Tuesday, September 29

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 HfO_2/ La_2O_3 High-κ Dielectrics
T.W. Lin[1], J.N. Yao[1], Y.C. Lin[1], K.C. Yang[1], W.H. Wu[1], K. Kakushima[2], J.S. Maa[1], E.Y. Chang[1] and H. Iwai[2], [1]NCTU and [2]Tokyo Tech (Taiwan)

PS-1-2
Impact of in situ Plasma Enhanced Atomic Layer Deposition on the Electrical Properties of HfO_2/$In_{0.53}Ga_{0.47}As$ 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 N_2/H_2 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 HfO_2/InGaAs MOS by Employing Thin SiN_x Interfacial Layer using Plasma Enhanced Atomic Layer Deposition
S.K. Eom[1], R.S. Ki[1], D.H. Kim[1], H.Y. Cha[2] and K.S. Seo[1], [1]Seoul National Univ. and [2]Hongik Univ. (Korea)

PS-1-5
Sub-0.2V Switching Voltage of Negative Capacitance Double Gate Tunnel FET using Ferroelectric Gate
M.H. Lee[1], C. Liu[1], P.G. Cheng[1], C.C. Cheng[1], K.Y. Chu[1], M.J. Xie[1], S.N. Liu[1], J.W. Lee[1], S.J. Huang[1] and M.H. Liao[2], [1]National Taiwan Normal Univ. and [2]National Taiwan Univ. (Taiwan)

PS-1-6
Fabrication of Low-Temperature (< 400 °C) Germanium MOSCAPs by Microwave Thermal Oxidation
W.C. Chi[1], C.C. Hsu[1,2], C.H. Chou[1], A.S. Shih[1], Y.J. Lee[2] and C.H. Chien[1], [1]NCTU and [2]NDL, 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. Yoo[1], T. Ishigaki[1], T. Ueda[1], K. Kang[1], N. Hasuike[2], H. Harima[2] and M. Yoshimoto[2], [1]WaferMasters, Inc. and [2]KIT (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. Jeon[1], T. Asano[1,2], W. Takeuchi[1], M. Kurosawa[1,3], O. Nakatsuka[1] and S. Zaima[1,3], [1]Nagoya Univ., [2] JSPS Research Fellow and [3]EcoTopia Sci. Inst., Nagoya Univ. (Japan)

PS-1-10
n^+Si/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], [1]Univ. of Tokyo and [2]JST-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 Sn_xGe_{1-x} Interlayer on Reducing Schottky Barrier Height at Metal/n-Ge Interface
A. Suzuki[1], O. Nakatsuka[1], S. Shibayama[1,2], M. Sakashita[1], W. Takeuchi[1], M. Kurosawa[1,3] and S. Zaima[1,3], [1]Nagoya Univ., [2]JSPS Research Fellow and [3]EcoTopia 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/SiO_2 Interface by Thermal Oxidation
S. Kawachi[1], H. Hiroki[1], M. Araidai[1], H. Kageshima[2,4], T. Endoh[3,4] and K. Shiraishi[1,4], [1]Nagoya Univ., [2] Shimane Univ., [3] Tohoku Univ. and [4]JST-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 Y_2O_3-doped HfO_2 Films Probed by Microscopic Raman Spectroscopy Measurements
K. Izukashi[1,2], T. Nishimura[1,2], S. Migita[2,3] and A. Toriumi[1,2], [1]Univ. of Tokyo, [2] AIST and [3]JST-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], [1]Tokyo Tech, [2] JST-CREST and [3]NTT AT (Japan)

PS-2-2
Proposal of a Simple MEMS Phase Shifter Based on Effective Dielectric Constant Modulation
D. Nakano[1], M. Mori[1], K. Maezawa[1], H. Ishii[2] and H. Ando[3], [1]Univ. of Toyama, [2] Toyohashi Univ. of Tech. and [3]National 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. Konishi[3], K. Machida[1,2,3], H. Toshiyoshi[1,4], D. Yamane[1,2], K. Masu[1,2] and M. Sone[1,2], [1]JST-CREST, [2] Tokyo Tech, [3] NTT AT and [4]Univ. of Tokyo (Japan)

PS-2-4
Micro-Texture Dependence of the Strength of Electroplated Copper Fine Bumps Used for 3-Dimensonal 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. He[1], M. Fujino[1], A. Yamauchi[2] and T. Suga[1], [1]Univ. of Tokyo and [2]Bondtech Co., Ltd. (Japan)

PS-2-7
Transient Liquid-Phase Sintering using Tin and Silver Powder Mixture for Die Bonding
M. Fujino[1], H. Narusawa[1], Y. Kuramochi[1], E. Higurashi[1], T. Suga[1], T. Shiratori[2] and M. Mizukoshi[3], [1]Univ. of Tokyo, [2] ALPHA DESIGN CO., LTD. and [3]SYNDEO (Japan)

