AWAD2016 Program

July 4, 2016 (Mon)

9:10-9:20	**Opening Remark**

Plenary Session

Chair: W. Y. Choi (Sogang Univ.), H. Ikeda (Shizuoka Univ.)

9:20-10:05 K-1	3D integration technology - Past, present, and future - T. Asano (Univ. of Kyushu, Japan)
10:05-10:50 K-2	Devices and circuits for spiking neural networks, B.-G. Park, H. Kim, J. Park, M.-W. Kwon, S. Jung, M.-H. Kim (Seoul National Univ., Korea)
10:50-11:35 K-3	GaN electron devices for microwave power transmission, Y. Ohno (Laser System Inc., Japan)

11:35-13:00	**Lunch**

A1: Advanced & Functional Devices I

Chair: J. Heo (Ajou Univ.), S. Takatani (WIN Semiconductors Corp.)

13:00-13:30 A1-1	**[Invited]** Collective gate modulation in Mott transistors with ultrathin VO$_2$ channels, T. Yajima (Univ. of Tokyo, Japan)
13:30-14:00 A1-2	**[Invited]** Diamond power MOSFETs using 2 dimensional hole gas, H. Kawarada (Waseda Univ., Japan)
14:00-14:15 A1-3	Frequency dispersion in capacitance-voltage characteristics of Al$_2$O$_3$/AlGaN/GaN heterostructures, M. Matys, S. Kaneki, B. Adamowicz, J. Kuzmik, T. Hashizume (Hokkaido Univ., Japan)
14:15-14:30 A1-4	Vertical tunnel field-effect transistor: Design optimization with triple metal gate layers, E. Ko, H. Lee, C. Shin (Univ. of Seoul, Korea)
14:30-14:45 A1-5	High on/off current ratio AlGaN/GaN MIS-HEMTs with ALD deposited Al$_2$O$_3$ gate dielectric using ozone as an oxidant, H. Tokuda, J. T. Asubar, M. Kuzuhara (Univ. of Fukui, Japan)
14:45-15:00 A1-6	Formation and electron transport properties of Fe$_3$Si nanodots on ultrathin SiO$_2$, H. Zhang, M. Ikeda, K. Makihara, A. Ohta, S. Miyazaki (Nagoya Univ., Japan)

B1: Sensor & Circuits I

Chair: J. S. Rieh (Korea Univ.), R. Kuroda (Tohoku Univ.)

13:00-13:30 B1-1	**[Invited]** Characterization of 4 million micro bump interconnections at 7.6-um pitch for 3D stacked 16 M pixel image sensor, Y. Takemoto, N Takazawa, M. Tsukimura, H. Saito, T. Kondo, H. Kato, J. Aoki, K. Kobayashi, S. Suzuki,Y. Gomi, S. Matsuda, Y. Tadaki (Olympus, Japan)
13:30-14:00 B1-2	**[Invited]** SiGe BiCMOS technologies with “More-than-Moore” modules for mm-wave and THz applications, M. Kaynak, A. Mai (IHP, Germany)
14:00-14:15 B1-3	Refractive index measurement of aqueous solution using silicon-on-insulator photodiode with surface plasmon antenna, H. Satoh, T. Aso, S. Iwata, A. Ono, H. Inokawa (Shizuoka Univ., Japan)
14:15-14:30 B1-4	Single-electron detectable CMOS image sensor with reset-gate-less pixel, M.-W. Seo, S. Kawahito (Shizuoka Univ., Japan)
14:30-14:45 B1-5	Novel inductor current to digital converter and its concept evaluation, K. Itoh, M. Muraguchi, T. Endoh (Tohoku Univ., JST-ACCEL, Japan)
14:45-15:00 B1-6	A low-power and high performance double-edge triggered D flip-flop for organic integrated circuits, H. T. Pham, T. T. Dao, L. P.-Nguyen, T. V. Nguyen (Hanoi Univ. Sci. & Tech., Univ. of Transport & Comm., Vietnam)

15:00-15:15 **Coffee Break**

A2: TFT & Organic Devices

Chair: H. I. Kwon (Chung-Ang Univ.), F. Hirose (Yamagata Univ.)

