The Conference Theme

“Electron Devices for Future Safe and Comfortable Society”

Table of Contents

5/13 ……………………………………

Tutorials (in Japanese)

9:40-10:40 Growth and Device Applications of Zinc Oxide
S.Sasa, K. Koike, M. Yano, T. Maemoto, M. Inoue (Osaka Institute of Technology)

10:50-11:50 Low Power Technology for CMOS-LSI
H. Shinohara (STARC)

Opening

13:10-13:20 Opening Remarks by Y. Akasaka (Osaka University)

Keynote Speeches (I)

13:20-14:00

14:00-14:40

Break (14:40-14:55)

Poster Session
Short Presentation (5/13, 14:55-16:52)

PA-1 **(p.68)** Crystallinity of Double-Layered Polycrystalline Silicon Thin Films Formed by Green Laser Annealing
K. Yamasaki, M. Horita, Y. Sugawara, T. Yamashita, Y. Uraoka (Nara Institute of Science Technology)

PA-2 **(p.70)** Crystallization of a-Ge and a-Si Film by Soft X-ray Irradiation
N. Isoda[1], T. Inoue[2], S. Amano[2], A. Heya[1], K. Kanda[2], N. Matsuo[1], S. Miyamoto[2], T. Mochizuki[2] ([1]Department of Material Science and Chemistry, University of Hyogo, [2]LASTI, Universy of Hyogo)

PA-3 **(p.72)** Low-temperature Crystallization of Ge thin films with Ni ferritins
T. Imazawa[1], Y. Tojo[1], M. Uenuma[1,2], H. Watanabe[2,3], I. Yamashita[1,2,4], Y. Uraoka[1,2] ([1]Nara Institute of Science and Technology, [2]CREST, [3]Osaka University, [4]Panasonic)

PA-4 **(p.74)** Location Controls of Crystallized Areas in Silicon Films Utilizing Cage Shape Protein
Y. Tojo[1], A. Miura[1,2], I. Yamashita[1,3,4], Y. Uraoka[1,4] ([1]Nara Institute of Science and Technology, [2]National Chiao Tung University, [3]Panasonic, [4]CREST)

PA-5 **(p.76)** Optical Response of Si-Quantum-Dots/NiSi-Nanodots Hybrid Stacked Floating Gate
N. Morisawa, M. Ikeda, S. Nakanishi, A. Kawanami, K. Makihara, S. Miyazaki (Hiroshima University)

PA-6 **(p.78)** Electrical Characteristic in the High Temperatures for Thin-Film Transistor with Very Thin SiNx Film Formed at Source and Drain Region
T. Kobayashi[1], N. Matsuo[1], A. Heya[1], Y. Omura[2], S. Yokoyama[3] ([1]University of Hyogo, [2]Kansai University, [3]Hiroshima University)

PA-7 **(p.80)** Contactless Frequency Domain Lifetime Characterization for Semiconductor Wafers
K. Aoyagi, H. Yoshida (University of Hyogo)

PA-8 **(p.82)** The Influence of N Doping on the Properties of LaAlO Films
M. Honjo, N. Komatsu, C. Kimura, H. Aoki, T. Sugino (Osaka Univerisity)

PA-9 **(p.84)** Microscopic Interface Trap Characterization of Gate Stacks with Ultrathin High-K Films by Scanning Capacitance Microscopy
J. Fujieda, S. Kuge, H. Yoshida (University of Hyogo)

PA-10 **(p.86)** Characterization of Interface Traps in Ultrathin Gate Stacks by Contactless C-V Method
A. Hashimoto, K. Aoyagi, H. Yoshida (University of Hyogo)

PA-11 **(p.88)** Evaluation of Turn-on Transient Characteristics of Poly-Si TFT
T. Ota[1], J. Hayashi[1], H. Tsuji[1,2], Y. Kamakura[1], K. Taniguchi[1] ([1]Osaka University, [2]JST-CREST)

PA-12 **(p.90)** Reduction of self-heating effect in silicon MOSFETs on directly bonded Si-on-SiC wafer with high heat conductance
H. Shimizu, R. Araki, H. Shinohara, H. Kinoshita, M. Yoshimoto (Kyoto Institute of Technology)

