. Lin¹, C.H. Wu¹, Y.C. Lin¹, J.S. Maa¹, E.Y. Chang¹, K. Kakushima² and H. Iwai², ¹NCTU and ²Tokyo Tech (Taiwan)

PS-6-4
Thermal Stability of the Interface between Atomic Layer Deposited High-*k* ZrO₂ and GaN
H. Wang^{1,2}, G. Ye¹ and K.S. Ang², ¹NTU and ²TL@NTU (Singapore)

PS-6-5
Analysis of Electrical Characteristics of AlGaIn/GaN on Si Large SBD by Changing Structure
H.S. Lee^{1,2}, D.Y. Jung¹, Y.R. Park¹, J.H. Na¹, H.G. Jang¹, H. Lee¹, C.H. Jun¹, J.B. Park¹, Z.S. Kim¹, J.K. Mun¹, S.O. Ryu², S.C. Ko¹ and E.S. Nam¹, ¹Electronics and Telecommunications Res. Inst. and ²Dankook Univ. (Korea)

PS-6-6
Electrolyte Electro-Reflectance Spectra of Crack-Free AlGaIn/GaN High Electron Mobility Transistors on Si Substrate
T.S. Ko¹, B.Y. Hu¹, N.W. Chang¹, D.Y. Lin¹ and J.S. Li², ¹National Univ. of Changhua Edu. and ²Feng Chia Univ. (Taiwan)

PS-6-7
Study of AlGaIn/GaN Tri-Gate HEMTs for Device Performance Improvement
C.C. Liu¹, Y.X. Huang¹, W.C. Shih¹, H.H. Hsu¹, Y.C. Lin¹, J.S. Maa¹, E.Y. Chang¹ and H. Iwai², ¹NCTU and ²Tokyo Tech (Taiwan)

PS-6-8
The Si-Implanted Source/Drain of GaN-based High Electron Mobility Transistors by Using Stacking AlN Protection Layers
A.J. Tzou¹, D.H. Hsieh¹, J.K. Huang¹, C.J. Su², Z.Y. Li^{3,4}, C.Y. Chang^{1,4} and H.C. Kuo¹, ¹NCTU, ²NDL, NARLabs, ³Epistar Inc. and ⁴Academia Sinica (Taiwan)

PS-6-9
High Performance of AlGaIn/GaN HEMT Device with Embedded Multiple Graphene Layers
C.Y. Lee¹, Y.P. Lan², Y.S. Gau³, C.H. Chen³, R.M. Lin³ and C.Y. Chang^{1,2}, ¹Academia Sinica, ²NCTU and ³Chang Gung Univ. (Taiwan)

PS-6-10
2-Dimensional Characterization of Ion-Implantation Damage in GaN Schottky Contacts Using Scanning Internal Photoemission Microscopy
K. Shiojima¹, S. Murase¹, S. Yamamoto¹, T. Mishima² and T. Nakamura², ¹Univ. of Fukui and ²Hosei Univ. (Japan)

PS-6-11
DC Characteristics in Nearly Lattice-Matched InAlN/AlGaIn Heterostructure Field-Effect Transistors
T. Tsutsumi, G. Nishino, J. Freedman, M. Miyoshi and T. Egawa, Nagoya Inst. of Tech. (Japan)

PS-6-12
High-Quality PECVD SiO₂ Gate Oxide for Use in Normally-Off AlGaIn/GaN Recessed MOS-HFETs
H.S. Kim¹, J.G. Lee², S.H. Park¹, S.W. Han¹, K.S. Seo³ and H.Y. Cha¹, ¹Hongik Univ., ²Univ. of Texas at Dallas and ³Seoul National Univ. (Korea)

PS-6-13
Analysis of Post-Deposition Annealing Effects on Insulator/Semiconductor Interface of Al₂O₃/AlGaIn/GaN High-Electron-Mobility Transistors on Si Substrates
T. Kubo, M. Miyoshi and T. Egawa, Nagoya Inst. of Tech. (Japan)

PS-6-14
High Thermal Stability AlGaIn/GaN Schottky Barrier Diode with Diamond-Like Carbon (DLC) Heat Dissipation Anode Design
Y.H. Cheng, H.Y. Wang, L.Y. Peng and H.C. Chiu, Chang Gung Univ. (Taiwan)

PS-6-15
Nonvolatile Memory Effects in GaN Metal-Oxide-Semiconductor Heterostructure FETs with Thin AlGaIn Barrier
D.M. Keum, K.H. Cho and H.T. Kim, Hongik Univ. (Korea)

PS-6-16
Low Current Collapsed AlGaIn/GaN HEMT-on-Si Substrate with SiN_x / HfO₂ Dual Passivation Layer
D.H. Kim¹, M.J. Kang¹, S.K. Eom¹, H.Y. Cha² and K.S. Seo¹, ¹Seoul National Univ. and ²Hongik Univ. (Korea)

PS-6-17
Preparation of InAs Surface by Hydrogen Plasma Pre-Treatment for Low Interfacial Trap Density MOS Capacitors
C. Y. Chen¹, C.H. Hsieh¹, W.J. Hsueh¹ and J.I. Chyi^{1,2}, ¹National Central Univ. and ²Academia Sinica (Taiwan)

PS-6-18
Analysis of Energy States Where Electrons and Holes Coexist in Pseudomorphically Strained InAs HEMTs
Y. Nishio, T. Sato, N. Hirayama, T. Iida and Y. Takanashi, Tokyo Univ. of Science (Japan)

PS-6-19
Low Interface Trap Density HfO₂/Al₂O₃/InAs MOS Capacitors Prepared by Nitrogen Plasma Treatment
G.B. He¹, W.J. Hsueh¹, C.Y. Chen¹ and J.I. Chyi^{1,2}, ¹National Central Univ. and ²Research Center for Applied Sci., Academia Sinica (Taiwan)

PS-6-20
Study on Electrical Performances of ZnO-TFTs with 3-D Finlike Channels Fabricated by Nanoimprint Lithography and Atomic Layer Deposition
H.J.H. Chen¹, B.L. Yeh¹, C.Y. Chiang², T.N. Lee¹ and K.C. Hsieh², ¹National Chi Nan Univ. and ²National Tsing Hua Univ. (Taiwan)

PS-6-21
Structural Properties and Electrical Characteristics of High-κ Lu₂O₃ and Lu₂TiO₅ Gate Dielectrics for InGaZnO Thin-Film Transistors
T.M. Pan, C.H. Chen, H.J. Wang and I.C. Huang, Chang Gung Univ. (Taiwan)

PS-6-22
Impact of Gate Dielectrics and Oxygen Annealing on Tin-Oxide Thin-Film Transistors
C.W. Zhong¹, H.C. Lin¹, J.R. Tsai², K.C. Liu³ and T.Y. Huang¹, ¹NCTU, ²Asia Univ. and ³Chang Gung Univ. (Taiwan)

PS-6-23
Mobility Improvement Based on Mobility Model of Crystalline In-Ga-Zn-Oxide with High Indium Composition
K. Tsutsui, D. Matsubayashi, N. Ishihara, T. Takasu, S. Matsuda and S. Yamazaki, Semiconductor Energy Lab. Co., Ltd. (Japan)

PS-6-24
ZnO Thin Film Transistor with U-shape Active Layer for High Performance Application
H.J. Yun, Y.M. Kim, S.D. Yang, H.D. Lee and G.W. Lee, Chungnam National Univ. (Korea)

PS-6-25 (Late News)
Design of Drain for Low off Current in GaAsSb/InGaAs Tunnel FETs
S. Iwata¹, W. Lin¹, K. Fukuda^{1,2} and Y. Miyamoto¹, Tokyo Tech and ²AIST (Japan)

PS-6-26 (Late News)
Low-noise Performance of Pseudomorphic InGaAs/InAlAs HEMTs
I. Watanabe¹, A. Endoh^{1,2}, T. Mimura^{1,2} and A. Kasamatsu¹, ¹NICT and ²Fujitsu Labs. (Japan)

PS-6-27 (Late News)
Effect of Temperature on DC and RF Characteristics of Cryogenic InP HEMTs
A. Endoh^{1,2}, I. Watanabe¹, A. Kasamatsu¹, T. Takahashi², S. Shiba², Y. Nakasha², T. Iwai² and T. Mimura^{1,2}, ¹NICT and ²Fujitsu Labs. (Japan)

Area 7: Photonic Devices and Related Technologies	(23 papers)
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PS-7-1
GaN Metal-Insulator-Semiconductor Ultraviolet Detectors with Lanthanum Fluoride (LaF₃) Insulating Layers
C.H. Chen and C.F. Cheng, Cheng Shiu Univ. (Taiwan)

PS-7-2
Performance Enhancement of Blue InGaN Light-Emitting Diodes with p-InGaN/GaN SPS Last Barrier and p-AlGaN/GaN SPS EBL
P.K. Lin¹, C.K. Wang¹, Y.Z. Chiou¹, S.B. Chang² and S.J. Chang², ¹Southern Taiwan Univ. of Sci. and Tech. and ²NCKU (Taiwan)

PS-7-3
Enhanced Light Intensity of InGaN-based LEDs Grown on Molybdenum Patterned Sapphire Substrates
W.H. Wu¹, Y.H. You², V.C. Su², M.L. Lee², P.H. Chen², C.H. Kuan² and R.M. Lin¹, ¹Chang Gung Univ. and ²National Taiwan Univ. (Taiwan)

PS-7-4
A Narrow-band Short Wavelength Type II InAs/GaSb Superlattices Photodetector with High Performance
J.L. Huang^{1,2}, W.Q. Ma¹, Y.H. Zhang¹, Y.L. Cao¹, K. Liu¹, J.W. Huang¹ and S.L. Lu², ¹Institute of Semiconductors, CAS and ²SINANO, CAS (China)

PS-7-5
Enhanced Responsivity and Detectivity Values of Short 30-period InAs/GaSb Type-II Infrared Photodetectors with Reduced Device Areas
H.A. Chen^{1,2}, T.C. Shih¹, H.Y. Chen³ and S.Y. Lin^{1,2,3}, ¹Academia Sinica, ²National Taiwan Univ. and ³National Taiwan Ocean Univ. (Taiwan)

PS-7-6
Low-resistivity Lateral PIN Junction Formed by Ni-InGaAsP Alloy for Carrier-Injection InGaAsP Photonic Devices
J.K. Park^{1,2}, M. Takenaka^{1,2} and S. Takagi^{1,2}, ¹Univ. of Tokyo and ²JST-CREST (Japan)

PS-7-7
Broadband Gain Superluminescent Diode Based on Self-assembled InAs Quantum Dots with Segmented Contacts
N. Ozaki^{1,2}, T. Yasuda¹, H. Shibata¹, H. Ohsato³, E. Watanabe³, N. Ikeda², Y. Sugimoto³, D.T.D. Childs² and R.A. Hogg², ¹Wakayama Univ., ²Univ. of Sheffield and ³NIMS (Japan)

PS-7-8
Widely Tunable InAs/InP Quantum-Dot External-Cavity Laser with Bent-Waveguide Structure
F. Gao, S. Luo, H.M. Ji and T. Yang, Chinese Academy of Sciences (China)

PS-7-9
Photoconductivity with 1.55 μm Excitation of InAs QDs Embedded in InGaAs Barriers on GaAs Substrate
K. Murakumo, Y. Yamaoka, N. Kumagai, T. Kitada and T. Isu, Tokushima Univ. (Japan)

PS-7-10
Coupling Structures between Crystal/Amorphous Si Waveguides for In-Plane Integration
K. Itoh, Y. Kuno, J. Kang, Y. Hayashi, J. Suzuki, T. Amemiya, N. Nishiyama and S. Arai, Tokyo Tech (Japan)

PS-7-11
Photosensing in MOS(p) and MOS(n) Photodiodes
C.T. Yang and J.G. Hwu, National Taiwan Univ. (Taiwan)

PS-7-12
Free Spectral Range (FSR) Control of a High Quality Factor - 1D Photonic Crystal (PhC) Extended Cavity
A.R. Md Zain¹, B.Y. Majlis¹ and R.M. De La Rue², ¹Universiti Kebangsaan Malaysia and ²Univ. of Glasgow (Malaysia)

PS-7-13
Output Characteristics of a Double Circular Ring Resonators Laser Diode Through Sliotone Wave Guiding
M.C. Shih, Y.H. Kao and W.H. Lan, National Univ. of Kaohsiung (Taiwan)

PS-7-14
Highly Fabrication-Tolerant Shallow-Grating Coupler for Robust Coupling to Multimode "Optical Pin"
J. Ushida, M. Tokushima, T. Uemura and K. Kurata, PETRA (Japan)

PS-7-15
Ultracompact, Low-loss Waveguide Polarizer Based on Plasmonics
L. Gao, B. Bai and Z. Zhou, Peking Univ. (China)