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

PS-2-9
Capacitance Characteristics of Low-k Low-Cost CVD Grown Polyimide Liner for High-Density Cu-TSVs in 3D-LSI
M. Murugesan, 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. Yang[1], W. Cheng[1], H. Wu[1], C. Song[1,2] and W. Zhang[1,2], [1]NCAP China and [2]IMECAS (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. Fukushima[1], K. Taniguchi[2], S. Watariguchi[2], M. Murugesan[1], C. Nagai[1], A. Nakamura[1], H. Hiroyuki[1], J. Bea[1], T. Tanaka[1], M. Koyanagi[1] and K. Lee[1], [1]Tohoku Univ. and [2]Meltex 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. Bout[1], C. Fenouillet Beranger[1], A. Roule[1], M.P. Samson[1,2], B. Previtali[1], C. Arvet[1,2], A. Michallet[1,2], N. Rochat[1], S. Favier[1,2], R. Kachtouli[1], V. Loup[1], P. Besson[1,2], M. Garcia Barros[1,2], N. Posseme[1], F. Pierre[1], P. Maury[2], D. Benoit[2], P. Batude[1], M. Vinet[1] and T. Skotnicki[2], [1]CEA-LETI and [2]STMicroelectronics (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. Wang[1], S.H. Hsu[1], Y.T. Chang[3], C.K. Chen[3] and D.C. Chang[2], [1]National Tsing Hua Univ., [2]CIC, NARLabs and [3]BSMI, MOEA (Taiwan)

PS-2-15
Preparation of High Performance SiN_X Films Deposited by Reactive Sputtering and PECVD at Low Temperatures
M. Sato[1], M.B. Takeyama[1], Y. Nakata[2], Y. Kobayashi[2], T. Nakamura[2] and A. Noya[1], [1]Kitami Inst. of Tech. and [2]Fujitsu 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. Chou[1], C.C. Kuo[1], J.Y. Lin[2] and J.M. Song[1], [1]National Chung Hsing Univ. and [2]ITRI (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. Kwon[1], M. Nam[1], A. Kim[1], K. Kang[1], S.J. Chae[1], S.J. Lee[1], W.S. Sul[2] and S.G. Pyo[1], [1]Chung-Ang Univ. and [2]NNFC (Korea)

Area 3: CMOS Devices / Device Physics
(17 papers)

PS-3-1
Discrete Dopant Impact on the 7 nm Nanowire Transistor Performance
X. Wang[1], Y. Wang[2], C. Ridder[3], E. Towie[3], B. Cheng[3], X. Liu[2] and A. Asenov[1,3], [1]Univ. of Glasgow, [2]Peking Univ. and [3]Gold 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 HfO_2 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. Tiwari[1], A. Scholze[2], R. Divakaruni[2] and D.R. Nair[1], [1]Indian Inst. of Tech. Madras and [2]IBM 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 Juntionless Field-Effect Transistors
Y.C. Wu[1], K.W. Lin[1], M.S. Yeh[1], Y.R. Lin[1], M.H. Wu[1] and Y.H. Lin[2], [1]National Tsing Hua Univ. and [2]National 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. Takei[1], S. Hashimoto[1], J. Sun[1], X. Zhang[1], S. Asada[1], T. Xu[1], T. Wakamizu[1], T. Matsukawa[2], M. Masahara[2] and T. Watanabe[1], [1]Waseda Univ. and [2]AIST (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. Kao[1], S.J. Chang[1], Y.K. Fang[1], P.C. Huang[1], Y.K. Su[1], Y.J. Shen[1], C.Y. Wu[2] and S.L. Wu[2], [1]NCKU and [2]Cheng Shiu Univ. (Taiwan)

PS-3-13
The Limits of Applicability of the Analytic Model for Hot Carrier Degradation
M. Jech[1], P. Sharma[1], S. Tyaginov[1,2], F. Rudolf[1] and T. Grasser[1], [1]TU Wien and [2]Ioffe 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. Kubota[1], Y. Kikuchi[1,2], T. Nozawa[2] and S. Samukawa[1,3], [1]IFS, Tohoku Univ., [2]Tokyo Electron Ltd. and [3]WPI-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 CaF_2/Si/CaF_2 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 Ta_2O_5-Based Atomic Switches
C. Mannequin[1], T. Tsuruoka[1], T. Hasegawa[2] and M. Aono[1], [1]NIMS and [2]Waseda 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. Lin[1], W.C. Wang[1], Y.H. Lin[2] and Y.C. Wu[1], [1]National Tsing Hua Univ. and [2]National 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. Rueckes[1], [1]MIT and [2]Nantero 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. Akihara[1], T. Hirose[1], Y. Tanaka[1], N. Kuroki[1], M. Numa[1] and M. Hashimoto[2], [1]Kobe Univ. and [2]Osaka 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. Wang[1], J.L. Shi[1], Y.F. Hao[1], K.B. Lee[1], X.J. Yang[1], W.D. Wu[1], H.H. Liao[2], H.H. Tsai[2] and Y.Z. Juang[2], [1]National Kaohsiung Normal Univ. and [2]NARLabs (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. Kim[1], J.H. Lee[2] and Y.M. Jhon[1], [1]Korea Inst. of Sci. & Tech. and [2]KNU (Korea)

PS-6-2
Enhancement Mode AlGaN/GaN MIS-HEMTs Using Multilayer HfO_2/La_2O_3 Gate Insulator for High Power Application
Y.X. Huang[1], W.C. Shih[1], T.W. Lin[1], C.H. Wu[1], Y.C. Lin[1], J.S. Maa[1], E.Y. Chang[1], K. Kakushima[2] and H. Iwai[2], [1]NCTU and [2]Tokyo Tech (Taiwan)

PS-6-3
Improved Linearity and Reliability in GaN MOS-HEMTs Using Nanolaminate La_2O_3/SiO_2 Gate Dielectric
W.C. Shih[1], H.H. Hsu[1], Y.X. Huang[1], T.W. Lin[1], C.H. Wu[1], Y.C. Lin[1], J.S. Maa[1], E.Y. Chang[1], K. Kakushima[2] and H. Iwai[2], [1]NCTU and [2]Tokyo Tech (Taiwan)