PA-13 **(p.92)** Effects of Source and Drain Resistance on Drain Conductance Parameter for 20nm MOSFET
Y. Nakade, A. Hiroki, F. Inoue, K. Tomiyama (Kyoto Institute of Technology)

PA-14 **(p.94)** Analysis of CMOS Inverter Delay using λ-V_G MOSFET Model Down to 20nm Era
F. Inoue, A. Hiroki, K. Tomiyama, Y. Nakade (Kyoto Institute of Technology)

PA-15 **(p.96)** Analysis of Static Noise Margin for a 20nm CMOS SRAM Cell
K. Tomiyama, A. Hiroki, F. Inoue, Y. Nakade (Kyoto Institute of Technology)

PA-16 **(p.98)** Performance Evaluation of 1-V Deep Sub-micron Dynamic-Threshold SOI MOSFET
D. Ino, T. Tochio, Y. Omura (Kansai University)

PA-17 (p.100) Optimal Design of 2500V Non-punchthrough Type IGBT
E. G. Kang, Y. S. Hong, H. Y. Kang, J. H. Lee, S. B. Go (Far East Univeristy)

PA-18 (p.102) Experimental Study for Tank Circuit Control In Super-Regenerative Transponder
A. Itoh, H. Takeuchi, Y. Iida (Kansai Univeristy)

PA-19 (p.104) Advanced Low-Power DC-DC Converter Control Circuit for Portable Solar-Cell Battery
N. Hashimoto, Y. Omura (Kansai Univerisity)

PA-20 (p.106) Simple and Small Silicon Optical Switch with Silicon Waveguide as an Optical Control Gate
N. Wakama, T. Aki, Y. Iida (Kansai Univerisity)

PB-1 (p.108) Numerical Simulation of Electron Motion in Graphene with Vacancies
A. Tam[1], T. Kitayama[2], N. Mori[2] （[1]UCLA, [2]Osaka University）

PB-2 (p.110) Influence of electromagnetic field on the real-time electronic dynamics in graphene
K. Saeki, M. Ogawa, S. Souma (Kobe University)

PB-3 (p.112) Modulated Phonon Scattering in Graphene Nano-ribbons
T. Kitayama, H. Minari, N. Mori (Osaka Univeristy)

PB-4 (p.114) Chemical Bonding Features at TiO$_2$/Pt Interface and Their Impact on Resistance-Switching Properties
Y. Goto, A. Ohta, H. Murakami, S. Higashi, S. Miyazaki （Hiroshima University）

PB-5 (p.116) Optical Absorption Properties of RF-Sputtered β-FeSi$_2$ Thin Films
N. Kawabata, M. Kawashita, K. Nakamura (Kansai Univerisity)

PB-6 (p.118) Effect of molecular vibration on electronic transport through single molecule devices
A. Morihara, M. Ogawa, S. Souma (Kobe University)

PB-7 (p.120) RF-Sputtered BST Film Microwave Tunable Device : Comparison between MgO(111) and (100) Substrate
K. Seki[1], P. Lorchirachoonkul[1], T. Yamada[2], T. Kamo[2], A. Kimura[1], K. Yamashita[1], H. Funakubo[2], and M. Noda[1] ([1]Kyoto Institute of Technology, [2]Tokyo Institute of Technology)

PB-8 (p.122) Fabrication and Characterization of Zinc Oxide Thin-Film Transistors at Room Temperature on Glass and Polyethylene Napthalate Substrates
T. Tachibana, T. Yoshida, T. Maemoto, S. Sasa, M. Inoue (Osaka Institute of Technology)

PB-9 (p.124) Electrical Properties of $SrTa_2O_6$ Thin Films fabricated by Sol-Gel Method
L. Lu[1], T. Nishida[1], K. Uchiyama[1], Y. Uraoka[1,2] ([1]Nara Institute of Science and Technology, [2]CREST)