PS-7-16
Localized Surface Plasmon-Enhanced Light Emission Output of Amorphous Silicon Quantum Dots Light-Emitting Device with Plasmonic Subwavelength Ag Grating Structure
T.H. Tsai, W.K. Choi and H.Y. Lin, National Taiwan Univ. (Taiwan)

PS-7-17
The Excellent Full-color Micro Display Dominated by RGB Quantum Dots
H.Y. Lin¹, H.V. Han¹, W.C. Chong², J.R. Li¹, C.C. Lin¹, H.M. Chen¹, K.M. Lau² and H.C. Kuo¹, ¹NCTU and ²HKUST (Taiwan)

PS-7-19
Enhanced Light Extraction from Lateral Side of InGaN-based LEDs Grown on Nano-Sized Patterned Sapphire Substrates
Y.H. You¹, W.H. Wu¹, B.W. Lin², W.C. Hsu¹, V.C. Su¹, M.L. Lee¹, P.H. Chen¹, C.H. Kuan¹ and R.M. Lin¹, ¹National Taiwan Univ., ²Chang Gung Univ., ³NCTU and ⁴Sino-America Silicon Products Inc. (Taiwan)

PS-7-20
Hydrothermal Growth of Single-crystalline ZnO Thin Films and Theirs Application on UV Photodetectors
C.H. Wu¹, S.J. Wang¹, T.H. Lin¹, Y.C. Tu¹, C.H. Hung¹, P.Y. Liu¹, Y.H. Chin¹, K.M. Uang² and T.M. Chen², ¹NCKU and ²WuFeng Univ. (Taiwan)

PS-7-21
Preparation of Porous p-ZnO Films by Hydrothermal Method and Its Application on Ultraviolet Sensors
Y.C. Tu¹, S.J. Wang¹, T.H. Lin¹, C.H. Hung¹, C.H. Wu¹, P.Y. Liu¹, Y.H. Chin¹, K.M. Uang² and T.M. Chen², ¹NCKU and ²WuFeng Univ. (Taiwan)

PS-7-22
Electro-Optic Characteristics Improvement of ZnMgTe/ZnTe Waveguide Devices
W.C. Sun¹, F. Kazami¹, J. Wang¹, T. Nakasu¹, S. Hattori², T. Kizu¹, Y. Hashimoto¹, M. Kobayashi^{1,2} and T. Asahi², ¹Waseda Univ., ²Kagami Memorial Res. Inst. for Materials Sci. and Tech. and ³JX Nippon Mining & Metals Corp. (Japan)

PS-7-23
Demonstration of Spatial Demultiplexing of Polarization Modulation Signal Based on Magneto-optical Modulation of Multiplexed Lightwave in Fiber
K. Nishibayashi¹, H. Yoneda², K. Kuga² and H. Munekata¹, ¹Tokyo Tech, ²Univ. of Electro-Communications and ³NHK STRL (Japan)

PS-7-24
Fabrication of Mesa-type Mg₂Si Pn-junction Photodiode for 2 - 4 μm IR-detection
T. Akiyama, N. Hori and H. Udono, Ibaraki Univ. (Japan)

Area 8: Advanced Material Synthesis and Crystal Growth Technology	(27 papers)
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PS-8-1
Temperature-Dependent Photoluminescence and Hall-Effect Studies of Ge_{1-x}Sn_x Alloys Grown on Ge-Buffered Si Substrates
M.Y. Ryu¹, T.R. Harris², B. Wang^{2,3}, Y.K. Yeo² and J. Kouvetakis⁴, ¹Kangwon National Univ., ²AFIT, ³Wright State Univ. and ⁴Arizona State Univ. (Korea)

PS-8-2
Electrical Property of Single-phase HMS Grown by Temperature Gradient Solution Growth Method using Ga and Sn Solvent
S. Hori¹, M. Iioka¹, S. Jimba¹, Y. Hara² and H. Udono¹, ¹Ibaraki Univ. and ²Ibaraki College of Tech. (Japan)

PS-8-3
Surface Hydrogen Passivation and Sn Distribution in Ge_{1-x}Sn_x (001) Materials: A DFT Study
H. Johll¹, M. Samuel¹, R.Y. Koo¹, H.C. Kang^{2,3}, S.W. Ong³, Y.C. Yeo² and E.S. Tok^{2,3}, ¹National Junior College, ²NUS and ³Yale-NUS College (Singapore)

PS-8-4
Role of Monolayer Indium Atom Distribution in Metalorganic Chemical Vapor Deposition of InAs/GaAs Epitaxy on Ge Substrate
H.W. Yu, H.Q. Nguyen, T.M. Wang and E.Y. Chang, NCTU (Taiwan)

PS-8-5
Resonant Excitation of Single Luminescence Centers in GaAs:N
M. Ikezawa¹, N. Yasuda¹, L. Zhang¹, Y. Sakuma², K. Sakoda² and Y. Masumoto¹, ¹Univ. of Tsukuba and ²NIMS (Japan)

PS-8-6
Free Exciton Emission from Hexagonal Boron Nitride Films Grown on Sapphire Substrates by Low Pressure Chemical Vapor Deposition
N. Umehara, A. Masuda, T. Shimizu, T. Kouno, H. Kominami and K. Hara, Shizuoka Univ. (Japan)

PS-8-7
N-face GaN (000-1) Films with Hillock-Free Smooth Surfaces Grown by Group-III-Source Flow-Rate Modulation Epitaxy
C.H. Lin, T. Akasaka and H. Yamamoto, NTT Corp. (Japan)

PS-8-8
Heteroepitaxial Growth of GaSb Films on Si(111)-√3×√3-Ga Surface Phase
H. Shimoyama, M. Mori and K. Maezawa, Univ. of Toyama (Japan)

PS-8-9
Selective-Area Growth of Heavily N-Doped C-GaN/GaAs Nanostubs on Si(100) Substrate by Molecular Beam Epitaxy
Y.J. Chang, B. Beekley, M. Goorsky and J. Woo, UCLA (USA)

PS-8-10
AlGaN Microdisks on Top of Supporting GaN Columns Fabricated using Hydrogen Environment Anisotropic Thermal Etching
S. Suzuki¹, T. Kouno¹, H. Takeshima¹, A. Kikuchi², K. Kishino², M. Sakai³ and K. Hara¹, ¹Shizuoka Univ., ²Sophia Univ. and ³Univ. of Yamanashi (Japan)

PS-8-11
Effects of Double-cap Technique on the Improvement of InAs/InAlGaAs/InP Quantum Dots Grown by Metal-organic Chemical Vapor Deposition
B. Shi and K.M. Lau, The Hong Kong Univ. of Sci. & Tech. (China)

PS-8-12
Effect of Remote Doping on Photoluminescence and Carrier Spin Dynamics in InGaAs Quantum Dots
D. Yamazaki, S. Chen, J. Takayama and A. Murayama, Hokkaido Univ. (Japan)

PS-8-13
Improving Crystalline Quality of Sputtering Deposited MoS₂ Thin Film by Post-Sulfurization Annealing Using (t-C₄H₉)₂S₂
S. Ishihara¹, K. Suda¹, Y. Hibino¹, N. Sawamoto¹, T. Ohashi², S. Yamaguchi², K. Matsuura², H. Machida³, M. Ishikawa³, H. Sudoh³, H. Wakabayashi² and A. Ogura¹, ¹Meiji Univ., ²Tokyo Tech and ³Gas-phase Growth Ltd. (Japan)

PS-8-14
Large Effect of Etchant on Electrical Performance of Transferred CVD Graphene
T.W. Chen¹, Y.P. Hsieh¹ and M. Hofmann², ¹National Chung Cheng Univ. and ²NCKU (Taiwan)

PS-8-15
Improved Synthesis and Air Stability of Two-Dimensional Material GeH
N. Shao, R.R. Liang, C.C. Sun, L. Xiao, J. Wang and J. Xu, Tsinghua Univ. (China)

PS-8-16
Topography and Atomic Strain Deformation of Epitaxial Graphene on Si-terminated 6H-SiC Extended to the Few Microns Order
G. Rius¹, N. Mestres², Y. Tanaka¹, O. Eryu¹ and P. Godignon³, ¹Nagoya Inst. of Tech., ²ICMAB-CSIC and ³IMB-CNM-CSIC (Japan)

PS-8-17
Synthesis of Si-based Nanostructures by Extraction of Metallic Atoms from Silicides by Inositol Hexakisphosphate
K. Sasaki¹, K. Sano¹, X. Meng¹, H. Suzuki¹, T. Kobayashi², T. Kuno³ and H. Tatsuoaka¹, ¹Shizuoka Univ., ²Koba Tech. and ³Kankyo Science (Japan)

PS-8-18
Temperature Dependence of Electrical Transport Properties of La₄BaCu_{5-x}Co_xO_{13+δ} Conducting Oxide Thin Films
A. Tsuruta¹, Y. Tsujioka², Y. Yoshida², I. Terasaki^{1,2} and W. Shin¹, ¹AIST and ²Nagoya Univ. (Japan)

PS-8-19
Solvent Effect on Zinc Oxide Crystallites Shape using Submerged Photo-Synthesis
M. Jeem, K. Kawaguchi, A.M.R. Hamzah, J. Ishioka, S. Yatsu, T. Shibayama and S. Watanabe, Hokkaido Univ. (Japan)

PS-8-20
Study on Thermal Durability of AZO/Ag(Al)/AZO Transparent Conductive Film
Y. Sugimoto¹, K. Igarashi¹ and A. Kikuchi^{1,2}, ¹Sophia Univ. and ²Sophia Nanotech. Res. Center (Japan)

PS-8-21
Study on Microstructure of Gd₂O₃ and Nd₂O₃ Compound Film Formed by RF Magnetron Sputtering
Z. Wang, L. Xiao and J. Wang, Tsinghua Univ. (China)

PS-8-23
Epitaxial Growth of Yttrium Monoxide Thin Film
K. Kaminaga^{1,2}, R. Sei^{1,2}, T. Fukumura^{1,3} and T. Hasegawa^{1,3}, ¹Univ. of Tokyo, ²Tohoku Univ. and ³JST-CREST (Japan)

PS-8-24
Behavior of Si Atoms, Ge Atoms and Vacancies for Flash Lamp Annealing
A. Heya¹, N. Matsuo¹, S. Hirano¹, Y. Nakamura¹, T. Yokomori² and M. Yoshioka², ¹Univ. of Hyogo and ²USHIO Inc. (Japan)

PS-8-25
Low Temperature Liquid Phase Epitaxy of YBa₂Cu₃O_x Films by the Molten KOH Method
S. Fumaki, Y. Yamada, R. Okunishi and Y. Miyachi, Shimane Univ. (Japan)

PS-8-26
Thermoelectric Properties of Yb₂Fe₃Co_{4-x}Sb₁₂ Prepared under High Pressure
Y. Chen, Y. Kawamura and C. Sekine, Murooran Inst. of Tech. (Japan)

PS-8-27
Effect of Fabrication Method on the Structural and Magnetic Properties of Copper Ferrite
S. Pongpaddung, T. Kamwanna and V. Amornkitbamrung, Khon Kaen Univ. (Thailand)

PS-8-28 (Late News)
Chemical Vapor Deposition of Highly Resistive ZnO Films using Nonequilibrium N₂/O₂ Plasma Generated near Atmospheric Pressure
Y. Nose¹, T. Kiguchi¹, T. Yoshimura¹, A. Ashida¹, T. Uehara² and N. Fujimura¹, ¹Osaka Prefecture Univ. and ²Sekisui Chemical Co., LTD. (Japan)

Area 9: Physics and Applications of Novel Functional Devices and Materials	(11 papers)
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PS-9-1
Performance Enhancement of Calcium-doped Zinc Oxide Thin Film Transistors Fabricated on Glass at Low Temperature
W. Yu, D.D. Han, G.D. Cui, P. Shi, Y. Zhang, Y.Y. Cong, X.L. Zhou, L.L. Huang, X. Zhang, Y. Wang and S.D. Zhang, Peking Univ. (China)

PS-9-2
Oxygen Partial Pressure Dependence of Ti-Zn-O Thin-Film Transistors Fabricated on Flexible Plastic Substrate at Low Temperature
G.D. Cui, D.D. Han, W. Yu, P. Shi, Y. Zhang, L.L. Huang, Y.Y. Cong, X.L. Zhou, X.M. Zhang, S.D. Zhang, X. Zhang and Y. Wang, Peking Univ. (China)

PS-9-3
Characterization of Epitaxial Calcium Fluoride as a Dielectric Material for Ultra-thin Barrier Layers in Silicon Microelectronics
Y.Y. Illarionov^{1,2}, M.I. Vexler², V.V. Fedorov², S.M. Suturin², N.S. Sokolov² and T. Grasser¹, ¹TU Wien and ²JoFFE Physical-Techn. Inst. (Austria)

PS-9-4
All Oxide All Solution-processed Active Matrix Thin-film Transistor for Electrophoretic Display Application
T.T. Phan^{1,2}, S. Inoue¹, H. Koyama³, Y. Takamura^{1,2} and T. Shimoda¹, ¹JAIST, ²JST-CREST and ³Toppaan Printing Co., Ltd. (Japan)