PS-6-4
Thermal Stability of the Interface between Atomic Layer Deposited High-*k* ZrO_2 and GaN
H. Wang[1,2], G. Ye[1] and K.S. Ang[2], [1]NTU and [2]TL@NTU (Singapore)

PS-6-5
Analysis of Electrical Characteristics of AlGaN/GaN on Si Large SBD by Changing Structure
H.S. Lee[1,2], D.Y. Jung[1], Y.R. Park[1], J.H. Na[1], H.G. Jang[1], H. Lee[1], C.H. Jun[1], J.B. Park[1], Z.S. Kim[1], J.K. Mun[1], S.O. Ryu[2], S.C. Ko[1] and E.S. Nam[1], [1]Electronics and Telecommunications Res. Inst. and [2]Dankook Univ. (Korea)

PS-6-6
Electrolyte Electro-Reflectance Spectra of Crack-Free AlGaN/GaN High Electron Mobility Transistors on Si Substrate
T.S. Ko[1], B.Y. Hu[1], N.W. Chang[1], D.Y. Lin[1] and J.S. Li[2], [1]National Univ. of Changhua Edu. and [2]Feng Chia Univ. (Taiwan)

PS-6-7
Study of AlGaN/GaN Tri-Gate HEMTs for Device Performance Improvement
C.C. Liu[1], Y.X. Huang[1], W.C. Shih[1], H.H. Hsu[1], Y.C. Lin[1], J.S. Maa[1], E.Y. Chang[1] and H. Iwai[2], [1]NCTU and [2]Tokyo 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. Tzou[1], D.H. Hsieh[1], J.K. Huang[1], C.J. Su[2], Z.Y. Li[1,3], C.Y. Chang[1,4] and H.C. Kuo[1], [1]NCTU, [2] NDL, NARLabs, [3] Epistar Inc. and [4]Academia Sinica (Taiwan)

PS-6-9
High Performance of AlGaN/GaN HEMT Device with Embedded Multiple Graphene Layers
C.Y. Lee[1], Y.P. Lan[2], Y.S. Gau[3], C.H. Chen[3], R.M. Lin[3] and C.Y. Chang[1,2], [1]Academia Sinica, [2] NCTU and [3]Chang Gung Univ. (Taiwan)

PS-6-10
2-Dimentional Characterization of Ion-Implantation Damage in GaN Schottky Contacts Using Scanning Internal Photoemission Microscopy
K. Shiojima[1], S. Murase[1], S. Yamamoto[1], T. Mishima[2] and T. Nakamura[2], [1]Univ. of Fukui and [2]Hosei Univ. (Japan)

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

PS-6-12
High-Quality PECVD SiO_2 Gate Oxide for Use in Normally-Off AlGaN/GaN Recessed MOS-HFETs
H.S. Kim[1], J.G. Lee[2], S.H. Park[1], S.W. Han[1], K.S. Seo[3] and H.Y. Cha[1], [1]Hongik Univ., [2] Univ. of Texas at Dallas and [3]Seoul National Univ. (Korea)

PS-6-13
Analysis of Post-Deposition Annealing Effects on Insulator/Semiconductor Interface of Al_2O_3/AlGaN/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 AlGaN/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 AlGaN Barrier
D.M. Keum, K.H. Cho and H.T. Kim, Hongik Univ. (Korea)

PS-6-16
Low Current Collapsed AlGaN/GaN HEMT-on-Si Substrate with SiN_x / HfO_2 Dual Passivation Layer
D.H. Kim[1], M.J. Kang[1], S.K. Eom[1], H.Y. Cha[2] and K.S. Seo[1], [1]Seoul National Univ. and [2]Hongik Univ. (Korea)

PS-6-17
Preparation of InAs Surface by Hydrogen Plasma Pre-Treatment for Low Interfacial Trap Density MOS Capacitors
C.Y. Chen[1], C.H. Hsieh[1], W.J. Hsueh[1] and J.I. Chyi[1,2], [1]National Central Univ. and [2]Academia 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 HfO_2/Al_2O_3/InAs MOS Capacitors Prepared by Nitrogen Plasma Treatment
G.B. He[1], W.J. Hsueh[1], C.Y. Chen[1] and J.I. Chyi[1,2], [1]National Central Univ. and [2]Research 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. Chen[1], B.L. Yeh[1], C.Y. Chiang[2], T.N. Lee[1] and K.C. Hsieh[2], [1]National Chi Nan Univ. and [2]National Tsing Hua Univ. (Taiwan)

PS-6-21
Structural Properties and Electrical Characteristics of High-κ Lu_2O_3 and Lu_2TiO_5 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. Zhong[1], H.C. Lin[1], J.R. Tsai[2], K.C. Liu[3] and T.Y. Huang[1], [1]NCTU, [2] Asia Univ. and [3]Chang 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. Iwata[1], W. Lin[1], K. Fukuda[1,2] and Y. Miyamoto[1], [1]Tokyo Tech and [2]AIST (Japan)

PS-6-26 (Late News)
Low-noise Performance of Pseudomorphic InGaAs/InAlAs HEMTs
I. Watanabe[1], A. Endoh[1,2], T. Mimura[1,2] and A. Kasamatsu[1], [1]NICT and [2]Fujitsu Labs. (Japan)

