

Program

(abstract page)

(Monday, February 9)

10:00 - 10:10 "Introductory Talk"
Hideki Hasegawa, Hokkaido University

- Plenary -

10:10 - 10:50 "Meme Media for the Dynamic Federation of Web Applications and Ubiquitous Knowledge Resources"
Yuzuru Tanaka, Kimihito Ito, and Jun Fujima, Hokkaido University p.1

10:50 - 11:10 Break

11:10 - 11:50 "Toward Realization of Intelligent Quantum Chips Utilizing III-V Nanoelectronics"
Hideki Hasegawa, Hokkaido University p.39

11:50 - 12:40 "Self-Assembled Quantum Dots for Optoelectronic Devices: Progress and Challenges"
Mohamed Henini, Nottingham University p.46

12:40 - 13:40 Lunch Break

- Spintronics -

13:40 - 14:30 "Growth and Characterization of Ferromagnetic Metal/Compound Semiconductor Heterostructures for Spin Electronics"
Chris Palmstrøm, University of Minnesota p.60

14:30 - 15:10 "High Efficiency Spin Injection from a Ferromagnetic Metal into a Semiconductor through an Fe/InAs Junction"
Kanji Yoh, Hokkaido University and CREST-JST p.62

15:10 - 15:30 Break

15:30 - 16:20 "Hybrid Ferromagnetic (MnGa)As / GaAs-Structures: Metal Organic Vapor Phase Epitaxy, Structure Analysis and Magnetic Properties"
Wolfgang Stolz, Philipps University Marburg p.66

16:20 - 17:00 "Magnetoresistance and Magnetometry Phenomena in AlGaIn/GaN Two-Dimensional Electron Gas"
Kotaro Tsubaki¹, N. Maeda², T. Saitoh³, and N. Kobayashi⁴, ¹Toyo University, ²NTT Photonics Laboratory, ³NTT Basic Research Laboratory, ⁴University of Electro-Communications p.67

17:00 - 18:00 Lab Tour to RCIQE

(Tuesday, February 10)

- Devices and Circuit Applications -

9:30 - 10:10 "Room Temperature Operation of Highly Functional Single-Electron Transistors and Silicon Nanocrystal Memories"
Toshiro Hiramoto, M. Saitoh, and I. Kim, University of Tokyop.73

10:10 - 10:50 "MOVPE Growth of Nanostructures and Their Applications"
Takashi Fukui and Junichi Motohisa, Hokkaido Universityp.78

10:50 - 11:10 Break

11:10 - 11:50 "A LSI Design of a High-Speed Wireless Communication System using Dynamic Reconfigurable Architecture"
Yoshikazu Miyanaga, Kentarou Yoshikawa and Yasuyuki Hatakawa, Hokkaido Universityp.83

11:50 - 13:30 Lunch Break

- Photonic Technologies -

13:30 - 14:10 "Photonics Nanodevice Integration Engineering in Tokyo Tech"
Shigehisa Arai, Tokyo Institute of Technology p.89

14:10 - 14:50 "Challenges for Terahertz Integrated Circuits"
Eiichi Sano, Hokkaido Universityp. 95

14:50 - 15:10 Break

- GaN-Based Technologies -

15:10 - 15:50 "Surface Characterization and Passivation for GaN-based Electron Devices"
Tamotsu Hashizume and Hideki Hasegawa, Hokkaido Universityp.101

15:50 - 16:30 "AlGaN/GaN Heterojunction FET for High Frequency Power Applications"
Masaaki Kuzuhara, R&D Association for Future Electron Devices..... p.112

16:30 - 18:00 Poster Sessions (see page iv)

18:30 - 20:30 Reception (Centennial Hall, Hokkaido University)

(Wednesday, February 11)

- GaN-Based Technologies (continued) -

9:30 - 10:10 "Critical Issues for the Development of GaN-Based UV Devices"
Hiroshi Amano, M. Iwaya, S. Kamiyama and I. Akasaki, Meijo Universityp.118

10:10 - 10:30 Break

- Quantum Dots -

10:30 - 11:20 "In-rich InGaN/GaN Self-Assembled Quantum Dots by MOCVD"
Euijoon Yoon, Seoul National University p. 112

11:20 - 12:00 "Scanning Probe Microscopy Observations of Electronic States and Work Functions
in InAs Quantum Dots"
Arao Nakamura^{1,2}, T. Yamauchi² and M. Tabuchi³, ¹Nagoya University, ²CREST-JST, ³Nagoya University-VBLp.127