PS-9-5
Mesoscopic Blockade and Staircase Phenomena of Holes in DNA/Si-MOSFET by Gate Voltage Modulation
N. Matsuo¹, S. Nakamura¹, T. Takada¹, A. Heya¹, K. Yamana¹, T. Sato², S. Yokoyama² and Y. Omura³, ¹Univ. of Hyogo, ²Hiroshima Univ. and ³Kansai Univ. (Japan)

PS-9-6
A Quasi-ballistic Transport Model for Top- and Back-gated Graphene Nanoribbon Field-effect Transistors
G. Hu, S. Hu, L. Wang, R. Liu and L. Zheng, Fudan Univ. (China)

PS-9-7
A Concept of Heterogeneous Circuits with Epitaxial Tunnel Layer Tunnel FETs
J.H. Hung, P.Y. Wang, B.Y. Tsui and C.H. Yang, NCTU (Taiwan)

PS-9-8
Gate-Stacking Engineering for Insta Ge/SiO₂/SiGe MOS Devices
P.H. Liao¹, W.T. Lai², S.C. Luo¹, K.C. Yang¹, T. George¹ and P.W. Li², ¹National Central Univ. and ²NCTU (Taiwan)

PS-9-9
Novel Design of Electrostatic Lens Potential for Improving Bending Curvature and Transmission Probability of Drive Current for Vertical Body Channel MOSFET
M. Muraguchi^{1,2,3} and T. Endoh^{1,2,3}, ¹Tohoku Univ., ²CIES, Tohoku Univ. and ³JST-ACCEL (Japan)

PS-9-11
Geometry-dependent Phase/Stress and Electrical Resistivity in Nickel-Silicide Nanowires
C.C. Wang¹, Y.Y. Hsiao¹, I.H. Chen¹, W.T. Lai¹, T. George¹ and P.W. Li², ¹National Central Univ. and ²NCTU (Taiwan)

PS-9-12
Changes in Morphology and Local Conductance of GeTe-Sb₂Te₃ Superlattice Films on Silicon Made by Scanning Probe Microscopy in a Lithography Mode
L. Bolotov^{1,2}, T. Tada^{1,2}, Y. Saito^{1,2} and J. Tominaga^{1,2}, ¹AIST and ²JST-CREST (Japan)

Area 10: Organic Materials Science, Device Physics, and Applications	(12 papers)
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PS-10-1
Temperature Dependence Analysis of Printed Organic MOSFET
H. Zenitani¹, T.K. Maiti², T. Hayashi¹, Y. Tanimoto¹, K. Sato¹, L. Chen², H. Kikuchihara², M. Miura Mattausch² and H.J. Mattausch¹, ¹Hiroshima Univ. and ²HiSIM, Hiroshima Univ. (Japan)

PS-10-2
Control of Threshold Voltage in Organic Thin-film Transistors by Modifying Gate Electrode Surface with MoO_x Aqueous Solution and Its Application to Circuits
R. Shiwaku¹, Y. Yoshimura¹, Y. Takeda¹, K. Fukuda^{1,2}, D. Kumaki¹ and S. Tokito¹, ¹Yamagata Univ. and ²JST-PRESTO (Japan)

PS-10-3
Solution-Processed Hybrid Organic-Inorganic Complementary Thin-Film Transistor Inverter
H.J. Cheong, S. Ogura, K. Kuribara, M. Yoshida, H.. Ushijima, N. Fukuda and S. Uemura, AIST (Japan)

PS-10-4
Fabrication of Organic Field Effect Transistors Based on Printing Techniques and the Improvement of FET Properties by the Insertion of Solution Processable Buffer Layers
A. Kanamori and E. Itoh, Shinshu Univ. (Japan)

PS-10-5
All-Solution-process Red Phosphorescent and Blue Fluorescent Organic Light-emitting Diodes by Blade Coating
Y.F. Chang¹, H.F. Meng¹, H.W. Zan¹, H.W. Lin², K.T. Wong³, H.L. Huang⁴ and S.F. Horng², ¹NCTU, ²National Tsing Hua Univ., ³National Taiwan Univ. and ⁴e-Ray Optoelectronics Tech. Co., Ltd. (Taiwan)

PS-10-6
Novel Textile Actuator Having a Large Displacement Consisting of Electrospun Poly(DL-Lactic Acid) Fibrous Film and Its Mechanism
T. Nobeshima¹, Y. Ishii², H. Sakai³, S. Uemura¹ and M. Yoshida¹, ¹AIST, ²Toyohashi Univ. of Tech. and ³JAIST (Japan)

PS-10-7
Deposition Characteristics of Small Molecule Organic Thin Film (CBP:PBD:TPD:Ir(Mppy)₃) by Modified Electrospray Deposition
Y. Niinuma¹, D. Nishi¹, J. Ishino¹ and A. Kikuchi^{1,2}, ¹Sophia Univ. and ²Sophia Nanotech. Res. Center (Japan)

PS-10-8
Bis(thiophenyl)benzothiadiazole Derivatives as Hole-Transporting Red Emitters for Efficient Solution-Processed Pure Red Electroluminescent Devices
V. Promarak¹, A. Thangthong², S. Namuangruk², T. Sudyoadsuk¹, T. Kaewin², S. Jungsuttiwong² and A. Prachumrak¹, ¹Vidyasirimedhi Inst. of Sci. and Tech., ²Ubon Ratchathani Univ. and ³NANOTEC (Thailand)

PS-10-9 (Late News)
Lower Power Consumption Technique on Organic Circuits for Roll-to-roll Process.
K. Kuribara¹, K. Kakita², Y. Tanaka² and M. Yoshida¹, ¹AIST and ²Ube Indus., Ltd. (Japan)

PS-10-10 (Late News)
Achieving Low-Program Voltage and High-Stability in Controllable Organic Complementary Logic Circuits by Photoactive Gate Dielectric
T.T. Dao¹, H. Sakai², K. Ohkubo³, S. Fukuzumi⁴ and H. Murata², ¹Univ. of Transport and Communications, ²JAIST, ³Osaka Univ. and ⁴Ewha Womans Univ. (Vietnam)

PS-10-11 (Late News)
Molecular Dynamics and Electronic Structure Studies of Organic Semiconductors under Mechanical Stress
K. Yamakawa, W. Xie., T. Yanase, T. Nagahama and T. Shimada, Hokkaido Univ. (Japan)

PS-10-12 (Late News)
Achieving Efficient Solution-Processed Small Molecular Solar Cells via Non-halogenated Solvent
C.W. Chu^{1,2} and M.E. Farahat¹, ¹National Tsing Hua Univ. and ²Academia Sinica (Taiwan)

Area 11: Sensors and Materials for Biology, Chemistry and Medicine (13 papers)
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PS-11-1
IGZO Substrate for PH Detection in LAPS with High Photo Response
C.H. Chen, C.M. Yang, L.B. Chang, J.C. Wang and C.S. Lai, Chang Gung Univ. (Taiwan)

PS-11-2
Temperature-Lowered Plasma Treatment by Controlling Direction of Supplying Reactive Species for Biological Application
Y. Nakayama¹, S. Kumagai¹, H. Hashizume², T. Ohta³, M. Ito³, M. Hori² and M. Sasaki¹, ¹Toyota Tech. Inst., ²Nagoya Univ. and ³Meijo Univ. (Japan)

PS-11-3
A Friendly Portable 2D Chemical Imaging System
C. Ren¹, C.G. Lyu¹, H.L. Liu², Y.M. Chen², Y.C. Hsu², C.M. Yang² and C.S. Lai², ¹Tianjin Univ. and ²Chang Gung Univ. (China)

PS-11-4
High Sensitive Biosensor using Si Photonic Crystal Cavity Resonators
A.K. Sana, K. Honzawa, Y. Amemiya and S. Yokoyama, Hiroshima Univ. (Japan)

PS-11-5
Development of a Novel Device for Allergy Test Based on Semiconductor Principle
H.Y. Yang¹, A. Saito¹, T. Kajisa², Y. Yanase³ and T. Sakata¹, ¹Univ. of Tokyo, ²PROVIGATE Inc. and ³Hiroshima Univ. (Japan)

PS-11-6
Nanosphere Lithography (NSL) on Au Nanopatterned Electrodes for Electrochemical DNA Detection
A. Purvidyantri¹, C.H. Chen², C.C. Chiou¹, Y.C. Tian³ and C.S. Lai¹, ¹Chang Gung Univ., ²National Taiwan Univ. of Sci. and Tech. and ³Chang Gung Memorial Hospital (Taiwan)

PS-11-7
Highly Sensitive pH-EGFET Sensors with Oxygen-Plasma-Treated Reduced Graphene Oxide Films Sprayed on the Reverse Pyramid Substrate
Y.R. Li, S.H. Chang, W.L. Tsai, C.T. Chang and H.C. Cheng, NCTU (Taiwan)

PS-11-8
Characteristics of N₂/H₂ Annealed Ni-Co Nanowires Upon Immobilized Affinity of Penta-histidine-tagged Protein
C.-Y. Ho, T.-H. Lin and Y.-J. Chang, Chung Yuan Christian Univ. (Taiwan)

PS-11-9
A Fluorescent Arrayed Biosensor Using Liposome Encapsulating Calcein for Discrimination of Different Target Proteins by Principal Component Analysis
R. Imamura¹, Z. Zhang¹, T. Shimanouchi², N. Murata¹, K. Yamashita¹, M. Fukuzawa¹ and M. Noda¹, ¹Kyoto Inst. of Tech. and ²Okayama Univ. (Japan)

PS-11-10
The Annealing Effect of BaSrTiO₃ Membrane in O₂ and N₂ Ambient for Electrolyte-Insulator-Semiconductor
Y.L. Su, C.H. Kao, C.F. Lin, C.W. Chang, C.L. Chang, S.W. Chang and Y.X. Huang, Chang Gung Univ. (Taiwan)

PS-11-11
Controlled Decoration of Double Junction N⁺/N⁻/N⁺ Polysilicon Nanobelt Device with Platinum for Hydrogen Gas Sensor Application
N.A. Tran, C.H. Sang, F.M. Pan and J.T. Sheu, NCTU (Taiwan)

PS-11-12 (Late News)
Cross-Talk Immunity of Gold-Nanoparticle Incorporated PEDOT:PSS Pressure Sensors with 2×2 Cross-Point Array Structure
R.S. Karmakar¹, Y. Fu¹, S.H. Chen¹, J.C. Wang¹, Y.J. Lu², C.Y. Huang², K.C. Wei² and C.S. Lai¹, ¹Chang Gung Univ. and ²Chang Gung Memorial Hospital (Taiwan)

PS-11-13 (Late News)
Improvement of Filter-less Fluorescence Sensor by the Surface Planarization of Polysilicon Photogate
Y.J. Choi, K. Takahashi, M. Matsuda, T. Hizawa, Y. Moriwaki, F. Dasai, Y. Kimura, I. Akita, T. Iwata, M. Ishida and K. Sawada, Toyohashi Univ. of Tech. (Japan)

Area 12: Spintronics Materials and Devices (20 papers)
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PS-12-1
Anti-Damping Torque Engineering in Trilayer Spin-Hall System
G. Gupta, M.B.A. Jalil and G. Liang, NUS (Singapore)

PS-12-2
Enhancement of Gilbert Damping in Trilayer Synthetic Antiferromagnets via Dynamic Exchange Interactions
T. Chiba¹, G.E.W. Bauer^{1,2,3} and S. Takahasi¹, ¹IMR, Tohoku Univ., ²WPI-AIMR, Tohoku Univ. and ³Kavli Inst. of NanoScience Delft Univ. of Tech. (Japan)

PS-12-3
A Pulse Current Synchronization Scheme for Spin Torque Nano Oscillators
K. Nakada¹, K. Miura² and T. Kimura³, ¹Hiroshima City Univ., ²Kwansei Gakuin Univ. and ³Kyushu Univ. (Japan)

PS-12-4
Spin Transport in Magnetic Tunnel Junctions with the Insertion of [6]Cyclo-2,7-naphthylenes Organic Semiconductor
K. Suzuki¹, T. Izumi^{2,3}, X. Zhang¹, A. Sugihara¹, S.T. Pham¹, H. Taka^{2,3}, S. Sato^{1,2}, H. Isobe^{1,2} and S. Mizukami¹, ¹Tohoku Univ., ²JST-ERATO and ³KONICA MINOLTA, Inc. (Japan)

PS-12-5
Bias Voltage Dependence of the Spin-dependent Tunneling Conductance of Co₂(Mn,Fe)Si-Based Magnetic Tunnel Junctions Exhibiting Giant Tunneling Magnetoresistances
K. Moges, B. Hu, H.x. Liu, T. Uemura and M. Yamamoto, Hokkaido Univ. (Japan)