PS-6-27 (Late News)
Effect of Temperature on DC and RF Characteristics of Cryogenic InP HEMTs
A. Endoh[1,2], I. Watanabe[1], A. Kasamatsu[1], T. Takahashi[2], S. Shiba[2], Y. Nakasha[2], T. Iwai[2] and T. Mimura[1,2], [1]NICT and [2]Fujitsu Labs. (Japan)

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

PS-7-1
GaN Metal-Insulator-Semiconductor Ultraviolet Detectors with Lanthanum Fluoride (LaF_3) 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. Lin[1], C.K. Wang[1], Y.Z. Chiou[1], S.B. Chang[2] and S.J. Chang[2], [1]Southern Taiwan Univ. of Sci. and Tech. and [2]NCKU (Taiwan)

PS-7-3
Enhanced Light Intensity of InGaN-based LEDs Grown on Molybdenum Patterned Sapphire Substrates
W.H. Wu[1], Y.H. You[2], V.C. Su[2], M.L. Lee[2], P.H. Chen[2], C.H. Kuan[2] and R.M. Lin[1], [1]Chang Gung Univ. and [2]National 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. Ma[1], Y.H. Zhang[1], Y.L. Cao[1], K. Liu[1], J.W. Huang[1] and S.L. Lu[2], [1]Institute of Semiconductors, CAS and [2]SINANO, 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. Shih[1], H.Y. Chen[3] and S.Y. Lin[1,2,3], [1]Academia Sinica, [2]National Taiwan Univ. and [3]National 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], [1]Univ. of Tokyo and [2]JST-CREST (Japan)

PS-7-7
Broadband Gain Superluminescent Diode Based on Self-assembled InAs Quantum Dots with Segmented Contacts
N. Ozaki[1,2], T. Yasuda[1], H. Shibata[1], H. Ohsato[3], E. Watanabe[3], N. Ikeda[3], Y. Sugimoto[3], D.T.D. Childs[2] and R.A. Hogg[2], [1]Wakayama Univ., [2]Univ. of Sheffield and [3]NIMS (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 Zain[1], B.Y. Majlis[1] and R.M. De La Rue[2], [1]Universiti Kebangsaan Malaysia and [2]Univ. of Glasgow (Malaysia)

PS-7-13
Output Characteristics of a Double Circular Ring Resonators Laser Diode Through Slioton 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. Lin[1], H.V. Han[1], W.C. Chong[2], J.R. Li[1], C.C. Lin[1], H.M. Chen[1], K.M. Lau[2] and H.C. Kuo[1], [1]NCTU and [2]HKUST (Taiwan)

PS-7-19
Enhanced Light Extraction from Lateral Side of InGaN-based LEDs Grown on Nano-Sized Patterned Sapphire Substrates
Y.H. You[1], W.H. Wu[2], B.W. Lin[3], W.C. Hsu[4], V.C. Su[1], M.L. Lee[1], P.H. Chen[1], C.H. Kuan[1] and R.M. Lin[2], [1]National Taiwan Univ., [2] Chang Gung Univ., [3] NCTU and [4]Sino-America Silicon Products Inc. (Taiwan)

PS-7-20
Hydrothermal Growth of Single-crystalline ZnO Thin Films and Theirs Application on UV Photodetectors
C.H. Wu[1], S.J. Wang[1], T.H. Lin[1], Y.C. Tu[1], C.H. Hung[1], P.Y. Liu[1], Y.H. Chin[1], K.M. Uang[2] and T.M. Chen[2], [1]NCKU and [2]WuFeng Univ. (Taiwan)

PS-7-21
Preparation of Porous p-ZnO Films by Hydrothermal Method and Its Application on Ultraviolet Sensors
Y.C. Tu[1], S.J. Wang[1], T.H. Lin[1], C.H. Hung[1], C.H. Wu[1], P.Y. Liu[1], Y.H. Chin[1], K.M. Uang[2] and T.M. Chen[2], [1]NCKU and [2]WuFeng Univ. (Taiwan)

PS-7-22
Electro-Optic Characteristics Improvement of ZnMgTe/ZnTe Waveguide Devices
W.C. Sun[1], F. Kazami[1], J. Wang[1], T. Nakasu[1], S. Hattori[1], T. Kizu[1], Y. Hashimoto[1], M. Kobayashi[1,2] and T. Asahi[3], [1]Waseda Univ., [2] Kagami Memorial Res. Inst. for Materials Sci. and Tech. and [3]JX 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. Nishibayashi[1], H. Yoneda[2], K. Kuga[3] and H. Munekata[1], [1]Tokyo Tech, [2] Univ. of Electro-Communications and [3]NHK STRL (Japan)

PS-7-24
Fabrication of Mesa-type Mg_2Si 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)