15:15-15:45 A2-1	**[Invited]** Development and examination of OPDKs for organic transistor electronics, T. T. Dao, H. T. Pham, T. V. Nguyen (Univ. Transport & Commun., Vietnam)
15:45-16:00 A2-2	Fabrication and characterization of organic thin film transistors with electrodes of highly doped polymer, D. Tadaki, T. Ma, J. Zhang, S. Iino, A. Hirano-Iwata, Y. Kimura, R. A. Rosenberg, M. Niwano (Tohoku Univ., JST-CREST, Tokyo Univ. of Tech., Argonne National Laboratory, Japan)
16:00-16:15 A2-3	Effect of nitrogen-doped LaB$_6$ interfacial layer on device characteristics of pentacene-based OFET, Y. Maeda, S. Ohmi, T. Goto, T. Ohmi (Tokyo Inst. of Tech., Tohoku Univ., Japan)
16:15-16:30 A2-4	Low-cost low-temperature poly-Si thin film transistor, T. Noguchi, T. Okada (Univ. of Ryukyus, Japan)

16:30-16:45 A2-5	Exfoliation process and analytic model for thickness-controlled separation of single-crystalline semiconductor layers, H. Park, C. Lim, C.-J. Lee, J. Kang, J. Kim, S. Jung, H. Park (Kyungpook National Univ., Dankook Univ., Korea)

B2: MOSFET & Process Technology I

Chair: W. Y. Choi (Sogang Univ.), T. Hiramoto (Univ. of Tokyo)

15:15-15:45 B2-1	**[Invited]** Possibility of super steep subthreshold slope PN-body tied SOI FET for ultra low power IoT applications, J. Ida (Kanazawa Inst. Tech., Japan)
15:45-16:00 B2-2	A study on thermal stability improvement in Ni germanide/p-Ge using Co interlayer for Ge MOSFETs, G.-H. Shin, J. Kim, M. Li, J. Lee, G.-W. Lee, J. Oh, H.-D. Lee (Chungnam National Univ., Yonsei Univ., Korea)
16:00-16:15 B2-3	$Si_{1-x}Ge_x$ positive feedback field-effect transistor with steep subthreshold swing for low-voltage operation, S. Hwang, H. Kim, D. Kwon, J.-H. Lee, B.-G. Park (Seoul National Univ., Korea)
16:15-16:30 B2-4	Formation of atomically flat Si(100) surface by annealing in Ar/H_2 ambient and its effect on MIS device application, S. Kudoh, S. Ohmi (Tokyo Inst. Tech., Japan)
16:30-16:45 B2-5	Effect of forming-gas rapid thermal annealing on contact resistance reduction between Ni-InGaAs and n-InGaAs, J. Lee, M. Li, J. Kim, G. Shin, G. Lee, J. Oh, H.-D. Lee (Chungnam National Univ., Yonsei Univ., Korea)

16:45-17:00	**Coffee Break**

A3: Photon & Energy Related Devices I

Chair: D. Ahn (Kookmin Univ.), M. Arai (New Japan Radio)

17:00-17:30 A3-1	**[Invited]** *In situ* observation of direct electron transfer reaction of cytochrome *c* immobilized on ITO electrode modified with slab optical waveguide spectral change, N. Matsuda, H. Okabe (AIST, Japan)
17:30-18:00 A3-2	**[Invited]** High performance thin film perovskite solar cells employing combustion-processed Cu:NiO_x hole transport layer, J.-W. Jung (Kyung Hee Univ., Korea)
18:00-18:15 A3-3	Exfoliated crystalline thin-film tandem solar cell with high efficiency, Z. Kiaee, S.-K. Joo (Seoul National Univ., Korea)
18:15-18:30 A3-4	Design of infrared emitter device for infrared scene projector, Y. B. Shin, K. W. Park, I.-K. Kang, H. C. Lee (KAIST, Korea)