PS-12-6
Temperature Dependence of Spin-Dependent Tunneling Conductance of Magnetic Tunnel Junctions with Highly Spin-Polarized Electrodes
B. Hu, Kidist. Moges, H.x. Liu, Y. Honda, T. Uemura and M. Yamamoto, Hokkaido Univ. (Japan)

PS-12-7
Exchange Bias Effects in Ni₂MnAl/Ferromagnet Film Bilayers
T. Kubota, T. Tsuchiya, T. Sugiyama and K. Takanashi, Tohoku Univ. (Japan)

PS-12-8
Theoretical Sensitivity in Magnetic Field Sensors using a Spin-torque Oscillator
Y. Suzuki^{1,2}, A. Tulapurkar³, H. Tomita¹, E. Tamura¹, H. Kubota², S. Miwa¹, A. Fukushima² and S. Yuasa², ¹Osaka Univ., ²AIST and ³IIT Bombay (Japan)

PS-12-9
Nanoscale Magneto-Resistance Sensors with Improved Sensitivity using Resonant Tunneling Magnetic Tunnel Junctions
N. Chatterji, A. Sharma, A. Tulapurkar and B. Muralidharan, IIT Bombay (India)

PS-12-10
Experimental Demonstration of Long-Distance Propagation of a Surface Plasmon on the Surface of a Ferromagnetic Metal
V. Zayets, H. Saito, S. Yuasa and K. Ando, AIST (Japan)

PS-12-11
Influence of Oxygen Partial Pressure on Electrical and Magnetic Characteristics of Spinel CoFe₂O₄ Thin Films
M. Araki, H. Kajita, N. Takahashi, T. Yanase, T. Shimada, H. Ohta and T. Nagahama, Hokkaido Univ. (Japan)

PS-12-12
Magnetic and Electronic Properties of Epitaxial Mn₂CoAl Films
K. Ueda, S. Hirose, S. Aichi, T. Hajiri and H. Asano, Nagoya Univ. (Japan)

PS-12-13
Crystallographic Properties of L1₀ Ordered FeNi Thin Films Fabricated by Sputtering and Rapid Thermal Annealing
M. Mizuguchi¹, T.Y. Tashiro¹, T. Koganezawa² and K. Takanashi¹, ¹Tohoku Univ. and ²SPRING-8/JASRI (Japan)

PS-12-14
Experimental Analysis of Shubnikov-De Haas Oscillation for Slightly Asymmetric InGaAs/InAlAs Double Quantum Wells
H. Chen¹, T. Matsuura¹, A. Sawada¹, T. Yamashige¹, B. Liu¹, H. Sugiyama², Y. Sekine² and T. Koga¹, ¹Hokkaido Univ. and ²NTT Corp. (Japan)

PS-12-15
Real Space Analysis of Classical Diffusion and Weak Localization of Electrons in Mesoscopic Systems from Boltzmannian Picture
A. Sawada and T. Koga, Hokkaido Univ. (Japan)

PS-12-16
Electron G-factor Engineering in GaAs Quantum Nano-Disks Fabricated by Defect-Free Neutral Beam Etching Process
Y.C. Tsai¹, L.W. Yang¹, Y. Li¹, O. Voskoboinikov¹, A. Higo², A. Murayama³ and S. Samukawa², ¹NCTU, ²Tohoku Univ. and ³Hokkaido Univ. (Taiwan)

PS-12-17
Transient Analysis of Oblique Hanle Signals Observed in GaAs
Z.c. Lin, M. Yamamoto and T. Uemura, Hokkaido Univ. (Japan)

PS-12-18
Influence of Si Surface on Spin Accumulation and Transport Signals in CoFe/MgO/n⁺-Si Junctions
M. Ishikawa¹, H. Sugiyama¹, T. Inokuchi¹, K. Hamaya², N. Tezuka³ and Y. Saito¹, ¹Toshiba Corp., ²Osaka Univ. and ³Tohoku Univ. (Japan)

PS-12-19
Temperature Dependences of Spin-injection Dynamics and Spin-polarized Electroluminescence in InGaAs Quantum Dots
Y. Nomura¹, Y. Akei¹, J. Takayama¹, T. Kiba², A. Subagyo¹, T. Yamamura¹, D. Yamazaki¹, K. Sueoka¹ and A. Murayama¹, ¹Hokkaido Univ. and ²Kitami Inst. of Tech. (Japan)

PS-12-20
Spin Depolarization Induced by Low Electric Fields in Undoped InGaAs/AlGaAs Multiple Quantum Well
Y.H. Chen, L.P. Zhu and Y. Liu, Chinese Academy of Sciences (China)

Area 13: Applications of Nanotubes, Nanowires, and Graphene

(22 papers)

PS-13-1
Direct Observation of Evolution in Graphene Layers by Electrical Properties
C.W. Huang, J.Y. Chen and W.W. Wu, NCTU (Taiwan)

PS-13-2
Bandgap Engineering of Graphene by Mean of Adsorption of Defective Graphene
K. Kishimoto and S. Okada, Univ. of Tsukuba (Japan)

PS-13-3
Al₂O₃/HfO₂/Al₂O₃/Graphene Charge Trap Flash Device with a Self-aligned Gate
K.H. Lee and O.H. Kim, POSTECH (Korea)

PS-13-4
Radical Spin Interaction of Graphene Flakes Embedded into h-BN Sheet
M. Maruyama and S. Okada, Univ. of Tsukuba (Japan)

PS-13-5
First-Principles Calculations for Diffusion Mechanism of Li Atom from Li(EC)₄ to Interlayer of Graphite with Hydrogen/Carbonylic Edge Terminations
T. Kawai^{1,2}, S. Okada² and M. Otani¹, ¹NEC Corp., ²Univ. of Tsukuba and ³AIST (Japan)

PS-13-6
Study of the Electronic Properties and Strain sensitivity of Chemical Vapor Deposition-Grown Graphene from C₂H₂
M. Yang, S. Sasaki, M. Ohnishi, K. Suzuki and H. Miura, Tohoku Univ. (Japan)

PS-13-8
Thermal Interface Materials with Vertically-aligned Carbon Nanotubes and Their Thermal Properties
S. Hirose¹, M. Norimatsu¹, K. Suzuki¹, Y. Yagishita¹, Y. Suwa², T. Kurosawa², K. Kawamura², Y. Mizuno¹, D. Kondo¹ and T. Iwai¹, ¹Fujitsu Labs. Ltd. and ²Shinko Electric Industries Co., Ltd. (Japan)

PS-13-9
Competition and Cooperation between External and Internal Electric Fields for Carrier Injection in Carbon Nanotubes with Defects
U. Ishiyama¹, N.T. Cuong² and S. Okada¹, ¹Univ. of Tsukuba and ²NIMS (Japan)

PS-13-10
Solution Processible Metal Nanoparticle Embedded Reduced Graphene Oxide for Stretchable and Conductive Electrode
Y. Yoon¹ and H.L. Lee^{1,2}, ¹IBS Sungkyunkwan Univ. and ²Sungkyunkwan Univ. (Korea)

PS-13-11
Mechanisms of Polarization Switching in Graphene Oxide and Poly(Vinylidene Fluoride)-Graphene Oxide Films
Z.Y. Jiang¹, G.P. Zheng¹, K. Zhan² and Z. Han^{1,2}, ¹The Hong Kong Polytechnic Univ. and ²USST (China)

PS-13-12
Energetics of H₂O Encapsulated in Fullerenes under an Electric Field
J. Sorimachi and S. Okada, Univ. of Tsukuba (Japan)

PS-13-13
Top-Gated Epitaxial Bilayer MoSe₂ Transistors on AlN Wafers & the Impact of Top-down Process-Induced Damage
M. Manfrini¹, S. Sutar¹, S. Brems¹, P. Tsipas², K.E. Aretoulis², E. Xenogiannopoulou², A. Dimoulas², A.C. Mocuta¹, I.P. Radu¹ and A. Thean¹, ¹IMEC and ²NCSR Demokritos (Belgium)

PS-13-14
XPS Study of HfO₂ Growth on 2H-MoS₂ Substrate
C.P. Chen¹, S.W. Ong², J.W. Chai³, Z. Zhang³, S.J. Wang³, J.S. Pan³ and E.S. Tok^{1,2}, ¹NUS, ²Yale-NUS College and ³Inst. of Material Res. and Eng. (Singapore)

PS-13-15
Electrical and Optical Properties of Co-doped and Undoped MoS₂ Crystals
C.C. Huang¹, T.S. Ko¹, D.Y. Lin¹, Y.J. Ruan¹ and Y.S. Huang², ¹National Univ. of Changhua Edu. and ²National Taiwan Univ. of Sci. and Tech. (Taiwan)

PS-13-16
MoS₂ FET based Oxygen Sensors with Gate Voltage Stress Induced Performance Enhancement
Y. Tong, Z. Lin, J.T.L. Thong, D.S.H. Chan and C. Zhu, NUS (Singapore)

PS-13-17
Theoretical Study of Multiatomic Vacancies in Hexagonal Boron Nitride
S. Urasaki and H. Kageshima, Shimane Univ. (Japan)

PS-13-18
Growth and Characterization of Wurtzite InP/AlInP Core-Shell Nanowires
F. Ishizaka¹, Y. Hiraya¹, K. Tomioka^{1,2} and T. Fukui¹, ¹Hokkaido Univ. and ²JST-PRESTO (Japan)

PS-13-19
Hybrid Nanoimprint SiNW-based Solar Cell Fabrication with Efficiency Enhancement by Hydrogen Annealing
W. Jevasuwan, K. Nakajima, Y. Sugimoto and N. Fukata, NIMS (Japan)

PS-13-20
Stability and Electronic Structures of Group IV Semiconductor Alloy Nanosheets: a First Principles Study
T. Akiyama, K. Nakamura and T. Ito, Mie Univ. (Japan)

PS-13-21
Fundamental Strategy to Succeed a Vapor-Liquid-Solid Nanowire Growth
T. Yanagida, K. Nagashima, H. Yong, F. Zhuge, M. Kanai and A. Klamchuen, Kyushu Univ. (Japan)

PS-13-22
Axial Strain Effects on Phonon Thermal Transport in Silicon Nanowires
J. Hattori, V. Poborchii and T. Tada, AIST (Japan)

PS-13-23 (Late News)
Graphene Nanoribbon Field Effect Transistor Designing from Numerical Simulations
K. Takashima, S. Konabe and T. Yamamoto, Tokyo Univ. of Science (Japan)

Area 14: Power Devices and Materials

(19 papers)

PS-14-1
Minimization of Reverse Recovery Charge and Forward Voltage of Silicon Pin Diodes
Y. Yamashita and S. Machida, Toyota Central R&D Labs., Inc. (Japan)

PS-14-2
The Resistance Effect on Turn-on Speed of Resistor Assisted Trigger SCR Stacking Structure
S.S. Yen¹, C.C. Fan¹, Y.P. Lan¹, C.Y. Chang¹, Y.C. Chiu¹, Z.W. Jiang², S.C. Chang², L.Y. Hung² and C.C. Tsai², ¹NCTU and ²Himax Tech. Inc. (Taiwan)

PS-14-3
Impact of 3D Stacking Silicon on Diamond Substrate for the ESD Protection Device
Y. Ikeda, K. Nakagawa and S. Matsumoto, Kyushu Inst. of Tech. (Japan)

PS-14-4
The Heat Performance Study of Nanocrystal Diamond Film Used in a Thin Film Device
S. Duangchan¹, Y. Koishikawa¹, R. Shirahama¹, K. Oishi¹, A. Baba¹, S. Matsumoto¹ and M. Hasegawa², ¹Kyushu Inst. of Tech. and ²AIST (Japan)

PS-14-5
Transport Characteristics of Minority Carriers in 4H-SiC/Si Heterojunction Bipolar Transistor Structures Fabricated by Surface Activated Bonding
J. Liang¹, S. Shimizu¹, S. Nishida¹, N. Shigekawa¹ and M. Arai², ¹Osaka City Univ. and ²New JRC (Japan)

PS-14-6
Improved Electrical Properties of 4H-SiC MOS Devices with High Temperature Thermal Oxidation
H. Xu^{1,2}, Q. Yang¹, M. Zhao¹, S. Wang¹, Z. Jin¹, X. Liu¹, A. Chanthaphan², Y. Cheng², T. Hosoi², T. Shimura² and H. Watanabe², ¹IMECAS and ²Osaka Univ. (China)

PS-14-7
Removal of Near-Interface Oxide Traps at SiO₂/SiC Interface by Post-Oxidation Annealing in Reducing Ambient
H. Kajifusa, H. Hirai, Y. Fujino and K. Kita, Univ. of Tokyo (Japan)

PS-14-8
Charge Distribution in Termination Area of 4H-SiC Diodes Analyzed by Measuring Depletion-layer Capacitance
H. Matsushima, H. Okino, K. Mochizuki and R. Yamada, Hitachi Ltd. (Japan)