PS-8-1
Temperature-Dependent Photoluminescence and Hall-Effect Studies of $Ge_{1-y}Sn_y$ Alloys Grown on Ge-Buffered Si Substrates
M.Y. Ryu[1], T.R. Harris[2], B. Wang[2,3], Y.K. Yeo[2] and J. Kouvetakis[4], [1]Kangwon National Univ., [2]AFIT, [3]Wright State Univ. and [4]Arizona 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. Hori[i], M. Iioka[1], S. Jimba[1], Y. Hara[2] and H. Udono[1], [1]Ibaraki Univ. and [2]Ibaraki 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. Johll[1], M. Samuel[1], R.Y. Koo[1], H.C. Kang[2,3], S.W. Ong[3], Y.C. Yeo[2] and E.S. Tok[2,3], [1]National Junior College, [2]NUS and [3]Yale-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. Ikezawa[1], N. Yasuda[1], L. Zhang[1], Y. Sakuma[2], K. Sakoda[2] and Y. Masumoto[1], [1]Univ. of Tsukuba and [2]NIMS (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. Suzuki[1], T. Kouno[1], H. Takeshima[1], A. Kikuchi[2], K. Kishino[2], M. Sakai[3] and K. Hara[1], [1]Shizuoka Univ., [2]Sophia Univ. and [3]Univ. 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 MoS_2 Thin Film by Post-Sulfurization Annealing Using $(t\text{-}C_4H_9)_2S_2$
S. Ishihara[1], K. Suda[1], Y. Hibino[1], N. Sawamoto[1], T. Ohashi[2], S. Yamaguchi[2], K. Matsuura[2], H. Machida[3], M. Ishikawa[3], H. Sudoh[3], H. Wakabayashi[2] and A. Ogura[1], [1]Meiji Univ., [2]Tokyo Tech and [3]Gas-phase Growth Ltd. (Japan)

PS-8-14
Large Effect of Etchant on Electrical Performance of Transferred CVD Graphene
T.W. Chen[1], Y.P. Hsieh[1] and M. Hofmann[2], [1]National Chung Cheng Univ. and [2]NCKU (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. Rius[1], N. Mestres[2], Y. Tanaka[1], O. Eryu[1] and P. Godignon[3], [1]Nagoya Inst. of Tech., [2]ICMAB-CSIC and [3]IMB-CNM-CSIC (Japan)

PS-8-17
Synthesis of Si-based Nanostructures by Extraction of Metallic Atoms from Silicides by Inositol Hexakisphosphate
K. Sasaki[1], K. Sano[1], X. Meng[1], H. Suzuki[1], T. Kobayashi[2], T. Kuno[3] and H. Tatsuoka[1], [1]Shizuoka Univ., [2]Koba Tech. and [3]Kankyo Science (Japan)

PS-8-18
Temperature Dependence of Electrical Transport Properties of $La_4BaCu_{5-x}Co_xO_{13+\delta}$ Conducting Oxide Thin Films
A. Tsuruta[1], Y. Tsujioka[2], Y. Yoshida[2], I. Terasaki[1,2] and W. Shin[1], [1]AIST and [2]Nagoya 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. Sugimoto[1], K. Igarashi[1] and A. Kikuchi[1,2], [1]Sophia Univ. and [2]Sophia Nanotech. Res. Center (Japan)

PS-8-21
Study on Microstructure of Gd_2O_3 and Nd_2O_3 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[2,3] and T. Hasegawa[1,3], [1]Univ. of Tokyo, [2]Tohoku Univ. and [3]JST-CREST (Japan)

PS-8-24
Behavior of Si Atoms, Ge Atoms and Vacancies for Flash Lamp Annealing
A. Heya[1], N. Matsuo[1], S. Hirano[1], Y. Nakamura[2], T. Yokomori[2] and M. Yoshioka[2], [1]Univ. of Hyogo and [2]USHIO Inc. (Japan)

PS-8-25
Low Temperature Liquid Phase Epitaxy of $YBa_2Cu_3O_Y$ Films by the Molten KOH Method
S. Funaki, Y. Yamada, R. Okunishi and Y. Miyachi, Shimane Univ. (Japan)

PS-8-26
Thermoelectric Properties of $Yb_xFe_yCo_{4-y}Sb_{12}$ Prepared under High Pressure
Y. Chen, Y. Kawamura and C. Sekine, Muroran Inst. of Tech. (Japan)

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

PS-8-28 (Late News)
Chemical Vapor Deposition of Highly Resistive ZnO Films using Nonequilibrium N_2/O_2 Plasma Generated near Atmospheric Pressure
Y. Nose[1], T. Kiguchi[1], T. Yoshimura[1], A. Ashida[1], T. Uehara[2] and N. Fujimura[1], [1]Osaka Prefecture Univ. and [2]Sekisui Chemical Co., LTD. (Japan)

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

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. Vexler[2], V.V. Fedorov[2], S.M. Suturin[2], N.S. Sokolov[2] and T. Grasser[1], [1]TU Wien and [2]Ioffe 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. Inoue[1], H. Koyama[3], Y. Takamura[1,2] and T. Shimoda[1], [1]JAIST, [2]JST-CREST and [3]Toppan Printing Co., Ltd. (Japan)

PS-9-5
Mesoscopic Blockade and Staircase Phenomena of Holes in DNA/Si-MOSFET by Gate Voltage Modulation
N. Matsuo[1], S. Nakamura[1], T. Takada[1], A. Heya[1], K. Yamana[1], T. Sato[2], S. Yokoyama[2] and Y. Omura[3], [1]Univ. of Hyogo, [2]Hiroshima Univ. and [3]Kansai 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/SiO_2/SiGe MOS Devices
P.H. Liao[1], W.T. Lai[2], S.C. Luo[1], K.C. Yang[1], T. George[1] and P.W. Li[2], [1]National Central Univ. and [2]NCTU (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], [1]Tohoku Univ., [2]CIES, Tohoku Univ. and [3]JST-ACCEL (Japan)

PS-9-11
Geometry-dependent Phase/Stress and Electrical Resistivity in Nickel-Silicide Nanowires
C.C. Wang[1], Y.Y. Hsiao[1], I.H. Chen[1], W.T. Lai[1], T. George[1] and P.W. Li[2], [1]National Central Univ. and [2]NCTU (Taiwan)