18:30-18:45 A3-5	The method for high hole injection into light-emitting diodes by trench patterning and *p*-AlGaN regrowth, S. Kim, S. Kim, S. Cho, B.-G. Park (Seoul National Univ., Samsung Electronics, Gachon Univ., Korea)

B3: Memory I

Chair: S. Cho (Gachon Univ.), T. Sugii (Fujitsu)

17:00-17:30 B3-1	**[Invited]** Theoretical studies on superlattice $GeTe/Sb_2Te_3$ phase change memories, K. Shiraishi, H. Shirakawa, M. Takato, M. Araidai (Nagoya Univ., Japan)
17:30-17:45 B3-2	Grain boundary effects of data retention and endurance characteristics in ferroelectric field-effect transistor, J. H. Park, S. K. Joo (Seoul National Univ., Korea)
17:45-18:00 B3-3	Investigation of Nb-Zr-O thin film using sol-gel coating, J. Kim, K. Haga, E. Tokumitsu (JAIST, Japan)
18:00-18:15 B3-4	Embedding of Ti nanodots into SiO_x and its impact on resistance switching behaviors, Y. Kato, A. Ohta, M. Ikeda, K. Makihara, S. Miyazaki (Nagoya Univ., Japan)
18:15-18:30 B3-5	Self-compliance bipolar resistive switching in $Ni/Ti/SiO_x/Si$ structure, S. Kim, M.-H. Kim, T.-H. Kim, S. H. Bang, D. K. Lee, S. Cho, B.-G. Park (Seoul National Univ., Korea)
18:30-18:45 B3-6	Characteristics of floating-body capacitorless 1T-DRAM memory, S. Kwon, I.-S. Park, M. Choi, S. Cristoloveanu, J.-Ahn, Y. T. Kim (Hanyang Univ., IMEP-LAHC, Korea Inst. of Sci. & Tech., Korea, France)

July 5, 2016 (Tue)

A4: Photon & Energy Related Devices II

Chair: J. Oh (Yonsei Univ.), T. Noguchi (Univ. of Ryukyus)

9:00-9:30 A4-1	**[Invited]** Simulation and characterization of electronic and photonic devices using silicon nanowire structure, J.-S. Yoon, S. Lee, S. Yoon, K. Kim, T. Rim, C.-K. Baek (POSTECH, Korea)
9:30-10:00 A4-2	**[Invited]** Germanium photonic devices in silicon photonics, Y. Ishikawa (Univ. of Tokyo, Japan)
10:00-10:15 A4-3	Photoluminescence characteristics after phosphorus implantation onto in-situ doped Ge-on-Si for CMOS-compatible Ge lasers, J. Baek, B. Ki, B. Lee, Y.-H. Cho, D. Nam, J. Oh (Yonsei Univ., Yonsei Inst. of Convergence Tech., KAIST, Inha University, Korea)

B4: MOSFET & Process Technology II

Chair: S. M. Hong (GIST), Y. Ono (Shizuoka Univ.)

9:00-9:30 B4-1	**[Invited]** Transient device simulation using a deterministic Boltzmann equation solver, S.-M. Hong (GIST, Korea)
9:30-9:45 B4-2	Simulation of nanowire *p*-type metal-oxide-semiconductor field-effect transistor (PMOSFET) having SiGe channel on Si core at different Ge fractions, E. Yu, S. Cho (Gachon Univ., Korea)
9:45-10:00 B4-3	Effects of annealing process on the electrical properties of HfN$_x$ gate stacks with bilayer gate insulator formed by ECR plasma sputtering, N. Atthi, S. Ohmi (Tokyo Inst. Tech., Japan)
10:00-10:15 B4-4	Impact of trap level fluctuation attributable to the trap-detrap of sole electron on the modeling of RTN phenomena, P.-J. J. Lin, C.-W. K. Yao, Z.-A. A. Lee, H.-J. V. Lin, H. Watanabe (National Chiao Tung Univ., Taiwan)

