WORKSHOP SCIENTIFIC PROGRAM

January 29 (Friday), 2010

5th International WorkShop on New Group IV Semiconductor Nanoelectronics

Jan. 29(Fri.) - 30(Sat.), 2010

Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku Univ., Sendai, Japan

Session 0: Opening 13:00-13:10 (4F Conference Room)

13:00-13:10 **Introductory**

Junichi Murota,
Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Japan

Session I: Invited Presentation (1) 13:10-14:50 (4F Conference Room)

13:10-13:35 I-01:

"High frequency behaviour of Ge pin junctions", ・・・ 1

Erich Kasper[1], M. Oehme[1], J. Schulze[1], S. Klinger[2] and M. Berroth[2],
[1] Institut für Halbleitertechnik (IHT), Universität Stuttgart, Germany,
[2] Institut für Elektrische und Optische Nachrichtentechnik (INT), Universität Stuttgart, Germany

13:35-14:00 I-02:

"Fluctuations in Electronic Properties of Interface Traps in Nano-MOSFETs", ・・・ 3

Toshiaki Tsuchiya[1], Yuki Mori[1], Yuta Morimura[1] and Tohru Mogami[2],
[1] Shimane University, Japan,
[2] Semiconductor Leading Edge Technologies (Selete), Japan

14:00-14:25 I-03:

"Effective passivation of Ge surface by high-quality GeO_2 formed by Electron-Cyclotron-Resonance plasma oxidation for Ge-based electronic and photonic devices", ・・・ 5

Yukio Fukuda[1], Yohei Otani[1], Tetsuya Sato[2], Hiroshi Toyota[3] and Toshiro Ono[3]
[1] Tokyo University of Science, Suwa, Japan,
[2] Clean Energy Research Center, University of Yamanashi, Japan,
[3] Hirosaki University, Japan

14:25-14:50 I-04:

"$Si_{1-x}Ge_x$ GS-MBE and Sputter Epitaxy Techniques and Their Application to Devices with Low Dimensional Structures", ・・・ 7

Yoshiyuki Suda, Hiroaki Hanafusa, Takafumi Okubo,
Kouta Kunugi and Hiroyuki Ohhashi,
Graduate School of Engineering, Tokyo University of Agriculture and Technology, Japan

14:50-15:10 **Break**

WORKSHOP SCIENTIFIC PROGRAM

January 29 (Friday), 2010

Session II: Invited Presentation (2)　15:10-17:15 (4F Conference Room)

15:10-15:35 I-05:
"Atomic Level Control for Group IV Semiconductor Processing", ・・・ 9
Bernd Tillack[1,2], Yuji Yamamoto[1] and Junichi Murota[3],
[1] IHP, Germany,
[2] Technische Universität Berlin, Germany,
[3] Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Japan

15:35-16:00 I-06:
"Germanium surface segregation in the silicon passivation of Ge pMOSFETs: influence of the Si precursor", ・・・ 11
Matty Caymax, Benjamin Vincent, Wilfried Vandervorst and Roger Loo,
IMEC, Belgium

16:00-16:25 I-07:
"Defect Annihilation of *a*-GeO_2 on Ge and Passivation of Ge/GeO_2 Interface", ・・・ 13
Akira Toriumi,
Department of Materials Engineering, The University of Tokyo, Japan

16:25-16:50 I-08:
"Formation of graphene on 3C-SiC ultrathin film on Si substrates", ・・・ 15
Maki Suemitsu[1,2],
[1] Research Institute of Electrical Communication, Tohoku University, Japan,
[2] CREST, Japan Science and Technology Agency, Japan

16:50-17:15 I-09:
"Si Single-Dopant FETs and Observation of Single-Dopant Potential by LT-KFM", ・・・ 17
Michiharu Tabe[1], D. Moraru[1], M. Anwar[1], Y. Kawai[1], S. Miki[1],
Y. Ono[2] and T. Mizuno[1],
[1] Research Institute of Electronics, Shizuoka University, Japan,
[2] NTT Basic Research Laboratories, Japan

Banquet　18:30-20:00 (Hotel Bel Air 1F)

WORKSHOP SCIENTIFIC PROGRAM
January 30 (Saturday), 2010

Session III: Poster Presentation 9:30-11:30 (4F Room 401)

(Boards for posters are available during Workshop.)