PS-14-9
Investigation of 4H-SiC IGBT Turn-off Performance for Achieving Low Power Loss
D. Navarro¹, I. Pesic¹, Y. Morikawa¹, Y. Furui¹ and M. Miura Mattausch², ¹Silvaco Japan and ²Hiroshima Univ. (Japan)

PS-14-10
Characterization of Near-Interface Oxide Trap Density in SiC MOS Capacitors by Transient Capacitance Measurements at Various Temperatures
Y. Fujino and K. Kita, Univ. of Tokyo (Japan)

PS-14-11
Mapping of Si/SiC Hetero p-n Junctions Using Scanning Internal Photoemission Microscopy
M. Shingo¹, J. Liang², N. Shigekawa², M. Arai³ and K. Shiojima¹, ¹Univ. of Fukui, ²Osaka City Univ. and ³New JRC (Japan)

PS-14-12
Photoemission Spectroscopy Measurements of p⁺-Si/n-SiC and n⁺-Si/n-SiC Junctions by Surface Activated Bonding
N. Shigekawa¹, J. Liang², M. Shingo², M. Arai³ and K. Shiojima², ¹Osaka City Univ., ²Univ. of Fukui and ³New JRC (Japan)

PS-14-13
Special Features in Stress Degradation of SiC-MOSFETs Observed in I-V Characteristics
E. Murakami, K. Oda and T. Takeshita, Kyushu Sangyo Univ. (Japan)

PS-14-14
Heteroepitaxial Growth of Diamond on 3C-SiC/Si Substrates by Antenna-Edge Microwave Plasma CVD
T. Suto¹, J. Yaita^{1,2}, T. Iwasaki^{1,2,3}, M. Natal⁴, S.E. Saddow⁴ and M. Hatano^{1,2,3}, ¹Tokyo Tech, ²JST-CREST, ³JST-ALCA and ⁴Univ. of South Florida (Japan)

PS-14-15
Trench-channel MOSFET using C-H Diamond Surface
T. Saito, M. Kobayashi, T. Yamada, D. Xu, Y. Kitabiyashi, D. Matsumura, M. Inaba, A. Hiraiwa and H. Kawarada, Waseda Univ. (Japan)

PS-14-16
Solution Growth of AlN Single Crystal on Sapphire using Multi-Component Solvent Designed by Thermodynamic Calculation
S. Harada, M. Nagaya, S. Watanabe, M. Chen, Y. Takeuchi, K. Aoyagi, M. Tagawa and T. Ujihara, Nagoya Univ. (Japan)

PS-14-17 (Late News)
A 150 a SiC VMOSFET with 6 x 6 mm² Chip Size on a 150 mm C-face in-house Epitaxial Wafer
Y. Saitoh, H. Itoh, K. Wada, M. Sakai, T. Horii, K. Hiratsuka, S. Tanaka and Y. Mikamura, Sumitomo Electric Industries, Ltd. (Japan)

PS-14-18 (Late News)
Investigation of Conventional Bipolar Logic Technologies in 4H-SiC for Harsh Environment Applications
H. Elgabra, A. Siddiqui and S. Singh, Khalifa Univ. of Sci., Tech. & Res. (UAE)

PS-14-19 (Late News)
Investigation of Deep Levels in Diamond Based Radiation Detector by Transient Charge Spectroscopy with Focused Heavy Ion Microbeam
Y. Ando^{1,2}, Y. Kambayashi^{1,2}, W. Kada¹, S. Onoda², T. Makino², S. Sato², H. Umezawa³, Y. Mokuno³, S. Shikata¹, O. Hanaizumi¹, T. Kamiya² and T. Ohshima², ¹Gunma Univ., ²JAEA, ³AIST and ⁴Kwansei Gakuin Univ. (Japan)

Area 15: Photovoltaic Materials and Devices	(20 papers)
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PS-15-1
Exciton and Bandgap Energies of Hybrid Perovskite CH₃NH₃PbI₃
Y. Nakamura¹, J. Sano¹, T. Matsushita^{1,3}, Y. Kiyota², Y. Udagawa², H. Kunugita^{2,3}, K. Ema^{2,3} and T. Kondo^{1,3,4}, ¹Univ. of Tokyo, ²Sophia Univ., ³JST-ALCA and ⁴RCAST, Univ. of Tokyo (Japan)

PS-15-2
Optical Pumped Lasing in Solution Processed Perovskite Semiconducting Materials: Self Assembled Microdisk Lasing
F. Sasaki, H. Mochizuki, Y. Zhou, Y. Sonoda and R. Azumi, AIST (Japan)

PS-15-3
Shape-Controlled Preparation of MAPbI₃ Nanoparticles by Ionic Liquid-Assisted Simple Spin-coating Method with Tunable Optical Absorption
Md. Shahiduzzaman, K. Yamamoto, Y. Furumoto, T. Kuwabara, K. Takahashi and T. Taima, Kanazawa Univ. (Japan)

PS-15-4
Field Test of Dye-Sensitized Solar Cells by Utilizing a Power Delivery CMOS Integrated Circuits
J. Miyamoto¹, M. Sato¹, H. Itoh¹, M. Tanaka¹, A. Kato¹, S. Hasegawa¹, Y. Suzuki² and F. Munakata², ¹Chubu Univ. and ²Tokyo City Univ. (Japan)

PS-15-5
Efficiency Enhancement of Dye-sensitized Solar Cells by Flower-like Zinc Oxide
F.I. Lai¹, M.Y. Hsieh² and S.Y. Kuo², ¹Yuan Ze Univ. and ²Chang Gung Univ. (Taiwan)

PS-15-6
Organic Ultraviolet Photodetectors with m-MTDATA:LiF Nanocomposite Layer
R.W. Chuang¹, P.Y. Su¹ and C.H. Chen², ¹NCKU and ²Cheng Shiu Univ. (Taiwan)

PS-15-7
First-principles Study of Defect Formation in Photovoltaic Semiconductor Cu₂SnS₃
H. Nishihara, T. Maeda, A. Shigemi and T. Wada, Ryukoku Univ. (Japan)

PS-15-8
A Look into Plasmonic Energy Transfer in CIGS Solar Cells via Ultrabroadband Femtosecond Pump-probe Spectroscopy
J.X. Li¹, S.C. Chen¹, A. Yabushita¹, S.H. Tang¹, D.P. Tsai², H.C. Kuo¹, K.H. Wu¹ and T. Kobayashi¹, ¹NCTU and ²Academia Sinica (Taiwan)

PS-15-9
Investigation of the Optical Absorption in Si/SiO₂ Superlattice for the Application to Solar Cells
S. Yamada¹, M. Konagai^{1,2} and S. Miyajima³, ¹JST, ²Tokyo City Univ. and ³Tokyo Tech (Japan)

PS-15-10
Si Nanofilm Efficient UV Solar Absorber
V. Poborchii¹, Y. Morita¹, T. Tada¹, P. Geshev², Z. Utegulov³ and A. Volkov³, ¹AIST, ²Inst. of Thermophysics of the Russian Academy of Sciences and ³Nazarbayev Univ. (Japan)

PS-15-11
Hydrogenated Nanocrystalline Cubic Silicon Carbide/c-Si Heterojunction Solar Cell with Triple Anti-Reflection Coating
E.O. Ateto and S. Miyajima, Tokyo Tech (Japan)

PS-15-12
A New Interdigitated Nanopillar HIT Solar Cell with 26.09% Efficiency Achieved by Using Silicon-Carbide-based Window Layer
C.C. Lai, J.T. Lin, T.H. Huang, J.M. Syu and B.C. Yan, National Sun Yat-sen Univ. (Taiwan)

PS-15-13
Development of Wider Bandgap n-type a-SiO_x:H for High Efficiency a-Si:H Single Junction and a-Si:H/a-Si_{1-x}Ge_x:H Tandem Solar Cells
P.W. Chen, L.H. Lai, C.H. Hsu and C.C. Tsai, NCTU (Taiwan)

PS-15-14
Local Surface Potential on Amorphous Silicon Thin Film Solar Cells by Kelvin Force Microscope
T. Itoh, T. Ito, H. Kuriyama and S. Nonomura, Gifu Univ. (Japan)

PS-15-15
Detailed-Balance-Limit Efficiencies of Solar Cells with Intermediate Bands and Carrier Multiplication
K. Tanabe, Kyoto Univ. (Japan)

PS-15-16
A Simple Optical Model Well Explains Plasmonic-Nanoparticle-Enhanced Spectral Photocurrent in Optically Thin Solar Cells
K. Tanabe, Kyoto Univ. (Japan)

PS-15-17
InGaP/GaAs Heterojunction Phototransistor Powered by an On-Chip GaAs Solar Cell for Energy Harvesting
P.H. Than, K. Uchida and S. Nozaki, Univ. of Electro-Communications (Japan)

PS-15-18 (Late News)
Behavior of the Potential-Induced Degradation for Photovoltaic Modules Fabricated using Flat Mono-Crystalline Silicon Cells with Different Surface Orientations
S. Yamaguchi¹, A. Masuda² and K. Ohdaira¹, ¹JAIST and ²AIST (Japan)

PS-15-19 (Late News)
Degradation of Backsheets for Crystalline Photovoltaic Modules under Damp Heat
D. Kim, W. Hong and C. Oh, Korea Electronics Technology Institute (Korea)

PS-15-20 (Late News)
Optimization of Etching Paste Process by Screen Printing for Recycling Crystalline Silicon Solar Wafer from End-of-life Photovoltaic Modules
J. Shin and J. Jeong, Korea Electronics Technology Institute (Korea)