PB-10(p.126) A Single-CMOS Oscillator and Potential Application to Alcohol-Detection Sensors
K. Hanajima, S. Tamura, Y. Omura (Kansai University)

PC-1 (p.128) Intense THz radiation from InAs epitaxial thin films grown on a GaAs
Y. Ishibasi, S. Umino, K. Takeya*, T. Maemoto, S. Sasa, M. Inoue, M. Tonouchi* (Osaka Institute of Technology, *Osaka University)

PC-2 (p.130) Radiation Hardness of Single-Crystalline Zinc Oxide Films Grown by Molecular Beam Epitaxy
T. Amano[1], K. Koike[1], S. Sasa[1], M. Yano[1], S. Gonda, R. Ishigami[2], K. Kume[2] ([1]Osaka Institute of Technology, [2]The Wakasa Wan Energy Research Center)

PC-3 (p.132) Alpha Particle Measurements by an InSb Radiation Detector made of Liquid Phase Epitaxially Grown Crystal
Y. Sato, Y. Morita, T. Harai and I. Kanno (Kyoto University)

PC-4 (p.134) Micro-fabrication and characterization of an ion-sensitive ZnO-based transistor on a glass substrate

K. Tsuji, K. Koike, K. Ogata, S. Sasa, M. Inoue, M. Yano (Osaka Institute of Technology)

PC-5 (p.136) Ballistic three-terminal devices based on T-branch junctions in InAs/AlGaSb heterostructures
H. Nishioka, T. Maemoto, S. Sasa, M. Inoue (Osaka Institute of Technology)

PC-6 (p.138) Electrical characteristics of AlSiON/AlN/4H-SiC MIS structure at high temperature
N. Komatsu, M. Honjo, C. Kimura, H. Aoki, T. Sugino (Osaka University)

PC-7 (p.140) Monte Carlo simulation of drift and Hall mobilities in n-type GaN
T. Kimizu, K. Kodama and M. Kuzuhara (University of Fukui)

PC-8 (p.142) Reduced current collapse of AlGaN/GaN HFET with Al_2O_3 passivation
N. Yamada, H. Chikaoka, H. Tokuda and M. Kuzuhara (University of Fukui)

PC-9 (p.144) Improved charge-control model for AlGaN/GaN HEMTs
Y. Naito, H. Tokuda and M. Kuzuhara (University of Fukui)

5/14 ……………………………………

Keynote Speeches (II)

9:20-10:00

K-3 **(p.20)** Future Prospects of Nano-Scale Transistors for VLSI Applications
T. Hiramoto (The University of Tokyo)

Technical Session A (Silicon Devices and Related)

10:00-10:20

A-1 **(p.30)** Study of Electroless Plating for Low Resistance 3D Interconnect
F. Inoue[1], T. Yokoyama[1], H. Miyake[1], S. Tanaka[2], K. Yamamoto[2], S. Shingubara[1] ([1]Kansai University, [2]National Institute of Communication Technology)

10:20-10:40

A-2 **(p.32)** Sub-threshold Characteristics of High-k/Metal Gate MOSFET
T. Imamoto, T. Sasaki, T. Endoh (Tohoku University)

Break (10:40-10:50)

10:50-11:10

A-3 **(p.34)** Dependency of Driving Current on Channel Width in High-k/Metal Gate MOSFET
T. Sasaki, T. Imamoto, T. Endoh (Tohoku University)

11:10-11:30

A-4 **(p.36)** A Liquid-Phase Bonding for High Density Chip-Stack Interconnection
L. Qiu, N. Watanabe*, T. Asano (Kyushu University, *On leave from Fukuoka Industry, Science & Technology Foundation (Fukuoka IST))

11:30-11:50

A-5 **(p.38)** Residual Stress Distribution in a Silicon Chip Encapsulated by

Plastic Packages
N. Ueda, H. Watanabe (RICOH Company, Ltd.)

11:50-12:10

A-6 **(p.40)** Novel Hybrid Trench Isolated SOI Technology For 50um x 50um RFID Chip
Y. Hirano[1], T. Iwamatsu[1], M. Usami[2], H. Oda[1], Y. Inoue[1] ([1]Renesas Electronics Corp., [2]Hitachi, Ltd.)