PS-9-12
Changes in Morphology and Local Conductance of GeTe-Sb_2Te_3 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], [1]AIST and [2]JST-CREST (Japan)

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

PS-10-1
Temperature Dependence Analysis of Printed Organic MOSFET
H. Zenitani[1], T.K. Maiti[2], T. Hayashi[1], Y. Tanimoto[1], K. Sato[1], L. Chen[2], H. Kikuchihara[2], M. Miura Mattausch[2] and H.J. Mattausch[1], [1]Hiroshima Univ. and [2]HiSIM, 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. Shiwaku[1], Y. Yoshimura[1], Y. Takeda[1], K. Fukuda[1,2], D. Kumaki[1] and S. Tokito[1], [1]Yamagata Univ. and [2]JST-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. Chang[1], H.F. Meng[1], H.W. Zan[1], H.W. Lin[2], K.T. Wong[3], H.L. Huang[4] and S.F. Horng[2], [1]NCTU, [2] National Tsing Hua Univ., [3] National Taiwan Univ. and [4]e-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. Nobeshima[1], Y. Ishii[2], H. Sakai[3], S. Uemura[1] and M. Yoshida[1], [1]AIST, [2] Toyohashi Univ. of Tech. and [3]JAIST (Japan)

PS-10-7
Deposition Characteristics of Small Molecule Organic Thin Film (CBP:PBD:TPD:Ir(Mppy)$_3$) by Modified Electrospray Deposition
Y. Niinuma[1], D. Nishi[1], J. Ishino[1] and A. Kikuchi[1,2], [1]Sophia Univ. and [2]Sophia 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. Promarak[1], A. Thangthong[2], S. Namuangruk[3], T. Sudyoadsuk[1], T. Kaewin[2], S. Jungsuttiwong[2] and A. Prachumrak[1], [1]Vidyasirimedhi Inst. of Sci. and Tech., [2] Ubon Ratchathani Univ. and [3]NANOTEC (Thailand)

PS-10-9 (Late News)
Lower Power Consumption Technique on Organic Circuits for Roll-to-roll Process.
K. Kuribara[1], K. Kakita[2], Y. Tanaka[2] and M. Yoshida[1], [1]AIST and [2]Ube 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. Dao[1], H. Sakai[2], K. Ohkubo[3], S. Fukuzumi[4] and H. Murata[2], [1]Univ. of Transport and Communications, [2] JAIST, [3] Osaka Univ. and [4]Ewha 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. Farahat[1], [1]National Tsing Hua Univ. and [2]Academia Sinica (Taiwan)

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

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. Nakayama[1], S. Kumagai[1], H. Hashizume[2], T. Ohta[3], M. Ito[3], M. Hori[2] and M. Sasaki[1], [1]Toyota Tech. Inst., [2]Nagoya Univ. and [3]Meijo Univ. (Japan)

PS-11-3
A Friendly Portable 2D Chemical Imaging System
C. Ren[1], C.G. Lyu[1], H.L. Liu[2], Y.M. Chen[2], Y.C. Hsu[2], C.M. Yang[2] and C.S. Lai[2], [1]Tianjin Univ. and [2]Chang 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. Yang[1], A. Saito[1], T. Kajisa[2], Y. Yanase[3] and T. Sakata[1], [1]Univ. of Tokyo, [2] PROVIGATE Inc. and [3]Hiroshima Univ. (Japan)

PS-11-6
Nanosphere Lithography (NSL) on Au Nanopatterned Electrodes for Electrochemical DNA Detection
A. Purwidyantri[1], C.H. Chen[2], C.C. Chiou[1], Y.C. Tian[3] and C.S. Lai[1], [1]Chang Gung Univ., [2]National Taiwan Univ. of Sci. and Tech. and [3]Chang 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 N_2/H_2 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. Imamura[1], Z. Zhang[1], T. Shimanouchi[2], N. Murata[1], K. Yamashita[1], M. Fukuzawa[1] and M. Noda[1], [1]Kyoto Inst. of Tech. and [2]Okayama Univ. (Japan)

PS-11-10
The Annealing Effect of $BaSrTiO_3$ Membrane in O_2 and N_2 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. Karmakar[1], Y. Fu[1], S.H. Chen[1], J.C. Wang[1], Y.J. Lu[2], C.Y. Huang[2], K.C. Wei[2] and C.S. Lai[1], [1]Chang Gung Univ. and [2]Chang 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)

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. Chiba[1], G.E.W. Bauer[1,2,3] and S. Takahasi[1], [1]IMR, Tohoku Univ., [2] WPI-AIMR, Tohoku Univ. and [3]Kavli Inst. of NanoScience Delft Univ. of Tech. (Japan)

PS-12-3
A Pulse Current Synchronization Scheme for Spin Torque Nano Oscillators
K. Nakada[1], K. Miura[2] and T. Kimura[3], [1]Hiroshima City Univ., [2]Kwansei Gakuin Univ. and [3]Kyushu Univ. (Japan)

PS-12-4
Spin Transport in Magnetic Tunnel Junctions with the Insertion of [6]Cyclo-2,7-naphthylenes Organic Semiconductor
K. Suzuki[1], T. Izumi[2,3], X. Zhang[1], A. Sugihara[1], S.T. Pham[1], H. Taka[2,3], S. Sato[1,2], H. Isobe[1,2] and S. Mizukami[1], [1]Tohoku Univ., [2]JST-ERATO and [3]KONICA MINOLTA, Inc. (Japan)