10:15-10:30 **Coffee Break**

A5: Advanced & Functional Devices II

Chair: H. Y. Cha (Hongik Univ.), J. Kotani (Fujitsu)

10:30-11:00 A5-1	**[Invited]** Recent advances in gallium oxide device technologies, M. Higashiwaki, M. H. Wong, K. Konishi, K. Sasaki, K. Goto, Q. T. Thieu, R. Togashi, H. Murakami, Y. Kumagai, B. Monemar, A. Kuramata, T. Masui, S. Yamakoshi (NICT, Tamura Co., Tokyo Univ. Agri. Tech., Linkoping Univ., Japan, Sweden)
11:00-11:30 A5-2	**[Invited]** Role of C doping in low-carrier n-GaN epitaxial layers for high-power Schottky diode development, K. Shiojima (Univ. of Fukui, Japan)
11:30-11:45 A5-3	Thickness dependence of doping characteristic in Al doping into 4H-SiC by laser irradiation to deposited Al film, R. Sumina, A. Ikeda, H. Ikenoue, T. Asano (Kyushu Univ., Japan)
11:45-12:00 A5-4	Design and analysis of fin-type AlGaN/GaN MIS-HEMTs using dual material gate (DMG) structure, Y. I. Jang, Y. J. Yoon, R. H. Kwon, M. S. Jo, I. M. Kang (Kyungpook National Univ., Korea)
12:00-12:15 A5-5	Sub-THz photonic double-mixing conversion using transistors, A. Satou, K. Sugawara, G. Tamamushi, T. Watanabe, A. Dobroiu, T. Suemitsu, H. Fukidome, M. Suemitsu, V. Ryzhi, K. Iwatsuki, S. Kuwano, J. Kani, J. Terada, T. Otsuji (Tohoku Univ., NTT, Japan)
12:15-12:30 A5-6	Performance improvement of the gate-last Si-based TFET with atomic layer deposited HfAlO$_x$ gate dielectrics, D. Lim, H. H. Han, Y. J. Kim, C. Choi (Hanyang Univ., Korea)

12:30-12:45 A5-7 Vacuum annealing and passivation of HfS_2 FET for mitigation of atmospheric degradation, V. Upadhyaya, T. Kanazawa, Y. Miyamoto (Tokyo Inst. Tech., Japan)

B5: Sensor & Circuits II

Chair: C. H. Cho (Hongik Univ.), K. Maezawa (Univ. of Toyama)

10:30-11:00 B5-1 **[Invited]** Mid-infrared absorption in InGaN nanodisks embedded in AlGaN/GaN core-shell nanowires, J. Heo, A. Akter, Y. Park (Ajou Univ., Korea)

11:00-11:30 B5-2 **[Invited]** 300-GHz ASK transmitter using InP-HEMT MMIC technology, H. Hamada, T. Kosugi, H.-J. Song, H. Matsuzaki, A. E. Moutaouakil, H. Sugiyama, M. Yaita, H. Nosaka (NTT, Pohan Univ. Sci. Tech., Japan, Korea)

11:30-11:45 B5-3 Investigation on sensitivity of square-law detectors for radio wave imaging, K. Sekiguchi, Y. Mukai, Y. Miyaji, H. Kanaya, T. Asano (Kyushu Univ., Japan)

11:45-12:00 B5-4 Room-temperature atomic layer deposition of SnO_2 by using tetramethyl tin and plasma-excited humidified argon, F. Hirose, K. Tokoro, M. Miura, K. Kanomata, B. Ahmmad, S. Kubota (Yamagata Univ., Japan)

12:00-12:15 B5-5 Autonomous neuromorphic system with four-terminal Si-based synaptic devices, J. Park, H. Kim, M.-W. Kwon, S. Hwang, B.-G. Park (ISRC, Korea)

12:15-12:30 B5-6 Effect of MTJ resistance fluctuations on synapse stability of MTJ-based nonvolatile neuron circuit for high-speed object recognition, Y. Ma, T. Endoh (Tohoku Univ., JST-ACCEL, Japan)

12:30-12:45 B5-7 Robust common gate amplifier using 75nm InP HEMT, M. Sato, S. Shiba, Y. Kawano, T. Takahashi, T. Suzuki, Y. Nakasha, T. Iwai, N. Hara (Fujitsu Lab., Japan)

12:45-14:00 **Lunch**

14:00-17:00 **Excursion**

17:00-18:45 **Poster session**

Chair: M. Shin (KAIST), M. Arai (New Japan Radio), H. Ikeda (Shizuoka Univ.)

