

**2005 Asia-Pacific Workshop on Fundamental and Application of Advanced Semiconductor Devices
(AWAD 2005)**

Advance Technical Programs

June 28

8:50 *Opening Remarks*

SessionA1 Advanced ULSI Technology

A1.2 9:00 [Invited]

HfSiON-CMOSFET Technology for Low Operating Power/Low Standby Power Applications

M. Takayanagi (Toshiba)

A1.3 9:25

ECR Ar/N₂ Plasma Nitridation of HfO₂ for High-k Gate Insulator Applications

S. Ohmi, T. Kurose, M. Satoh, T. Uchikawa(Tokyo Inst. of Tech.)

A1.4 9:45

Work-function tunability of metal gate electrode on HfO₂ high-k dielectrics

In-Sung Park, Han-Kyoung Ko, Sangsul Lee, Taeho Lee, Kyong-Rae Kim, and Jinho Ahn (Hanyang

A1.5 10:05

**High Aspect Ratio Copper Via Filling Used for the Three- Dimensional Chip Stacking-
2) Time Shortening of Electrodeposition**

K. Kondo, T. Yonezawa, K. Takahashi (Osaka Prefecture Univ.)

10:25-10:45

Authors Interview

SessionA2 New Materials and Processes

A2.1 10:50 [Invited]

Electron Beam Projection Patterning using Crystalline Lattice Image

Ki-Bum Kim (Seoul National Univ.)

A2.1 11:15 [Invited]

Resistance switching memory of perovskite-oxide heterojunctions

(AIST/Univ. Tokyo)

A2.2 11:40

Molecular Beam Epitaxy of Fe₃Si Film on Si Substrate

T. Sadoh, H. Takeuchi, K. Ueda, A. Kenjo, M. Miyao(Kyushu Univ.)

A2.3 12:00

A morphology-independent wafer level rivet packaging with LEGO-like assembly

Eunsung Lee(Seoul National Univ./SAIT), Woonbae Kim(SAIT), Insang Song(SAIT), Changyoul Moon(SAIT), Moon Koo Kang, Hyeon Cheol Kim, Kukjin Chun (Seoul National Univ.)

12:20-12:40

Authors Interview

12:40-13:40

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SessionA3 Functional Devices and Circuits

A3.1 13:40 [Invited]

24GHz UWB and 77GHz Transceivers for Automotive Radar Applications

H. Kondoh (Hitachi)

A3.2 14:05 [Invited]

Control of valley and spatial subbands in double-gate SOI MOSFETs

K. Takashina(NTT)

A3.3 14:25

Degradation and Recovery Phenomena of Thin Gate Oxide Films under Dynamic Negative-Bias Temperature Instability (NBTI) Stress

Jae-Sung Lee, Jong-Ho Lee, and Yong-Hyun Lee (Kyungpook National Univ.)

A3.4 14:45

16GHz CMOS LNA design without Source degeneration inductor

Hee Sauk Jhon, Seung il Choi, Tae Hyun Oh and Hyungcheol Shin (Seoul National Univ.)

A3.5 15:05

Noise modeling and analysis for RF CMOS circuit design

Jongwook Jeon, Seyoung Kim, In Man Kang (Seoul National Univ.), Kwangsuk Han, Kwiro Lee (KAIST), and Hyungcheol Shin (Seoul National Univ.)

15:25-15:45

Authors Interview

SessionA4 Advanced Si Devices

A4.1 15:45

RF Linearity Analysis of FinFETs using 3-D Device Simulation

Myounggon Kang, Dong Hwee Kim, Jae Young Song, and Hyungcheol Shin (Seoul National Univ.)

A4.2 16:05

Novel Device Structures for Dynamic Threshold Voltage MOSFET with Multiple High- κ Gate

Lee-Eun Yu, Ju-Hyun Kim, Dong-Yoon Jang, Yang-Kyu Choi (KAIST)

A4.3 16:25

Impact of High Performance Accumulation-Mode Fully Depletion SOI MOSFET

W. Cheng, A. Teramoto, M. Hirayama, S. Sugawa, T. Ohmi (Tohoku Univ.)

A4.4 16:45

A Comprehensive Study of Punchthrough Characteristics in Multiple-Gate MOSFETs

Hyun-Sik Kang, Seong-Wan Ryu and Yang-Kyu Choi (KAIST)

A4.5 17:05

Novel Structures for 2-Bit Per Cell of NVM Using Asymmetric Double Gate

Kuk-Hwan Kim, Hyunjin Lee and Yang-Kyu, Choi (KAIST)

A4.6 17:25

High Performance Power MOSFETs by Wing-cell Structure Design

Feng-Tso Chien, Chien-Nan Liao, Chi-Ling Wang (Feng Chia Univ.), and Hsien-Chin Chiu (Chang Gung

17:25-17:45

Authors Interview

June 29

SessionA5 High Speed and Optoelectronic Technology I

A5.1 8:40 [Invited]

AlGaN/GaN HFET for RF front-end and power applications

Y. Uemoto, Y. Hirose, T. Murata, H. Ishida, M. Hikita, M. Yanagihara, K. Inoue, T. Tanaka, D. Ueda (Matsushita), and T. Egawa (Nagoya Inst. of Tech.)