Wednesday, September 30

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-6: Optical Sensing (9:00-10:00) Chairs: N. Iizuka (Toshiba) S. Nishikawa (Mitsubishi Electric)		C-6: III-V Photovoltaics and Related Technologies (9:00-10:00) Chairs: T. Hoshii (Univ. of Tokyo) T. Negami (Panasonic)	D-6: Nanowire Synthesis and Properties I (9:00-10:15) Chairs: M. Arita (Univ. of Tokyo) N. Fukata (NIMS)	E-6: 3D / TSV (9:00-10:30) Chairs: T. Fukushima (Tohoku Univ.) M. Takeyama (Kitami Inst. of Tech.)	F-6: Advanced Memories and Circuits (9:00-10:20) Chairs: I. Akita (Toyohashi Tech) Y. Mita (Univ. of Tokyo)	
9:00 A-6-1 (Invited) Si and SiN Biophotonic Technology Platform, Applied to Biosensing, Spectroscopy, and Lens-Free Imaging <i>W. Van Roy¹, P. Neutens¹, T. Claes¹, R. Jansen¹, A. Subramanian², K. Jans¹, R. Vos¹, J. O'Callaghan¹, D. Vercruyssen¹, R. Stahl¹, V. Mukund¹, B. Du Bois¹, P. Helin¹, A. Stassen¹, S. Severi¹, D. Martens², P. Bienstman², P. Deshpande¹, R. Baets², A. Lambrechts¹, L. Lagae^{1,3}, X. Rottenberg¹ and P. Van Dorpe^{1,3}, ¹Imec, ²Ghent Univ. and ³KU Leuven (Belgium)</i>		9:00 C-6-1 (Invited) Recent Results for Concentrator Photovoltaics in Japan <i>M. Yamaguchi¹, T. Takamoto², K. Araki³ and N. Kojima¹, ¹Toyota Tech. Inst., ²Sharp Corp. and ³Daido Steel Corp. (Japan)</i>	9:00 D-6-1 (Invited) Nanowire Growth as a Means for the Monolithic Integration of III-V Compound Semiconductors on Si <i>L. Geelhaar, Paul-Drude-Institut fuer Festkoerperelektronik (Germany)</i>	9:00 E-6-1 (Invited) 3D Interconnection of Single Micron Pitch by Hybrid Bonding Technology <i>M. Nimura¹, M. Ohyama¹, S. Shoji¹, M. Tamura², T. Enomoto², A. Shigetou¹ and J. Mizuno¹, ¹Waseda Univ., ²Nissan Chemical Indus. and ³NIMS (Japan)</i>	9:00 F-6-1 39% tAC Improvement, 11% Energy Reduction, 32Kbit 1R/1W 2port SRAM using Two-stage Read Boost and Write-Boost after Read Sensing Scheme <i>Y. Yamamoto¹, S. Moriwaki¹, A. Kawasumi², S. Miyano³ and H. Shinohara⁴, ¹Socionext Inc., ²Toshiba Corp., ³STARC and ⁴Waseda Univ. (Japan)</i>	
9:30 A-6-2 Stretchable Photonic Crystal Coupled-Nanobeam Lasers for Stretch Sensing <i>C. Wang, T.W. Lu and P.T. Lee, NCTU (Taiwan)</i>		9:30 C-6-2 Terahertz Emission from Individual Subcells in a Triple Junction Solar Cell Excited by a Wavelength Tunable Pulsed Laser <i>S. Hamauchi¹, Y. Sakai¹, T. Umegaki¹, A. Ito², H. Nakanishi², I. Kawayama¹, H. Murakami¹ and M. Tonouchi¹, ¹Osaka Univ. and ²SCREEN Holdings Co., Ltd. (Japan)</i>	9:30 D-6-2 Bridging the Gap between the Nanometer-scale Bottom-up and Micrometer-scale Top-down Approaches for Site-defined InP/ InAs Heterostructure Nanowires <i>G. Zhang^{1,2}, M. Takiguchi^{1,2}, K. Tateno^{1,2} and H. Gotoh¹, ¹NTT BRL and ²NTT Nanophotonics Center (Japan)</i>	9:30 E-6-2 Evaluation of 2-D Local Stress Distribution in Stacked IC Chip Using Stress-Induced Retention Time Modulation of DRAM Cell Array <i>S. Tanikawa, H. Hashiguchi, Y. Sugawara, H. Kino, T. Fukushima, M. Koyanagi and T. Tanaka, Tohoku Univ. (Japan)</i>	9:20 F-6-2 Pure CMOS One-Time Programmable Memories using a Combination of Gate-Ox Anti-fuse and Poly-Si Fuse <i>M. Matsumoto, K. Tatsumura, K. Zaitzu and S. Yasuda, Toshiba Corp. (Japan)</i>	
9:45 A-6-3 Gold Bowtie Aperture with Projected Pad Underneath and Its Capability in Optical Sensing <i>P.Y. Chen, T.W. Lu and P.T. Lee, NCTU (Taiwan)</i>		9:45 C-6-3 Tandem Photovoltaic-photoelectrochemical Device for Solar Hydrogen Generation <i>S. Kosar¹, Y. Pihoshi², I. Turkevych^{2,4}, K. Mawatari², J. Uemura², Y. Kazoe², K. Makita³, T. Sugaya³, T. Matsui³, D. Fujita⁴, M. Tosa⁴, Y.M. Struk¹, M. Kondo³ and T. Kitamori², ¹Chernivtsi National Univ., ²Univ. of Tokyo, ³AIST and ⁴NIMS (Ukraine)</i>	9:45 D-6-3 Structural and Magnetic Characterizations of Vertical Ferromagnetic MnAs/Semiconducting InAs Heterojunction Nanowires <i>R. Kodaira, K. Kabamoto, S. Sakita and S. Hara, Hokkaido Univ. (Japan)</i>	9:50 E-6-3 Investigation of Low Temperature Cu Pillar Thermosonic Bonding for 3D Integration Applications <i>S.L. Lu¹, Y.P. Huang¹, Y.S. Huang¹, Y.H. Tseng², M.F. Shu² and K.N. Chen¹, ¹NCTU and ²ASE Group (Taiwan)</i>	9:40 F-6-3 Digitally Calibrated Dynamic Latched Comparator with Stochastic Offset Voltage Detection Technique for Low-Power ADCs <i>T. Okazawa¹, T. Kawano¹, M. Ishida^{1,2} and I. Akita¹, ¹Toyohashi Tech and ²EIIRIS (Japan)</i>	
			10:00 D-6-4 Effects of Polytypism on the Thermoelectric Properties of Si Nanowires: a Combination of Density Functional Theory and Boltzmann Transport Equation Calculations <i>T. Komoda, T. Akiyama, K. Nakamura and T. Ito, Mie Univ. (Japan)</i>	10:10 E-6-4 Novel Integration of Ultra-thin Al₂O₃ with Low-k Dielectric as Bi-layer Liner for Capacitance Optimization and Stress Mitigation in Cu-TSV <i>L. Zhang^{1,2}, H.Y. Li¹, Y. Shang², W. Yoo³, H. Yu² and C.S. Tan², ¹Inst. of Microelectronics, A*STAR, ²NTU and ³WaferMasters, Inc. (Singapore)</i>	10:00 F-6-4 No Reattaching and 8 Directions Detectable Octagonal MOSFET Stress Sensor <i>T. Harada, K. Kaiwa and Y. Yamazaki, Yamagata Univ. (Japan)</i>	

Wednesday, September 30

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
H-6: Quantum Optics (9:00-10:15) Chairs: T. Tanamoto (Toshiba) T. Nakaoka (Sophia Univ.)	J-6: SiC MOS (9:00-10:15) Chairs: D. Hisamoto (Hitachi) C.-F. Huang (National Tsing Hua Univ.)	K-6: Physics (9:00-10:00) Chairs: N. Mori (Osaka Univ.) M. Hane (Renesas Electronics)	M-6: Oxide Devices (9:00-10:00) Chairs: K. Maezawa (Univ. of Toyama) M. Kuzuhara (Univ. of Fukui)	N-6: 2D Materials and Band Engineering (9:00-10:10) Chairs: O. Nakatsuka (Nagoya Univ.) T. Aoyama (Toshiba)	O-6: NAND Flash Device (9:00-10:30) Chairs: K. Yamamoto (Toshiba) K. Hamada (Micron Memory Japan)	
9:00 H-6-1 (Invited) Quantum Communications with Semiconductor Devices <i>R.M. Stevenson, Toshiba Research Europe (UK)</i>	9:00 J-6-1 (Invited) Threshold-Voltage Instability in SiC MOSFETs <i>A. Lelis, R. Green and D. Habersat, U.S. Army Res. Lab. (USA)</i>	9:00 K-6-1 Modeling of Nonlinear Thermal Resistance in FinFET <i>B.K. Kompala¹, P. Kushwaha¹, S. Khandelwal², J.P. Duarte², A.S. Medury², C. Hu² and Y.S. Chauhan¹, ¹IIT Kanpur and ²Univ. of California Berkeley (India)</i>	9:00 M-6-1 Improved Performance of α-IGZO Thin-Film Transistors with an Au/ HfSiO/IGZO(O₂-rich) Schottky Source <i>C.H. Hung¹, S.J. Wang¹, Y.H. Chen¹, C.H. Wu², C. Lin¹, P.Y. Liu¹, Y.C. Tu¹ and T.H. Lin¹, ¹NCKU and ²Chung Hua Univ. (Taiwan)</i>	9:00 N-6-1 (Invited) High Performance Electronics Based on Novel Two Dimensional Materials <i>Y. Wu, Huazhong Univ. of Sci. and Tech. (China)</i>	9:00 O-6-1 (Invited) Future Prospects of Data Storage Technologies: NAND Flash Memory and Storage Class Memory Hybrid System <i>K. Takeuchi, Chuo Univ. (Japan)</i>	
9:30 H-6-2 Electron Spin Coherence Time of Nitrogen- Vacancy Center in Diamond Improved by External Electric Field <i>S. Kobayashi^{1,2}, H. Morishita¹, Y. Matsuzaki³, S. Miwa¹, Y. Suzuki¹ and N. Mizuochi^{1,2}, ¹Osaka Univ., ² JST-CREST and ³NTT BRL (Japan)</i>	9:30 J-6-2 Threshold Voltage Instability in 4H-SiC MOSFETs with Nitrided Gate Oxide Revealed by Non-relaxation Method <i>M. Sometani^{1,2}, D. Okamoto², S. Harada², H. Ishimori², S. Takasu², T. Hatakeyama², M. Takei^{1,2}, Y. Yonezawa², K. Fukuda² and H. Okumura², ¹Fuji Electric Co., Ltd. and ²AIST (Japan)</i>	9:20 K-6-2 Ballistic and Quasi- ballistic Hole Transport Properties in Germanium Nanowire pMOSFETs Based on an Extended "Top of the Barrier" Model <i>H. Tanaka, J. Suda and T. Kimoto, Kyoto Univ. (Japan)</i>	9:15 M-6-2 Correlation between Crystallinity and Formation of Oxygen Vacancies in IGZO - Comparison between Crystal and Amorphous Using First-Principles Calculations - <i>T. Hiramatsu, M. Nakashima, E. Kikuchi, N. Ishihara, M. Tsubuku, K. Dairiki and S. Yamazaki, Semiconductor Energy Lab. Co., Ltd. (Japan)</i>	9:30 N-6-2 Two Dimensional Si- Based Semiconductor Si_{1-y}C_y: C Atom Induced Band Structure Modulation at Visible Region <i>T. Mizuno¹, Y. Nagamine¹, U. Omata¹, Y. Suzuki¹, W. Urayama¹, T. Aoki¹ and T. Sameshima², ¹Kanagawa Univ. and ²Tokyo Univ. of Agri. & Tech. (Japan)</i>	9:30 O-6-2 Effects of Cell V_{th} State and Number of Traps on Statistical Distribution of Random Telegraph Noise in Scaled NAND Flash Memory <i>T. Tomita and K. Miyaji, Shinshu Univ. (Japan)</i>	
9:45 H-6-3 Photon Correlation Study of Background Suppressed Single InGaN Nanocolumns <i>T. Yamamoto, M. Maekawa, Y. Imanishi, S. Ishizawa, T. Nakaoka and K. Kishino, Sophia Univ. (Japan)</i>	9:45 J-6-3 Effect of Nitridation for SiO₂/SiC Interface on Defects Properties near Conduction Band Edge <i>W. Takeuchi¹, K. Yamamoto², M. Sakashita¹, T. Kanemura², O. Nakatsuka¹ and S. Zaima¹, ¹Nagoya Univ. and ²DENSO Corp. (Japan)</i>	9:40 K-6-3 Experimental Study on Interface Region of Two- Dimensional Si Layers <i>T. Mizuno¹, Y. Suzuki¹, R. Kikuchi¹, A. Suzuki¹, M. Yamanaka¹, Y. Nagamine¹, T. Aoki¹ and T. Maeda², ¹Kanagawa Univ. and ²AIST (Japan)</i>	9:30 M-6-3 Ideal Deep-Subthreshold Characteristics in C-Axis Aligned Crystalline Oxide Semiconductor FET <i>D. Matsubayashi, M. Tsubuku, T. Takeuchi, S. Matsuda, K. Ohshima, T. Tanaka, A. Shimomura, M. Sakakura, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Lab. Co., Ltd. (Japan)</i>	9:50 N-6-3 Chemical Trend of Isoelectronic Traps in Si Tunnel FET; First- Principles Study <i>S. Iizuka and T. Nakayama, Chiba Univ. (Japan)</i>	9:50 O-6-3 Improvement of Cell VT Distribution & Program Disturbance of NAND Flash Device by Using Tilt Implantation for Cell Junction Counter Doping <i>D.Y. Kim, N.K. Kim, K.T. Lee, H.Y. Shim, S.K. Park, B.K. Kim, K.B. Lee, H.Y. Chang, K.O. Ahn and J.W. Kim, SK Hynix Inc. (Korea)</i>	
10:00 H-6-4 Tolerance of Photon Entanglement in a Droplet Epitaxial Quantum Dot Grown on (111)A Surface <i>H. Nakajima¹, X. Liu², N. Ha², R. Takemoto¹, H. Kurosawa¹, T. Mano², T. Kuroda², K. Sakoda², I. Suemune¹ and H. Kumano¹, ¹Hokkaido Univ. and ²NIMS (Japan)</i>	10:00 J-6-4 Origin of Low Channel Mobility and Threshold Voltage Instability of SiC-MOSFETs <i>H. Shiomi¹, H. Kitai¹, M. Tsujiyama¹, Y. Kiuchi¹, D. Nakata², S. Ono², K. Kojima¹, K. Fukuda¹, K. Sakamoto¹, K. Yamasaki² and H. Okumura¹, ¹AIST and ²New JRC (Japan)</i>		9:45 M-6-4 Trench Gate Process for 60-nm-Node C-Axis Aligned Crystalline In- Ga-Zn-O Field-Effect Transistors <i>Y. Asami, A. Shimomura, Y. Okazaki, D. Matsubayashi, M. Tsubuku, M. Kurata, S. Okamoto, S. Sasagawa, T. Moriwaka, T. Kakehata, Y. Yakubo, K. Kato, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Lab. Co., Ltd. (Japan)</i>		10:10 O-6-4 A New High Density FinFET OTP Technology <i>P.C. Peng¹, Y.Z. Chen¹, H.W. Pan¹, W.Y. Hsiao², K.H. Chen², Y.H. Kuo², C.P. Lin², B.Z. Tien², T.S. Chang², Y.C. King¹ and C.J. Lin¹, ¹National Tsing Hua Univ. and ²TSMC (Taiwan)</i>	