P-1 Improvement of electrical properties AlGaN/GaN MIS HEMTs with Al_2O_3 gate insulator, G.-H. Choi, M.-J. Kang, H.-Y. Cha, K.-S. Seo (Seoul National Univ., Hongik Univ., Korea)

P-2	High quality pseudo-ALD silicon oxynitride (SiON) for E-mode AlGaN/GaN MIS-HEMTs, M.-J. Kang, G.-H. Choi, H.-Y. Cha, K.-S. Seo (Seoul National Univ., Hongik Univ., Korea)
P-3	Analysis of the optical response due to the deep trap level in AlGaN/GaN HFET device using device simulator, K. Lee, W. Choi, T. Suzuki, Y. Ohno (Nihon Synopsys G.K., LaserSystems Inc., Japan)
P-4	Threshold voltage engineering in AlGaN/GaN MISHEMT, I.-H. Hwang, H.-Y. Cha, K.-S. Seo (Seoul National Univ., Hongik Univ., Korea)
P-5	Multi-layer substrate based power semiconductor package for low parasitic inductance and high heat transfer, D. Y. Jung, H.-G. Jang, C. H. Jun, M. Kim, H. S. Lee, S. C. Ko, E. S. Nam (ETRI, Korea)
P-6	Design and analysis of a boost converter to verify power semiconductor performance, H.-G. Jang, D. Y. Jung, C. H. Jun, H. S. Lee, M. Kim Y. Park, S.-C. Ko, E. S. Nam (ETRI, Korea)
P-7	Fabrication and Investigation of 4H-SiC MOS Capacitors, M.-W. Ha, Y. J. Jo, K. Choi, J. Kwag, J. H. Moon, N.-K. Kim, T. J. Park (Myongji Univ., Hanyang Univ., Korea Electrotech. Res. Inst., Korea)
P-8	Epitaxial junction termination extension (Epi-JTE) for SiC power devices, D. Cho, J. Won, K. Park, K. Kim (Sogang Univ., ETRI, Korea)
P-9	Effects of nanowire fin structure on AlGaN/GaN FinFETs, M. Choi, S. H. Kwon, I. S. Park, J. Ahn, J.-H. Lee, Y. T. Kim (Hanyang Univ., Kyungpook National Univ., KIST, Korea)
P-10	Design of InGaAs-based junctionless field-effect transistors with hetero-gate dielectric structure for improvement of direct-current and radio-frequency performance, S. H. Lee, Y. J. Yoon, J. H. Seo, M. S. Cho, J.-H. Lee, I. M. Kang (Kyungpook National Univ., Korea)
P-11	Low damage formation process of GaN metal-insulator-semiconductor structure for transistor application, H. Okada, Y. Kondo, H. Sekiguchi, K. Yamane, A. Wakahara, M. Furukawa (Toyohashi Univ. of Tech., Aries Res. Group, Japan)
P-12	MOS-HFET fabricated on AlGaN/GaN-on-Si(110) grown by NH_3 MBE, S.-W. Han, Y-K. Noh, J.-E. Oh, K.-S. Seo, H.-Y. Cha (Hongik Univ., Hanyang Univ., IV Works, Seoul National Univ., Korea)
P-13	Impulse sensitivity function study of the phase noise in resonant tunneling diode oscillators, K. Maezawa, M. Mori (Univ. of Toyama, Japan)
P-14	A study of performance in biaxially strained single-layer black phosphorus FET, J. Seo, J. Lee, J. H. Oh, M. Shin (KAIST, Korea)
P-15	Methodology for extracting high accuracy capture and emission time constants of RTS noise using statistical analysis, D. Oh, S. Kwon, H.-S. Song, H.-D. Lee (Chungnam National Univ, Korea)