12:10-12:30

A-7 **(p.42)** 0.55 V Operation CMOS Voltage Reference Based on the Work Function Difference of Poly Si Gates
H. Watanabe, H. Aota, H. Katoh (Ricoh Co. Ltd.)

Lunch (12:30-13:50)

Technical Session B
(Emerging Devices)

13:50-14:10

B-1 **(p.46)** SWCNT TFT Made from Solution Process via PFOb Solubilizer
X. Yi[1], H. Ozawa[2], G. Nakagawa[1], T. Fujigaya2, N. Nakashima2, T. Asano1 ([1]Dept. of Electronics, Kyushu University, [2]Dept. of Applied Chemistry, Kyushu University)

14:10-14:30

B-2 **(p.48)** Bias Voltage Sweep Speed Dependence of Electron Injection in Si-Nano-Dots Floating Gate MOS Capacitor
M. Muraguchi[1], Y. Sakurai[2], Y. Takada[2], S. Nomura[2], K. Shiraishi[2], M. Ikeda[3], K. Makihara[3], S. Miyazaki[3], Y. Shigeta[4], T. Endoh[1] ([1]Tohoku University, [2]University of Tsukuba, [3]Hiroshima University, [4]University of Hyogo)

14:30-14:50

B-3 **(p.50)** The Micromagnetic Energy Simulation in MRAM Data Retention
K. Kawabata, K. Ishikawa, Y. Inoue, M. Inuishi (Renesas Electronics Corp.)

14:50-15:10

B-4 **(p.52)** Characteristic Evaluation of Thin-Film Transistors using Capacitance-Voltage Characteristics

M. Kimura, T. Nakanishi (Ryukoku University)

15:10-15:30

B-5 **(p.54)** Detection of Biochemical Reaction between Liposome and Denatured Protein by Leakage Current Microsensor

P. Lorchirachoonkul[1], T. Shimanouchi[2], K. Yamashita[1,2], H. Umakoshi[2], R. Kuboi[2], M. Noda[1,2] ([1]Kyoto Institute of Technology, [2]Osaka University)

Break (15:30-15:45)

Technical Session C (Compound Semiconductor Devices)

15:45-16:05

C-1 **(p.58)** Interface State Properties of Al_2O_3/n-GaN Prepared by Atomic Layer Deposition

Y. Hori[1], C. Mizue[1], T. Hashizume[1,2] ([1]Hokkaido University, [2]JST-CREST)

16:05-16:25

C-2 **(p.60)** Theoretical Possibilities of InN-Based High Electron Mobility Transistor

A. G. Bhuiyan[1], S. M. Muhtadi[2], M. T. Hasan[2], A. Hashimoto[1], A.Yamamoto[1] ([1]University of Fukui, [2]Khulna University of Engineering & Technology (KUET))

16:25-16:45

C-3 **(p.62)** Demonstration of High Channel Mobility in 4H-SiC MOSFETs by Utilizing Phosphorus-Doped Gate Oxide

D. Okamoto, H. Yano, K. Hirata, S. Kotake, T. Hatayama, T. Fuyuki (Nara Institute of Science and Technology)

16:45-17:05

C-4 **(p.64)** Highly Reliable ZnO Thin Film Transistor Fabricated by Atomic Layer Deposition
Y. Kawamura, M. Horita, Y. Uraoka (Nara Institute of Science and Technology)

Break (17:05-17:15)

Special Invited Session

17:15-17:45

T-1 **(p.24)** Current Controllability and Stability of Multi-Mesa-Channel AlGaN/GaN HEMTs
T. Hashizume[1,2] , K. Ohi[1] ([1]Hokkaido University, [2]JST-CREST)

17:45-18:15

T-2 **(p.26)** Infrared Imaging for Security and Safety
M. Kimata (Ritsumeikan University)

Break (18:15-18:25)

Awards & Closing Remark

18:25-18:35 Award Presentation: Y. Ohmura (Kansai University)
18:35-18:45 Closing Remark: Y. Ohmura (Kansai University)