Wednesday, September 30

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-7: III-V Devices and Related Technologies (10:45-12:30) Chairs: T. Isu (Tokushima Univ.) T. Shimizu (PETRA)		C-7: Crystalline Silicon Photovoltaics (10:45-12:30) Chairs: M. Isomura (Tokai Univ.) L.-S.Hong (TECRO in Japan)	D-7: Nanowire Synthesis and Properties II (10:45-12:30) Chairs: H. Tatsuoka (Shizuoka Univ.) A. Kikuchi (Sophia Univ.)	E-7: Advanced Circuits and MEMS Integration (10:45-12:35) Chairs: J. C. Guo (NCTU) M. Ueki (Renasas Electronics)	F-7: Biosensors (10:45-12:30) Chairs: C.-S. Lai (Chang Gung Univ.) T. Tanaka (Tohoku Univ.)	G-7: Organic Devices II (10:45-12:45) Chairs: K. Fujita (Kyushu Univ.) T. Shimada (Hokkaido Univ.)
10:45 A-7-1 Heterogeneous Quantum Dots/Silicon Photonics Wavelength Tunable Laser Diode <i>T. Kita¹, N. Yamamoto², T. Kawanishi² and H. Yamada¹, ¹Tohoku Univ. and ²NICT (Japan)</i>		10:45 C-7-1 Formation of Thermally Stable a-Si Passivation Films using Liquid Si <i>C. Guo¹, K. Ohdaira¹, H. Takagishi² and T. Shimoda¹, ¹JAIST and ²Fukushima Univ. (Japan)</i>	10:45 D-7-1 (Invited) Self-assembled Functional Nanocomposites <i>Y.H. CHU, NCTU (Taiwan)</i>	10:45 E-7-1 (Invited) Manufacturing Technology of All-solid-state Thin-film Lithium Secondary Battery for Stand-alone MEMS/ Sensor Applications <i>K Suu, ULVAC, Inc. (Japan)</i>	10:45 F-7-1 (Invited) Ultrasensitive Sensors Using Enhanced Surface Plasmon Resonances in Capped Metallic Nanostructures <i>K.L. Lee¹ and P.K. Wei^{1,2}, ¹Academia Sinica and ²National Yang-Ming Univ. (Taiwan)</i>	10:45 G-7-1 (Invited) Controlling Light at the Nano-Scale via Molecular Tunnel Junctions <i>C.A. Nijhuis, NUS (Singapore)</i>
11:00 A-7-2 Waveguide InGaAs Metal-semiconductor-metal Photodetector Monolithically Integrated with InP Grating Coupler on III-V CMOS Photonics Platform <i>Y.P. Cheng^{1,2}, Y. Ikku^{1,2}, M. Takenaka^{1,2} and S. Takagi^{1,2}, ¹Univ. of Tokyo and ²JST-CREST (Japan)</i>		11:00 C-7-2 Investigation of Interface State Density and Fixed Charge of Sr,SiO_x22 on the 2×1 Sr-reconstructed Si Substrate <i>S. Taniwaki¹, Y. Hotta^{1,3}, H. Yoshida^{1,3}, K. Arafune^{1,3}, A. Ogura^{2,3} and S. Satoh^{1,3}, ¹Univ. of Hyogo, ²Meiji Univ. and ³JST-CREST (Japan)</i>	11:15 D-7-2 Fabrication of Vertical Ge Nanowires on Amorphous Substrates by Combining Au-seeded Chemical-Vapor Deposition with Al-induced Crystallization <i>M. Nakata¹, K. Toko¹, W. Jevasuwani², N. Fukata² and T. Suemasu¹, ¹Univ. of Tsukuba and ²NIMS (Japan)</i>	11:15 E-7-2 Novel Gain-Controlled Sensor Circuits Designed by Multi-physics Simulation for CMOS-MEMS Accelerometer <i>T. Konishi¹, D. Yamane^{2,4}, M. Takayasu^{2,4}, S. Dosho^{2,4}, N. Ishihara^{2,4}, K. Masu^{2,4}, H. Toshiyoshi^{3,4} and K. Machida^{1,2,4}, ¹NTT AT, ²Tokyo Tech, ³Univ. of Tokyo and ⁴JST-CREST (Japan)</i>	11:15 F-7-2 An Implantable Needle-like Shaped Device and Its Performance in Lensless Fluorescence Imaging of Biological Tissues <i>H. Takehara, Y. Ohta, M. Motoyama, M. Haruta, T. Noda, K. Sasagawa, T. Tokuda and J. Ohta, NAIST (Japan)</i>	11:15 G-7-2 Detection of Mercury (II) Ion in Water using an Organic Field Effect Transistor with a Cysteine-functionalized Gold Electrode <i>T. Minami, T. Minamiki and S. Tokito, Yamagata Univ. (Japan)</i>
11:15 A-7-3 1.3 μm Photoluminescence from InAs/GaAs Quantum Dots on CMOS-compatible (001) Silicon by Metal-organic Chemical Vapor Deposition <i>Y. Wan, Q. Li, Y. Geng and K.M. Lau, HKUST (China)</i>		11:15 C-7-3 Temperature-Dependent Minority Carrier Lifetime of Crystalline Silicon Wafers Passivated by High Quality Amorphous Silicon Oxide <i>M. Inaba, S. Todoroki, K. Nakada and S. Miyajima, Tokyo Tech (Japan)</i>	11:30 D-7-3 Catalyst-free Growth of In_xGa_{1-x}As/InAs Coaxial Nanorod Heterostructures on Graphene Layers Using Molecular Beam Epitaxy <i>Y. Tehoe, J. Jo, M. Kim and G.-C. Yi, Seoul National Univ. (Korea)</i>	11:35 E-7-3 Zeolite-trench-embedded Micro Cantilevers for CMOS Strain-gauge Integrated Gas Sensors <i>S. Inoue¹, R. Setoguchi¹, M. Denoua², S. Mintova² and Y. Mita¹, ¹Univ. of Tokyo and ²Normandie Univ. (Japan)</i>	11:30 F-7-3 In situ Monitoring of Extracellular Matrix Based on Chondrocytes Behavior using Biologically-coupled Field Effect Transistor <i>H. Satake¹, A. Saito¹, T. Kajisa², S. Mizuno³ and T. Sakata¹, ¹Univ. of Tokyo, ²PROVIGATE Inc. and ³Harvard Medical School (Japan)</i>	11:30 G-7-3 Highly Flexible Complementary Inverter with Pentacene/a-IGZO Hybrid Thin Film Transistors <i>Z. Pei, H.C. Lai and B.J. Tzeng, National Chung Hsing Univ. (Taiwan)</i>
11:30 A-7-4 Optical and Electronic Properties of Ga(N,As,P) Quantum Wells on Silicon for Laser Application <i>S. Gies, S. Karrenberg, M. Zimprich, T. Wegele, C. Kruska, A. Beyer, W. Stolz, K. Volz and W. Heimbrod, Philipps Univ. Marburg (Germany)</i>		11:30 C-7-4 Investigation of New Stacking Surface Passivation Structures with Interfacial Tuning Layers on p-type Crystalline Silicon for Solar Cell Applications <i>N. Ikeno^{1,4}, T. Katsumata^{1,2}, H. Yoshida^{3,5}, K. Arafune^{3,5}, S. Satoh^{3,5}, T. Chikyow² and A. Ogura^{1,5}, ¹Meiji Univ., ²NIMS, ³Univ. of Hyogo, ⁴JSPS Research Fellow and ⁵JST-CREST (Japan)</i>	11:45 D-7-4 Two Different Mechanisms for Au-free Growth of InAsSb Nanowires on Si Substrate <i>W.N. Du¹, X.G. Yang¹, H.Y. Pan¹, X.Y. Wang¹, X.H. Ji¹, Z.G. Wang¹, H.Q. Xu² and T. Yang¹, ¹Chinese Academy of Sciences and ²Peking Univ. (China)</i>	11:55 E-7-4 S-Parameter Characterization and Lumped-Element Modelling of mm-Wave Single-Drift IMPATT Diode <i>W. Zhang¹, Y. Yamamoto², M. Oehme¹, K. Matthies¹, B. Tillack^{2,3}, E. Kasper¹ and J. Schulze¹, ¹Univ. of Stuttgart, ²IHP Microelectronics and ³TU Berlin (Germany)</i>	11:45 F-7-4 Robust and High Sensitive Myoelectric Signal Detection utilizing Stochastic Resonance with Carbon Nanotube Composite Paper-based Surface Electrodes <i>K. Shirata¹, S. Kasai¹, T. Oya¹, Y. Hagiwara³, S. Kaeriyama⁴ and H. Nakamura², ¹Hokkaido Univ., ²Yokohama National Univ. and ³STARC (Japan)</i>	11:45 G-7-4 Anodization Patterning for Organic Electronic Circuits with Low Operation Voltage <i>T. Yokota^{1,2}, T. Sekitani^{2,3} and T. Someya^{1,2}, ¹Univ. of Tokyo, ²JST-ERATO and ³Osaka Univ. (Japan)</i>
11:45 A-7-5 The Influence of III-V on Insulator Structure on Quantum Well Intermixing <i>S. Takashima^{1,2}, Y. Ikku^{1,2}, M. Takenaka^{1,2} and S. Takagi^{1,2}, ¹Univ. of Tokyo and ²JST-CREST (Japan)</i>		11:45 C-7-5 Catalytic Doping of Phosphorus and Boron Atoms onto Hydrogenated Amorphous Silicon Films <i>J. Seto^{1,2}, K. Ohdaira^{1,2} and H. Matsumura^{1,2}, ¹JAIST and ²JST-CREST (Japan)</i>	12:00 D-7-5 Formation of Self-aligned Pore Arrays on n-GaN Substrates by Photo-assisted Electrochemical Etching Process <i>Y. Kumazaki, T. Sato and Z. Yatabe, Hokkaido Univ. (Japan)</i>	12:15 E-7-5 Analysis and Reduction of Leakage Current of 2kV Monolithic Isolator with Wide Trench Spiral Isolation Structure <i>Y. Takeuchi, R. Kuroda and S. Sugawa, Tohoku Univ. (Japan)</i>	12:00 F-7-5 Respiratory Sensor Measuring Capacitance Constructed Across Skin <i>M. Terasawa, S. Kumagai and M. Sasaki, Toyota Tech. Inst. (Japan)</i>	12:00 G-7-5 Pseudo-CMOS Gain Enhancement by Post-Annealing Organic Circuits on Ultrathin Plastic Substrates <i>A. Reuveny^{1,2}, T. Yokota^{1,2}, S. Lee^{1,2}, R. Shidachi^{1,2}, T. Sekitani^{1,2,3} and T. Someya^{1,2}, ¹Univ. of Tokyo, ²JST-ERATO and ³Osaka Univ. (Japan)</i>