P-16	Characteristics of PdYb-silicide layer formed by silicidation of Pd/Yb/Si(100) stacked structures, S. Ohmi, M. Chen, W. Zuo, Y. Masahiro (Tokyo Inst. of Tech., Tanaka Kikinzoku Kogyo, Japan)
P-17	AlGaN/GaN-on-Si power devices with Mo/Au gate, H.-S. Kim, S.-W. Han, K.-S. Seo, H.-Y. Cha (Hongik Univ., Seoul National Univ, Korea)
P-18	Optimization of double gate tunneling field effect transistor (TFET) with sidewall dielectric layer, X. Wang, A. Ali, I. Kwon, J. Jang, D. Seo, I. H. Cho (Myongji Univ., Korea)
P-19	Design and characterization of GeSn junctionless tunneling FinFET, J. Lee, Yongbeom, S. Cho (Gachon Univ., Korea)
P-20	InGaAs-based tunneling field-effect transistor with stacked dual-metal gate with pnpn structure for high performance, R. H. Kwon, Y. J. Yoon, J. H. Seo, Y. I. Jang, M. S. Jo, I. M. Kang (Kyungpook National Univ., Korea)
P-21	A high sensitivity CMOS image sensor with double-layered microlenses, D. Kang, J. Park, Y. Kim (Dong-A Univ., Korea)
P-22	Integrated pressure-sensor system adapted to the higher resolution, S.-H. Hong, T.-W. Heo, C.-H. Cho (Hongik Univ., Korea)
P-23	Shear stress sensors by the mid-point measurements in ±45° semiconductor resistor-sensor pair, C.-H. Cho, S.-H. Hong, H.-Y. Cha (Hongik Univ., Korea)
P-24	Design of a 4th order delta-sigma modulator using subthreshold OP-Amp, J.-H. Seong (Inha Univ., Korea)
P-25	Design of a 10-bit 2-bit/step SAR ADC with three comparators, S.-H. Lee, K.-S. Yoon (Inha Univ., Korea)
P-26	A dual mode hysteretic buck CMOS converter with a fixed switching frequency, T.-H. Lee (Inha Univ., Korea)
P-27	A 4.2-5.5 GHz adaptable reference-less frequency locked loop with small frequency offset and one-time calibration, G. Lee, C. Yu, J. Burm (Sogang Univ., Korea)
P-28	Resonant plasma-wave transistor for terahertz emitter under realistic boundary condition, J. Y. Park, S.-H. Kim, K. R. Kim (Ulsan National Inst. of Sci. & Tech., Korea)
P-29	Theoretical analysis of oscillation modes in antenna-integrated resonant tunneling diodes for broadband wireless transmitters, N. Okumura, K. Asakawa, M. Suhara (Tokyo Metropolitan Univ., Japan)
P-30	Demonstration of X-band 10W 4H-SiC IMPATT diode, S. Ono, M. Arai (New Japan Radio, Japan)
P-33	Suppression of leakage current with overlap and off-set region at source-gate/drain-gate junction on MILC poly bottom gate TFTs, K. H. Seok, S. K. Lee, H. J. Chae, K. J. Seung (Seoul National Univ., Korea)