Poster Sessions

- P-1 "Air-Core Photonic Band-Gap Fibers: the Impact of Surface Modes"
Kunimasa Saitoh¹, Niels Asger Mortensen², and Masanori Koshiba¹, ¹*Graduate School of Electronics and Information Engineering, Hokkaido University*, ²*Crystal Fiber A/S* p.135
- P-2 "Growth Kinetics and Modeling of Selective Molecular Beam Epitaxial Growth of GaAs Ridge Quantum Wires on Pre-Patterned Substrates"
Taketomo Sato, Isao Tamai and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University*p.136
- P-3 "High-Density GaAs Hexagonal Nanowire Networks on Patterned (001) Substrates Using Selective MBE Growth"
Isao Tamai, Souichi Yoshida, Taketomo Sato and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University*p.137
- P-4 "GaAs Based Two-Dimensional Photonic Crystals Using Selective Area MOVPE"
Junichiro Takeda, Masaru Inari, Akihiro Tarumi, Junichi Motohisa and Takashi Fukui, *Research Center for Integrated Quantum Electronics, Hokkaido University* .p.138
- P-5 "Growth of III-V Semiconductor Nanowires by Selective Area Metalorganic Vapor Phase Epitaxy"
J. Motohisa, J. Noborisaka, J. Takeda, M. Inari, and T. Fukui, *Research Center for Integrated Quantum Electronics, Hokkaido University*p.139
- P-6 "Carbon Nanotube Growth on Substrates by Plasma CVD -Observation of Emission Spectra from Plasma-"
A. Okita, Y. Suda, Y. Hayakawa, A. Tanaka, M. A. Bratescu and Y. Sakai, *Graduate School of Electronics and Information Engineering, Hokkaido University*p.140
- P-7 "Fabrication of Two-Dimensional Kagome Lattice Structure by Selective Area Metalorganic Vapor Phase Epitaxy"
Premila Mohan, Junichi Motohisa and Takashi Fukui, *Research Center for Integrated Quantum Electronics, Hokkaido University*p.141
- P-8 "Low-Damage RIBE Process of GaN-based Materials and Its Application to Nanostructures Fabrication"
Tsutomu Muranaka, Tamotsu Hashizume and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University*.....p.142
- P-9 "Nano Structure Emergence Projected by Localized Surface States on Fe(001) Thin Film Surfaces"
Kazuhisa Sueoka^{1,2}, Hirofumi Oka¹, Agus Subagyo² and Koichi Mukasa¹, ¹*Graduate School of Electronics and Information Engineering, Hokkaido University*, ² *CREST-JST*p.143
- P-10 "Preparation and Characterization of Co₂Cr_{0.6}Fe_{0.4}Al Heusler Alloy Thin Films Grown on MgO Substrate by Magnetron Sputtering"
T. Kasahara, K. Matsuda, T. Marukame, T. Uemura, and M. Yamamoto, *Graduate School of Electronics and Information Engineering, Hokkaido University*p.144
- P-11 "Surface Reconstruction of Epitaxial Fe₃O₄(001) Films on MgO"
Agus Subagyo¹, Kazuhisa Sueoka^{1,2}, and Koichi Mukasa^{1,2}, ¹*CREST-JST*, ²*Graduate School of Electronics and Information Engineering, Hokkaido University*p.145

- P-12 "(001) GaAs Surface Passivation by Forming Si and GaN Interface Control Layers on Ga-rich (4×6) Surface"
Sanguan Anantathanasarn and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University* p.146
- P-13 "Simultaneous Imaging of Ga and As Atoms by Means of Non-Contact Atomic Force Microscopy"
Nobutomo Uehara¹, Hirotaka Hosoi², Kazuhisa Sueoka¹, and Koichi Mukasa¹,
¹*Graduate School of Electronics and Information Engineering, Hokkaido University*,
²*Innovation Plaza Hokkaido-JST* p.147
- P-14 "Effects of Si Deposition on Ga-Stabilized (4x6) and As-Stabilized (2x4) GaAs (001) surfaces"
Noboru Negoro and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University*..... p.148
- P-15 "In-depth Cathodoluminescence Characterization of Heterostructures for III-V Nanoelectronics"
Fumitaro Ishikawa and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University* p.149
- P-16 "Demonstration of Functional Magnetic Tunneling Junction with Negative Differential Resistance"
T. Uemura, S. Honma, T. Marukame, and M. Yamamoto, *Graduate School of Electronics and Information Engineering, Hokkaido University* p.150
- P-17 "Characterization of (La, Sr)MnO₃ Films Deposited by Magnetron Sputtering on Si Substrate"
T. Uemura, Y. Takagi, K. Sekine, K. Matsuda, and M. Yamamoto, *Graduate School of Electronics and Information Engineering, Hokkaido University* p.151
- P-18 "Switching Properties of GaAs-Based Quantum Wire Branch Switches Controlled by Nanometer-Scale Schottky Wrap Gate for Hexagonal BDD Quantum Circuits"
Miki Yumoto, Seiya Kasai, and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University* p.152
- P-19 "Design and Implementation of a Digital Nano-Architecture Utilizing GaAs-Based Hexagonal Nanowire Networks Controlled by Schottky Wrap Gates"
Seiya Kasai, Miki Yumoto, Takahiro Tamura and Hideki Hasegawa, *Research Center for Integrated Quantum Electronics and Graduate School of Electronics and Information Engineering, Hokkaido University* p.153
- P-20 "An Experimental Chip for Bio-Inspired Locomotion Controller based on the Wilson-Cowan Neural Oscillator"
Kazuki Nakada, Tetsuya Asai, and Yoshihito Amemiya, *Graduate School of Electronics and Information Engineering, Hokkaido University* p.154
- P-21 "Single-Electron Device for Nonlinear Analog Computation"
Takahide Oya, Tetsuya Asai, and Yoshihito Amemiya, *Graduate School of Electronics and Information Engineering, Hokkaido University* p.154