11:30-13:00 **Lunch**

Session IV: Invited Presentation (3) 13:00-14:40 (4F Conference Room)

13:00-13:25 I-10:
"SiGe and GaAsP Metamorphic Systems: 1.9-2.3eV III-V Band-GaP Integration on Si", ・・・ 63
Eugene A. Fitzgerald, M.J. Mori, N. Yang and M.T. Bulsara,
Department of Materials Science and Engineering, Massachusetts Institute of Technology (MIT), USA

13:25-13:50 I-11:
"Effects of 193 nm Excimer laser radiation on SiO_2/Si/SiGe heterostructures grown on s-SOI substrates", ・・・ 65
Stefano Chiussi[1], J.C. Conde[1], A. Benedetti[2], C. Serra[2], M. Sakuraba[3] and J. Murota[3],
[1] Departamento de Física Aplicada, E.T.S.I.Industriales, Universidade de Vigo, Spain,
[2] C.A.C.T.I., Universidade de Vigo, Spain,
[3] Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Japan

13:50-14:15 I-12:
"Potential of $Ge_{1-x}Sn_x$ alloys as high mobility channel materials and stressors", ・・・ 67
Shotaro Takeuchi[1], Yosuke Shimura[1], Norimasa Tsutsui[1], Osamu Nakatsuka[1], Akira Sakai[2] and Shigeaki Zaima[1],
[1] Graduate School of Engineering, Nagoya University, Japan,
[2] Graduate School of Engineering Science, Osaka University, Japan

14:15-14:40 I-13:
"Epitaxial Growth of Group IV Semiconductor Nanostructures Using Atomically Controlled Plasma Processing", ・・・ 69
Masao Sakuraba, Takayuki Nosaka, Katsutoshi Sugawara and Junichi Murota,
Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Japan

14:40-15:00 **Break**

WORKSHOP SCIENTIFIC PROGRAM
January 30 (Saturday), 2010

Session V: Invited Presentation (4)　15:00-17:05 (4F Conference Room)

15:00-15:25 I-14:
"Mn_5Ge_3/Ge heterostructures: perspectives for applications in spintronics and magnetic sensors", ・・・ 71
Vinh Le Thanh, A. Spiesser, M.-T. Dau, L.A. Michez, J.-M. Raimondo, M. Petit, A. Glachant and J. Derrien,
Centre Interdisciplinaire de Nanoscience de Marseille (CINaM)-CNRS, Aix-Marseille Université, France

15:25-15:50 I-15:
"SiGe Mixing-Triggered Liquid-Phase Epitaxy for Defect-Free GOI (Ge on Insulator)", ・・・ 73
Kaoru Toko, M. Kurosawa, T. Tanaka, T. Sadoh and M. Miyao,
Department of Electronics, Kyushu University, Japan

15:50-16:15 I-16:
"Fabrication method for triple coupled dots based on pattern-dependent oxidation", ・・・ 75
Yasuo Takahashi[1], Mingyu Jo[1], Yuki Kato[1], Masashi Arita[1], Akira Fujiwara[2], Yukinori Ono[2], Katsuhiko Nishiguchi[2], Hiroshi Inokawa[3] and Jung-Bum Choi[4],
[1] Graduate School of Information Science and Technology, Hokkaido University, Japan,
[2] NTT Basic Research Labs., NTT Corporation, Japan,
[3] Research Inst. Electronics, Shizuoka University, Japan,
[4] Physics and Research Inst. NanoScience and Technology, Chungbuk National University, Korea

16:15-16:40 I-17:
"Formation of Hybrid Nanodots Floating Gate for Functional Memories –Charge Storage Characteristics and Optical Response–", ・・・ 77
Seiichi Miyazaki, N. Morisawa, S. Nakanishi, K. Makihara and M. Ikeda,
Graduate School of Advanced Sciences of Matter, Hiroshima University, Japan

16:40-17:05 I-18:
"High Mobility Ge CMOS Technologies", ・・・ 79
Shinichi Takagi and Mitsuru Takenaka,
Department of Electrical Engineering, The University of Tokyo, Japan

17:05-17:10 **Closing Remarks**