P-35	A novel split channel thin-film transistor combining gate overlapped lightly doped spacer and raised source/drain structure, A.-C. Li, J.-L. Chen, F.-T. Chien (Feng-Chia Univ., Taiwan)
P-36	A novel field-plate source drain double-channel polycrystalline-silicon thin-film transistor with raised source/drain, J.-L. Chen, A.-C. Li, F.-T. Chien (Feng-Chia Univ., Taiwan)
P-38	The impact of light-illumination in p-channel SnO thin-film transistors, J.-H. Lee, Y.-J. Choi, C.-Y. Jeong, H.-I. Kwon (Chung-Ang Univ., Korea)
P-39	A 1.45-2.9 GHz all digital phase locked loop with single stage TDC in 0.11 μm CMOS, C.-Z. Yu, S. Oh, E. Sa, G. Lee, H. Park, J. Burm (Sogang Univ., Korea)
P-41	Time domain charge pumping on silicon-on-insulator MOS transistors, T. Watanabe, M. Hori, Y. Ono (Univ. of Toyama, Shizuoka Univ., Japan)
P-43	Mutually-actuated nano-electromechanical (MA-NEM) memory switches for low pull-in voltage, H. M. Lee, W. Y. Choi (Sogang Univ., Korea)
P-44	Room-temperature atomic layer deposition for nanoparticle coating, K. Kikuchi, M. Miura, K. Kanomata, B. Ahmmad, S. Kubota, F. Hirose (Yamagata Univ., Japan)
P-45	Mixed organic cation effects in mixed-halide perovskite photovoltaic devices, S. Lee, D.-W. Kang (Cheongju Univ., Korea)
P-46	Effects of various non-polar solvent washing treatment on characteristics of solution-processed mixed halide perovskite solar cells, S. Yoon, D.-W. Kang (Cheongju Univ. Korea)
P-47	Phonon-drag contribution to Seebeck coefficient in p-type Si, Ge and $Si_{1-x}Ge_x$, V. Maninuthu, M. Omprakash, Y. Suzuki, F. Salleh, M. Airvanandhan, Y. Kamakura, Y. Hayakawa, H. Ikeda (Shizuoka Univ., Univ. of Malaya, Anna Univ., Osaka Univ., Japan, Malaysia, India)
P-48	Estimation of phonon-drag contribution to Ga and P co-doped thin Si-on-insulator layer, Y. Suzuki, F. Salleh, Y. Kamakura, H. Ikeda (Shizuoka Univ., Univ. of Malaya, Osaka Univ., Japan, Malaysia)
P-49	SiN-based resistive random-access memory inserting tunnel barrier, S. Kim, M.-H. Kim, T.-H. Kim, S. H. Bang, S. Cho, B.-G. Park (Seoul National Univ., Korea)

19:00-21:00 **Banquet**

July 6, 2016 (Wed)

A6: Photon & Energy Related Devices III

Chair: D. Nam (Inha Univ.), H. Ikeda (Shizuoka Univ.)

9:00-9:30 A6-1	**[Invited]** Semiconductor process for study of nanostructure silicon anode in lithium-ion batteries, S. W. Lee (Nanyang Tech. Univ., Singapore)
9:30-9:45 A6-2	Lateral thin-film poly-Si solar cell prepared by low temperature Ni silicide-induced crystallization, Z. Kiaee, H. J. Chae, J. H. Park, H. Y. Kim, K. H. Seok, S. K. Lee, J. S. Han, S.-K. Joo (Seoul National Univ., Korea)
9:45-10:00 A6-3	Light emission from strained Ge nanowires coupled with high-Q optical cavities, D. Nam, J. Petykiewicz, J. Vuckovic, K. Saraswat (Inha Univ., Stanford Univ., Korea, USA)
10:00-10:15 A6-4	Read-in integrated circuit for infrared scene projector with refreshing technique, M. J. Cho, U. Shin, Y. M. Jo, H. C. Lee (KAIST, Korea)

B6: Sensor & Circuits III

Chair: M. W. Ha (Myongji Univ.), M. Suhara (Tokyo Metropolitan Univ.)