PS-12-5
Bias Voltage Dependence of the Spin-dependent Tunneling Conductance of Co_2(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 Ni_2MnAl/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. Tulapurkar[3], H. Tomita[1], E. Tamura[1], H. Kubota[2], S. Miwa[1], A. Fukushima[2] and S. Yuasa[2], [1]Osaka Univ., [2] AIST and [3]IIT 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 $CoFe_2O_4$ 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 Mn_2CoAl Films
K. Ueda, S. Hirose, S. Aichi, T. Hajiri and H. Asano, Nagoya Univ. (Japan)

PS-12-13
Crystallographic Properties of $L1_0$ Ordered FeNi Thin Films Fabricated by Sputtering and Rapid Thermal Annealing
M. Mizuguchi[1], T.Y. Tashiro[1], T. Koganezawa[2] and K. Takanashi[1], [1]Tohoku Univ. and [2]SPring-8/JASRI (Japan)

PS-12-14
Experimental Analysis of Shubnikov-De Haas Oscillation for Slightly Asymmetric InGaAs/InAlAs Double Quantum Wells
H. Chen[1], T. Matsuura[1], A. Sawada[1], T. Yamashige[1], B. Liu[1], H. Sugiyama[2], Y. Sekine[2] and T. Koga[1], [1]Hokkaido Univ. and [2]NTT 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. Tsai[1], L.W. Yang[1], Y. Li[1], O. Voskoboynikov[1], A. Higo[2], A. Murayama[3] and S. Samukawa[2], [1]NCTU, [2] Tohoku Univ. and [3]Hokkaido 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. Ishikawa[1], H. Sugiyama[1], T. Inokuchi[1], K. Hamaya[2], N. Tezuka[3] and Y. Saito[1], [1]Toshiba Corp., [2] Osaka Univ. and [3]Tohoku Univ. (Japan)

PS-12-19
Temperature Dependences of Spin-injection Dynamics and Spin-polarized Electroluminescence in InGaAs Quantum Dots
Y. Nomura[1], Y. Akei[1], J. Takayama[1], T. Kiba[2], A. Subagyo[1], T. Yamamura[1], D. Yamazaki[1], K. Sueoka[1] and A. Murayama[1], [1]Hokkaido Univ. and [2]Kitami 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
$Al_2O_3/HfO_2/Al_2O_3$/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. Okada[2] and M. Otani[3], [1]NEC Corp., [2] Univ. of Tsukuba and [3]AIST (Japan)

PS-13-6
Study of the Electronic Properties and Strain sensitivity of Chemical Vapor Deposition-Grown Graphene from C_2H_2
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. Hirose[1], M. Norimatsu[1], K. Suzuki[1], Y. Yagishita[1], Y. Suwa[2], T. Kurosawa[2], K. Kawamura[2], Y. Mizuno[1], D. Kondo[1] and T. Iwai[1], [1]Fujitsu Labs. Ltd. and [2]Shinko 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. Ishiyama[1], N.T. Cuong[2] and S. Okada[1], [1]Univ. of Tsukuba and [2]NIMS (Japan)

PS-13-10
Solution Processible Metal Nanoparticle Embedded Reduced Graphene Oxide for Stretchable and Conductive Electrode
Y. Yoon[1] and HL. Lee[1, 2], [1]IBS Sungkyunkwan Univ. and [2]Sungkyunkwan Univ. (Korea)

PS-13-11
Mechanisms of Polarization Switching in Graphene Oxide and Poly(Vinylidene Fluoride)-Graphene Oxide Films
Z.Y. Jiang[1], G.P. Zheng[1], K. Zhan[2] and Z. Han[1,2], [1]The Hong Kong Polytechnic Univ. and [2]USST (China)

PS-13-12
Energetics of H_2O Encapsulated in Fullerenes under an Electric Field
J. Sorimachi and S. Okada, Univ. of Tsukuba (Japan)

PS-13-13
Top-Gated Epitaxial Bilayer $MoSe_2$ Transistors on AlN Wafers & the Impact of Top-down Process-Induced Damage
M. Manfrini[1], S. Sutar[1], S. Brems[1], P. Tsipas[2], K.E. Aretouli[2], E. Xenogiannopoulou[2], A. Dimoulas[2], A.C. Mocuta[1], I.P. Radu[1] and A. Thean[1], [1]IMEC and [2]NCSR Demokritos (Belgium)

PS-13-14
XPS Study of HfO_2 Growth on 2H-MoS_2 Substrate
C.P. Chen[1], S.W. Ong[2], J.W. Chai[3], Z. Zhang[3], S.J. Wang[3], J.S. Pan[3] and E.S. Tok[1,2], [1]NUS, [2] Yale-NUS College and [3]Inst. of Material Res. and Eng. (Singapore)

PS-13-15
Electrical and Optical Properties of Co-doped and Undoped MoS_2 Crystals
C.C. Huang[1], T.S. Ko[1], D.Y. Lin[1], Y.J. Ruan[1] and Y.S. Huang[2], [1]National Univ. of Changhua Edu. and [2]National Taiwan Univ. of Sci. and Tech. (Taiwan)

PS-13-16
MoS_2 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. Ishizaka[1], Y. Hiraya[1], K. Tomioka[1,2] and T. Fukui[1], [1]Hokkaido Univ. and [2]JST-PRESTO (Japan)