A5.2 9:05 [Invited]

Highly Reliable GaN-HEMT power amplifier

T. Kikkawa and K. Joshin (Fujitsu Laboratories Ltd.)

A5.3 9:30 [Invited]

InP-based ICs for switch matrix and optoelectronic applications

H. Kamitsuna (NTT)

A5.4 9:55

Comparative studies on the conventional Metamorphic High Electron Mobility Transistor and InP-composite channel Metamorphic High Electron Mobility Transistor on the Breakdown Voltage Rhee(Dongguk Univ.)

10:15-10:35

Authors Interview

SessionA6 High Speed and Optoelectronic Technology II

A6.1 10:35 [Invited]

Channel Engineering of III-Nitride HEMTs for Enhanced Performance

Kevin J. Chen (Hong Kong Univ. of Sci. and Tech.)

A6.2 11:00 [Invited]

The photonic crystal application for LED

Y. Choe (LG Inst. of Tech.)

A6.3 11:25

Study of LPE HgCdTe Wafer Characteristics flattened with Single-Point-Diamond-Turning Method

Min Yung Lee (KAIST), Young Ho Kim (i3 system), Geon-hee Kim, Sun-cheol Yang (Korea Basic Science Inst.), Yong Soo Lee and Hee Chul Lee (KAIST)

A6.4 11:45 [Invited]

Current status of Low-k/Cu Technologies & future prospect of interconnections

T. Kikkawa (Hiroshima Univ.)

12:10-12:30

Authors Interview

12:30-13:30

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June 30

Session A7 Group IV Compound Semiconductors

A7.1 8:40 [Invited]

Recent progress of SiC devices in AIST

K. Fukuda, S. Harada, M. Okamoto, R. Kosugi, J. Senzaki, Y. Tanaka, K. Kojima, T. Yatsuo, K. Takao, K. Adachi, M. Kato, K. Suzuki, and A. Shimozato (AIST)

A7.2 9:05 [Invited]

Strain Engineering of SiGe buffer layers for High-Mobility Si Channels

S. Zaima (Nagoya Univ.)

A7.3 9:30

Microwave Plasma Oxidation for Reducing Ge Condensation at SiGe sidewall of Strained-Si/SGOI

M. Nishisaka, T. Asano (Kyushu Inst. of Tech.)

A7.4 9:50

Theoretical Calculation of Mobility Enhancement of Strained Si pMOSFETs: A Comparison between Uni- and Biaxial Stresses

M. Uchida, T. Sanda, Y. Kamakura, K. Taniguchi (Osaka Univ.)

10:10-10:30

Authors Interview

Session A8 Thin Film Devices and Systems

A8.1 10:30 [Invited]

Asynchronous Architecture and Its Impact on Low-Power TFT CPUs

N. Karaki, S. Inoue, and T. Shimoda (Seiko Epson)

A8.2 10:55 [Invited]

A 10-bit Driver LSI for HDTV TFT-LCDs

O.-K. Kwon (Hanyang Univ.)

A8.3 11:20

Excimer Laser Annealing of PbZr_{0.4}Ti_{0.6}O₃ Thin Film at Low Temperature for TFT FeRAM

W.X. Xianyu, H.S. Cho, J. Y. Kwon, H.X. Yin (SAIT), T. Noguchi (SAIT/Sungkyunkwan Univ.)

A8.4 11:40

Effect of Plasma Gate Oxidation on Performance of Poly-Si TFT

C. Shin, A. Baba, T. Asano (Kyushu Inst. of Tech.)

A8.5 12:00

Advanced Poly-Si TFT with Fin-like Channels

Huaxiang Yin, Wenxu Xianyu, Hans Cho, Xiaoxin Zhang, Jisim Jung, Doyoung Kim, Hyuck Lim, Kyungbae Park, Jongman Kim, Jangyeon Kwon (SAIT), Takashi Noguchi (SAIT/Sungkyunkwan Univ.)

12:20-12:40

Authors Interview

12:40-13:30

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Session A9 Quantum Devices

A9.1 13:30 [Invited]

Self-Assembled Quantum Dots

Y. Park, J. Song, Y. Park, W. Choi, and J. Lee (KIST)

A9.2 13:55 [Invited]

Orbital Quantum bits based on the inter-valley interactions in Si Quantum Dots

D. Ahn (Univ. of Seoul/iQUIPS), and S. W. Hwang (Korea Univ./iQUIPS)

A9.3 14:20

The Application of Multiple-Stacked Si Quantum Dots to Light Emitting Diodes

K. Makihara, Y. Kawaguchi, H. Murakami, S. Higashi, S. Miyazaki (Hiroshima Univ.)

A9.4 14:40

Experimental Evidence of Coulombic Interaction among Stored Charges in Single Si Dot as Detected by AFM/Kelvin Probe Technique

J. Nishitani, K. Makihara, Y. Darma, H. Murakami, S. Higashi, S. Miyazaki (Hiroshima Univ.)

A9.5 15:00

Fabrication and characterization of a in-plane gate quantum dot resonant tunneling transistor

S. H. Son¹(Korea Univ./KIST/iQUIPS), Y. S. Choi(Korea Univ./KIST), K. H. Cho(Korea Univ./iQUIPS), Y. J. Park, J. I. Lee (KIST), Y. S. Yu(Hankyong Univ.), S. W. Hwang(Korea Univ./iQUIPS) and D.

A9.6 15:20

A compact modeling of threshold voltage shift by a quantum confinement in UTB MOSFET

Cheon-Hak Ku, Seong-Wan Ryu, Yang-Kyu Choi (KAIST)

15:40-16:00

Authors Interview

16:00 *Adjourn*