9:00-9:30 B6-1	**[Invited]** Terahertz integrated circuits for imaging applications, J.-S. Rieh, J. Yun, D. Yoon, J. Kim, K. Song, M. Kaynak, B. Tillack (Korea Univ., Korea)
9:30-9:45 B6-2	On-chip optical filter technology with low extinction coefficient SiN for ultraviolet – visible – near infrared light waveband spectral imaging, Y. Koda, Y. R. S. C. da Silva, L. Julien, D. Sawada, T. Goto, R. Kuroda, S. Shigetoshi (Tohoku Univ., Japan)
9:45-10:00 B6-3	Phased array transmitter for automotive radar with built-in self-test system in 65-nm CMOS technology, I. Soga, Y. Yagishita, H. Matsumura, Y. Kawano, T. Iwai, T. Shimura, Y. Ohashi (Fujitsu Lab., Japan)
10:00-10:15 B6-4	Atmospheric pressure micro-thermal-plasma-jet irradiation on amorphous germanium strips and its application to thin film transistor fabrication, S. Higashi, H. Harada, T. Nakatani (Hiroshima Univ., Japan)

10:15-10:30 **Coffee Break**

A7: Advanced & Functional Devices III

Chair: J. S. Yoon (Postech), Y. Yamamoto (Mitsubishi Electric.)

10:30-11:00 A7-1	**[Invited]** Low-loss SiC power devices developments in AIST, S. Harada, R. Kosugi, Y. Yonezawa, K. Fukuda, H. Okumura (AIST, Japan)

11:00-11:15 A7-2	A high performance low-voltage power MOSFETs realized by laser annealing process, Y. Chen, T. Okada, T. Noguchi (Univ. of Ryukyus, Japan)
11:15-11:30 A7-3	Enhanced thermal oxidation using $SrTi_{1-x}Mg_xO_{3-\delta}$ catalyst and its application to 4H-SiC, L. Li, A. Ikeda, T. Asan (Kyushu Univ., Japan)
11:30-11:45 A7-4	Study on source/drain metal contact in a poly-Si reconfigurable field effect transistor having double-gate structure, J.-H. Eum, J.-M. Park, J.-H. Bae, W.-M. Kang, J.-H. Lee (Seoul National Univ., Korea)
11:45-12:00 A7-5	A fitting model for extraction of intrinsic transistor parameters in graphene FETs, J. Mitsushio, G. Tamamushi, K Sugawara, A. Satou, T. Suemitusu, H. Fukidome, M. Suemitsu, T. Otsuji (Tohoku Univ., Japan)
12:00-12:15 A7-6	Triple-gate tunnel FETs encapsulated with an epitaxial layer for high current drivability, J. W. Lee, J. H. Park, W. Y. Choi (Sogang Univ., Korea)
12:15-12:30 A7-7	*Ab initio* calculation of effective density of states of GeSn and its application to evaluate the current drivability of tunneling field-effect transistor with GeSn source junction, Y. Cho, J. Lee, S. Cho (Gachon Univ., Korea)

B7: Memory II

Chair: I. H. Cho (Myongji Univ.), S. Ohmi (Tokyo Tech.)

10:30-11:00 B7-1	**[Invited]** The overview of the reliability physics of flash memory, R. Shirota, P.-Y. Wang (National Chiao Tung Univ., Winbond Electronics, Taiwan)
11:00-11:15 B7-2	Characterization of the vertical position of the trapped charge in charge-trap flash memory, S. Kim, D.-B. Kim, S.-H. Lee, S.-K. Park, S. Cho, B.-G. Park (Seoul National Univ., Korea)
11:15-11:30 B7-3	A digital delay-locked loop for high-speed DRAMs, J. Yun, J. Kim (Hongik Univ., Korea)
11:30-11:45 B7-4	CMOS analog integrate-and-fire neuron circuit for driving memristor based on RRAM, M.-W Kwon, J. Park, H. Kim, S. Hwang, J.-H. Lee, B.-G. Park (Seoul National Univ., Korea)
11:45-12:00 B7-5	Nonvolatile nanoelectromechanical memory switches for low-power and high-speed CMOS-NEM hybrid reconfigurable logic, Y. J. Kim, H. S. Kwon, W. Y. Choi (Sogang Univ., Korea)
12:00-12:15 B7-6	Investigation of channel-alignment effect on arch-structured gate stacked array (GSTAR) 3-D NAND flash memory, M.-H. Baek, D.-B. Kim, S.-H. Kim, S.-H. Lee, B.-G. Park (Seoul National Univ., Korea)

12:40-12:45	**Closing Remark**