Wednesday, September 30

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
H-7: Quantum Devices (10:45-12:30) Chairs: A. Otiwa (Osaka Univ.) T. Nakaoka (Sophia Univ.)		K-7: Characterization II (10:45-12:05) Chairs: N. Sugii (Hitachi) T.-S. Chao (NCTU)	M-7: III-V Materials & Devices (10:45-12:30) Chairs: N. Hara (Fujitsu Labs.) T. Suzuki (JAIST)		O-7: ReRAM 2 (10:45-12:05) Chairs: K. Kinoshita (Tottori Univ.) H. Hwang (POSTECH)	
10:45 H-7-1 Determination of Phonon Decay-rate in p-type Si under Fano Resonance by Measurements of Coherent Phonons with Femto-second Laser Pulses <i>K. Kato, K. Oguri, H. Sanada, T. Tawara, T. Sogawa and H. Gotoh, NTT BRL (Japan)</i>		10:45 K-7-1 Reliability of Improved CAAC-IGZO FET Satisfying NOSRAM Performance <i>T. Murakawa, K. Ohshima, M. Tsubuku, D. Shimada, N. Kamata, T. Tanaka, A. Shimomura, M. Sakakura, Y. Yamamoto and S. Yamazaki, Semiconductor Energy Lab. Co. Ltd. (Japan)</i>	10:45 M-7-1 (Invited) THz Devices Based on 2D Electron Systems <i>H.G. Xing, R. Yan, B. Song, J. Encomendero and D. Jena, Cornell Univ. (USA)</i>		10:45 O-7-1 Low Power Switching of Si-doped Ta₂O₅ ReRAM for High Density Memory Application <i>B.Y. Kim, K.J. Lee, S.O. Chung, S.G. Kim and H.S. Kim, SK Hynix Inc. (Korea)</i>	
11:00 H-7-2 Dynamic creation of a topologically-ordered Hamiltonian using spin-pulse control in the Heisenberg model <i>T. Tanamoto¹, K. Ono², Y.X. Liu^{2,3} and F. Nori^{2,4}, ¹Toshiba Corp., ²RIKEN, ³Tsinghua Univ. and ⁴Univ. of Michigan (Japan)</i>		11:05 K-7-2 Degradation Investigation of High-k/Metal Gate nMOSFETs by 3D KMC with Multiple Traps Interactions <i>Y. Li, H. Jiang, Z.Y. Lun, Y.J. Wang, P. Huang, H. Hao, G. Du, X. Zhang and X.Y. Liu, Peking Univ. (China)</i>	11:15 M-7-2 Electrical Characteristics of Au/Ni Schottky Diodes on Cleaved m-Plane Surfaces of Free-Standing n-GaN Substrates <i>M. Naganawa¹, T. Aoki¹, T. Mishima² and K. Shiojima¹, ¹Univ. of Fukui and ²Hosei Univ. (Japan)</i>		11:05 O-7-2 Interface Engineered HfO₂-Based 3D Vertical Resistive Random Access Memory with Forming-Free Operation <i>B. Hudec¹, I.T. Wang¹, W.L. Lai¹, C.C. Zhang¹, T.H. Hou¹, P. Jancovic², K. Frohlich², M. Micusik² and M. Omastova², ¹NCTU and ²Slovak Academy of Sciences (Taiwan)</i>	
11:15 H-7-3 (Late News) Withdrawn		11:25 K-7-3 Estimation of Soft Error Tolerance According to the Thickness of Buried Oxide and Body Bias 28-nm and 65-nm in FD-SOI Processes by a Monte-Carlo Simulation <i>K. Zhang, J. Yamaguchi, S. Kanda, J. Furuta and K. Kobayashi, Kyoto Inst. of Tech. (Japan)</i>	11:30 M-7-3 Net Acceptor Type Trap Density in Semi-insulating GaN Layers <i>T. Tanaka, N. Ito, M. Akutsu, K. Chikamatsu, S. Takado and K. Nakahara, ROHM Co., Ltd. (Japan)</i>		11:25 O-7-3 Investigation of Carbon Nanotube Memory Cell Array Program Characteristics <i>S.Y. Ning¹, T.O. Iwasaki¹, E. Yanagizawa¹, S. Hachiya¹, G. Rosendale², M. Manning², D. Viviani², T. Rueckes² and K. Takeuchi¹, ¹Chuo Univ. and ²Nantero Inc. (Japan)</i>	
11:30 H-7-4 Controlled Photon Emission of Colloidal PbS Quantum Dot by Using Photonic Dot Made of Optical Polymer and Silicon <i>T. Nozaka and K. Mukai, Yokohama National Univ. (Japan)</i>		11:45 K-7-4 Impact of Hole Shape on Program Vt Distribution in Gate-All-Around 3D Flash Memory <i>C.H. Cheng, C.W. Lee, K.W. Wu, S.H. Ku, N.K. Zous, L. Liu, S.W. Huang, Y.W. Chang, I.J. Huang, A. Suzuki, T.C. Lu, W.P. Lu and K.C. Chen, Macronix Int'l. Co. Ltd. (Taiwan)</i>	11:45 M-7-4 GaAs/In_{0.2}Ga_{0.8}As Fin-Array-Esaki Tunnel Diodes Fabricated on (001) Silicon by Aspect Ratio Trapping <i>Q. Li, Y. Han and K.M. Lau, HKUST (China)</i>		11:45 O-7-4 A 1.0 V Operation, 65% Faster Set/Reset Voltage (3V) Generator for 3D-integrated ReRAM and NAND Flash Hybrid Solid-State Drive <i>M. Tanaka, S. Hachiya, T. Ishii, S.Y. Ning and K. Takeuchi, Chuo Univ. (Japan)</i>	
11:45 H-7-5 (Late News) Characterization and Topological Properties of Bi₂Se₃ Thin Film Grown by using Physical Vapor Deposition <i>Y.C. Lin, Y.S. Chen, C.C. Lee, J.K. Wu, H.Y. Lee and Y.H. Chang, National Taiwan Univ. (Taiwan)</i>			12:00 M-7-5 The Effects of AlN Passivation Layer to Metal Work-Function and Band Alignment of Metal Oxide Semiconductor Devices <i>H.B. Do, Q.H. Luc, M.T.H. Ha, S.H. Huynh, Y.C. Lin and E.Y. Chang, NCTU (Taiwan)</i>			

Wednesday, September 30

1F Middle-Sized Hall A	1F Middle-Sized Hall B	1F 101	1F 102	1F 107a	1F 107b	1F 108a
A-7: III-V Devices and Related Technologies		C-7: Crystalline Silicon Photovoltaics	D-7: Nanowire Synthesis and Properties II		F-7: Biosensors	G-7: Organic Devices II
12:00 A-7-6 Fabrication of Two-Color Surface Emitting Device of a Coupled Cavity Structure with InAs QDs Formed by Wafer-Bonding <i>H. Ota, C. Harayama, T. Maekawa, X.M. Lu, N. Kumagai, T. Kitada and T. Isu, Tokushima Univ. (Japan)</i> 12:15 A-7-7 Demonstration of Two-Wavelength Lasing in a GaAsP Ring/Fabry-Perot Composite Cavity Semiconductor Laser <i>A.K. Saha and T. Suhara, Osaka Univ. (Japan)</i>		12:00 C-7-6 Activation of Silicon Implanted with Phosphorus and Boron Atoms by Microwave Rapid Annealing <i>S. Kimura, M. Hasumi, K. Ota and T. Sameshima, Tokyo Univ. of Agri. & Tech. (Japan)</i> 12:15 C-7-7 Combination Accelerating Test for Crystalline Si Photovoltaic Modules <i>A. Masuda¹, C. Yamamoto¹, N. Uchiyama¹, K. Ueno² and T. Yamazaki^{2,1} AIST and ²Choshu Industry Co., Ltd. (Japan)</i>	12:15 D-7-6 X-ray Diffraction Study of Evolution of Polytypes in Au-assisted GaAs Nanowires <i>M. Takahashi^{1,2}, M. Kozu^{1,2} and T. Sasaki¹, ¹JAEA and ²Univ. of Hyogo (Japan)</i>		12:15 F-7-6 Monitoring of Hydroxyapatite Crystal Formation using Field Effect Transistor <i>T. Kajisa¹ and T. Sakata², ¹PROVIGATE Inc. and ²Univ. of Tokyo (Japan)</i>	12:15 G-7-6 (Invited) Organic-Assisted Oriented Attachment of Silver Nanosheets <i>S. Ekgasit and P. Jangtawee, Chulalongkorn Univ. (Thailand)</i>

Wednesday, September 30

2F 201	2F 202	2F Small Hall	2F 204	2F 206	2F 207	1F 108b
H-7: Quantum Devices			M-7: III-V Materials & Devices			
12:00 H-7-6 (Invited) Ultraclean Carbon Nanotube Quantum Dots Coupled to Superconducting Impedance Matching Circuits <i>M. Jung¹, T. Hasler¹, V. Ranjan¹, G. Puebla Hellmann^{1,2}, A. Wallraff² and C. Schonenberger¹,</i> ¹ Univ. of Basel and ² ETH Zurich (Switzerland)			12:15 M-7-6 Withdrawn			

RUMP SESSION A (Middle-Sized Hall A):**“Can we change the world by Steep-Slope devices?”**

The Big Data Age has come.

In this era, processors are required to furnish high performance at ultra-low operation voltage in order to manage enormous sensing data and execute real time processing with extremely low energy consumption. Thus drastic innovations in transistors and logic circuits, such as Steep-Slope devices and stacked logic circuits, are anticipated. This Rump session invites 5 distinguished researchers, introduces the status of developments of Steep-Slope devices and stacked logic circuits, and presents an opportunity to discuss the future of logic devices.

Organizer: Toshiro Hiramoto (The University of Tokyo)
Moderator: Shinji Migita (AIST)
Panelists: Ru Huang (Peking University)
Shigeru Kawanaka (Toshiba Corporation)
Masaharu Kobayashi (The University of Tokyo)
Calro Reita (CEA-LETI)
Shinichi Takagi (The University of Tokyo)

RUMP SESSION B (Middle-Sized Hall B):**“Future materials and devices for solar-based energy systems: from power generation to energy storage”**

Rapid increase in the installation of photovoltaic convinced is a promising progress of a solar-based energy system which is independent from fossil fuel. Large-scale installation of renewable power generation, however, introduces temporal and spatial fluctuation, which highlights the importance of energy storage and power management. Solid-state devices and related technology must play an essential role for such purposes. This session will introduce ongoing research and development on devices and materials for solar energy harvesting, storage and management and future direction will be discussed.

Organizer: Takashi Kita (Kobe University)
Moderator: Masakazu Sugiyama (The University of Tokyo)
Panelists: Hiroji Ebe (Fujitsu Labs. Ltd.)
Mutsuko Hatano (Tokyo Institute of Technology)
Kazuhiro Ohkawa (Tokyo University of Science)

Short Course A (Middle-Sized Hall A):**Trends and Challenges of Non-Volatile Memory Technologies in the Big-Data Era****Organizer: Masumi Saitoh (Toshiba Corporation)**

There is a growing demand for high-density non-volatile memory in the Big-Data era. Non-volatile memory is being introduced into each memory hierarchy (data storage, code storage, main memory, cache, etc.) to achieve low-power and high-speed LSI system. In this course, five excellent lectures give a review on the trends and challenges of promising non-volatile memory technologies.

14:00-14:05 Introduction on topics from organizer

14:05-14:55 “Evolution of NAND Flash Devices for Overcoming the Technological Barriers”

Dr. Youngwoo Park (Samsung Electronics Co., Ltd)

14:55-15:45 “Recent advances and challenges in ReRAM-related technologies”

Dr. Hiroyuki Akinaga (AIST)

15:45-16:35 “Phase Change Memory (PCM) -from the fundamental to the spintronics-”

Dr. Junji Tominaga (AIST)

Break (15 min.)

16:50-17:40 “Process Development of STT-MRAM for Embedded Cache Memory”

Dr. Toshihiro Sugii (Fujitsu Laboratories Ltd.)

17:40-18:30 “Technology trends and applications of embedded-STT-MRAM from big data to IoT”

Dr. Shinobu Fujita (Toshiba Corporation)

Short Course B (Middle-Sized Hall B):**“Fundamentals and Applications of Two-Dimensional Materials”****Organizer: Shintaro Sato (Fujitsu Laboratories Ltd.)**

This short course deals with emerging two-dimensional materials, especially transition metal dichalcogenides (TMDCs), such as MoS₂ and WSe₂. There are four excellent lectures focusing on physical, electrical, and optical properties of TMDCs, as well as their growth technology. Application of TMDCs to electronic and optical devices is also described. Possible application of TMDCs to ultra-short-channel transistors at the end of roadmap is also discussed.

14:00-14:05 Introduction on topics from organizer

14:05-15:05 “2D Crystals for Nanoelectronics and Beyond.....”

Prof. Kaustav Banerjee (University of California, Santa Barbara)

15:05-16:05 “Transport properties of van der Waals junctions of 2D layered materials”

Prof. Tomoki Machida (The University of Tokyo)

Break (15 min.)

16:20-17:20 “Fundamental optical properties and device application in atomically thin layered materials”

Prof. Kazunari Matsuda (Kyoto University)

17:20-18:20 “CVD growth of atomically thin transition metal dichalcogenides and their heterostructures”

Prof. Yasumitsu Miyata (Tokyo Metropolitan University)

PRESENTATION GUIDELINES

Oral Presentation:

Time Schedule

	Total session time	Presentation time	Discussion time
Invited	30 min.	25 min.	5 min.
Regular-1: Area 1-5	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 SSDM2015:

- * LCD projector
- * PC (laptop computer, Windows 7 Professional) with PowerPoint 2013 and PDF Adobe Reader XI
- * Projection laser pointer

Presenters can check their presentations in Preview Room on the second floor (see floor guide on page 76).

Copy Your Presentation File

Please copy your presentation file to the PC equipped in each session room. All the oral presenters are asked to bring their presentation files with own USB thumb drive. It is the presenter's responsibility **to copy 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 indicated above.

Poster Presentation:

Presenting Your Poster

Poster sessions are scheduled on Tuesday, September 29 from 13:30 to 15:30 at Main Hall A, B. **You are requested to put your poster on the board by 13:00 on September 29.** Poster boards with identifying labels and pushpins will be available on September 29 from 10:00. After the session, you must immediately remove your posters by 17:00 on September 29. Please note that after 17:00 all remaining posters will be destroyed. Size of a poster board is 1,800mm wide and 2,100mm high. Please clearly display the paper title, author names and affiliations on the poster. The identifying label indicates only paper number. You are requested to stay near by their posters during the poster session for discussions.

Short Oral Presentation

All poster presenters must give the short oral presentations in Short Presentation session scheduled on September 29, 11:00 - 12:00. The presentation time is **2 minutes**, including the time needed to move on to the next presenter. Submitted presentation file has been already copied to the PC equipped in the session room and is ready for presentation. For smooth progress of the session, the next presenter is asked to wait nearby in line for their turn. Only a PC projector will be available.

Short oral presentations will be held as follows:

September 29, 2015, 11:00 am - 12:00 am

Area 1 (PS-1) 2F 206	Area 6 (PS-6) 2F 204	Area 12 (PS-12) 1F 108b
Area 2 (PS-2) 1F 107a	Area 7 (PS-7) Mid-sized Hall A	Area 13 (PS-13) 1F 102
Area 3 (PS-3) 2F Small Hall	Area 8 (PS-8) 1F 108a	Area 14 (PS-14) 2F 202
Area 4 (PS-4) 2F 207	Area 9 (PS-9) 2F 201	
Area 5 & 11 (PS-5, PS-11) 1F 107b	Area 10 & 15 (PS-10, PS-15) 1F 101	

Confidentiality:

All presentation data will be completely deleted after the session.

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The Japan Society of Applied Physics

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