PS-13-19
Hybrid Nanoimprint SiNW-based Solar Cell Fabrication with Efficiency Enhancement by Hydrogen Annealing
W. Jevasuwan, K. Nakajima, Y. Sugimota 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. Yen[1], C.C. Fan[1], Y.P. Lan[1], C.Y. Chang[1], Y.C. Chiu[1], Z.W. Jiang[2], S.C. Chang[2], L.Y. Hung[2] and C.C. Tsai[2], [1]NCTU and [2]Himax 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. Duangchan[1], Y. Koishikawa[1], R. Shirahama[1], K. Oishi[1], A. Baba[1], S. Matsumoto[1] and M. Hasegawa[2], [1]Kyushu Inst. of Tech. and [2]AIST (Japan)

PS-14-5
Transport Characteristics of Minority Carriers in 4H-SiC/Si Heterojunction Bipolar Transistor Structures Fabricated by Surface Activated Bonding
J. Liang[1], S. Shimizu[1], S. Nishida[1], N. Shigekawa[1] and M. Arai[2], [1]Osaka City Univ. and [2]New JRC (Japan)

PS-14-6
Improved Electrical Properties of 4H-SiC MOS Devices with High Temperature Thermal Oxidation
H. Xu[1,2], Q. Yang[1], M. Zhao[1], S. Wang[1], Z. Jin[1], X. Liu[1], A. Chanthaphan[2], Y. Cheng[2], T. Hosoi[2], T. Shimura[2] and H. Watanabe[2], [1]IMECAS and [2]Osaka Univ. (China)

PS-14-7
Removal of Near-Interface Oxide Traps at SiO_2/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. Navarro[1], I. Pesic[1], Y. Morikawa[1], Y. Furui[1] and M. Miura Mattausch[2], [1]Silvaco Japan and [2]Hiroshima 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. Shingo[1], J. Liang[2], N. Shigekawa[2], M. Arai[3] and K. Shiojima[1], [1]Univ. of Fukui, [2] Osaka City Univ. and [3]New JRC (Japan)

PS-14-12
Photoemission Spectroscopy Measurements of p^+-Si/n-SiC and n^+-Si/n-SiC Junctions by Surface Activated Bonding
N. Shigekawa[1], J. Liang[1], M. Shingo[2], M. Arai[3] and K. Shiojima[2], [1]Osaka City Univ., [2] Univ. of Fukui and [3]New 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. Suto[1], J. Yaita[1,2], T. Iwasaki[1,2,3], M. Natal[4], S.E. Saddow[4] and M. Hatano[1,2,3], [1]Tokyo Tech, [2] JST-CREST, [3] JST-ALCA and [4]Univ. of South Florida (Japan)

PS-14-15
Trench-channel MOSFET using C-H Diamond Surface
T. Saito, M. Kobayashi, T. Yamada, D. Xu, Y. Kitabayashi, 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 mm^2 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. Kada[1], S. Onoda[2], T. Makino[2], S. Sato[2], H. Umezawa[3], Y. Mokuno[3], S. Shikata[4], O. Hanaizumi[1], T. Kamiya[2] and T. Ohshima[2], [1]Gunma Univ., [2] JAEA, [3] AIST and [4]Kwansei Gakuin Univ. (Japan)

Area 15: Photovoltaic Materials and Devices
(20 papers)

PS-15-1
Exciton and Bandgap Energies of Hybrid Perovskite $CH_3NH_3PbI_3$
Y. Nakamura[1], J. Sano[1], T. Matsushita[1,3], Y. Kiyota[2], Y. Udagawa[2], H. Kunugita[2,3], K. Ema[2,3] and T. Kondo[1,3,4], [1]Univ. of Tokyo, [2] Sophia Univ., [3] JST-ALCA and [4]RCAST, Univ. of Tokyo (Japan)

PS-15-2
Optical Pumped Lasing in Solution Proccessed 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 $MAPbI_3$ 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. Miyamoto[1], M. Sato[1], H. Itoh[1], M. Tanaka[1], A. Kato[1], S. Hasegawa[1], Y. Suzuki[2] and F. Munakata[2], [1]Chubu Univ. and [2]Tokyo City Univ. (Japan)

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

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

PS-15-7
First-principles Study of Defect Formation in Photovoltaic Semiconductor Cu_2SnS_3
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. Li[1], S.C. Chen[1], A. Yabushita[1], S.H. Tang[1], D.P. Tsai[2], H.C. Kuo[1], K.H. Wu[1] and T. Kobayashi[1], [1]NCTU and [2]Academia Sinica (Taiwan)

PS-15-9
Investigation of the Optical Absorption in Si/SiO_2 Superlattice for the Application to Solar Cells
S. Yamada[1], M. Konagai[1,2] and S. Miyajima[3], [1]JST, [2] Tokyo City Univ. and [3]Tokyo Tech (Japan)

PS-15-10
Si Nanofilm Efficient UV Solar Absorber
V. Poborchii[1], Y. Morita[1], T. Tada[1], P. Geshev[2], Z. Utegulov[3] and A. Volkov[3], [1]AIST, [2] Inst. of Thermophysics of the Russian Academy of Sciences and [3]Nazarbayev Univ. (Japan)

PS-15-11
Hydrogenated Nanocrystaline 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. Yamaguchi[1], A. Masuda[2] and K. Ohdaira[1], [1]JAIST and [2]AIST (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)