

FSNS2003 Program

November 11th, Tuesday

17:30- Registration

18:00-21:00 Welcome party at “Atsugi Royal Park Hotel”

November 12th, Wednesday

9:30-9:45 Opening Remarks

9:45-10:45 Trends in carbon nanotube technology

9:45-10:15

WeA-1 G. A.D.Briggs (Invited); *University of Oxford*

“Nanotubes and fullerenes for quantum information processing”

10:15-10:45

WeA-2 T. Mizutani (Invited); *Nagoya University*

“Fabrication and Characterization of Carbon Nanotube FETs”

10:45-11:05 Coffee Break (20 min.)

11:05-12:15 CNT Architectures

11:05-11:35

WeA-3 P. M. Ajayan (Invited); *Rensselaer Polytechnic Institute*

“Organized Carbon Nanotube Architectures”

11:35-11:55

WeA-4 Y. Homma¹, D. Takagi², Y. Kobayashi¹, T. Ogino³;

¹*NTT Basic Research Laboratories*, ²*Meiji University*,

³*Yokohama National University*,

“Controlled Growth of Suspended Carbon Nanotubes on Nanostructures”

11:55-12:15

WeA-5 A. Ando¹, T. Shimizu², H. Abe², Y. Nakayama³, H. Tokumoto⁴;

¹*Nanoelectronics Research Institute*, ²*Nanotechnology Research Institute, National Institute of Advanced Industrial Science and Technology (AIST)*,

³*Osaka Prefecture University*, ⁴*Hokkaido University*,

“Improvement of Electrical Contact at Carbon Nanotube/Pt by Selective Electron Irradiation”

12:15-13:25 Lunch (70 min.)

13:25-15:15 Fabrication of Self-assembled Systems

13:25-13:55

WeP-1 J.R. Heath (Invited); *California Institute of Technology*

“A Systems Approach to Molecular Electronics ”

13:55-14:25

WeP-2 C. Teichert (Invited); *University of Leoben*

“Self-organization of semiconductor nanostructures in heteroepitaxy and under ion erosion”

14:25-14:45

WeP-3 T. Ogino¹, Y. Homma²;

¹*Yokohama National University*, ²*NTT Basic Research Laboratories*

“Nano-integration through semiconductor and interconnection self-assembly”

14:45-15:15

WeP-4 M. Ichikawa (Invited); *The University of Tokyo*

“Formation of Si and Ge nanostructures using ultrathin SiO₂ technology”

15:30-17:30 Poster Session

Presentations:

P01 Y. Takagaki, E. Wiebicke, J. Mohanty, T. Hesjedal, L. Däweritz,

K. H. Ploog; *Paul Drude Institute for Solid State Electronics*,

“Semiautomatic wet chemical etching of an array of MnAs nanodots and their magnetic properties”

P02 A. Umeno, K. Hirakawa; *University of Tokyo*

“Fabrication of atomic-separation gold electrodes using familiar disinfectant”

P03 E. Kuramochi¹, A. Shinya¹, T. Tsuchizawa², M. Notomi¹;

¹*NTT Basic Research Laboratories*, ²*NTT Microsystem Integration Laboratories*

“Precise Electron Beam Lithography of Si-Based Photonic Crystals”

P04 S. Mitsugi¹, A. Shinya¹, E. Kuramochi¹, M. Notomi¹, T. Tsuchizawa²,

T. Watanabe²; ¹*NTT Basic Research Laboratories*,

²*NTT Microsystem Integration Laboratories*,

“Design and Fabrication of Photonic Crystal Wavelength Filters with High-Q and High-Transmittance”

P05 S. Harako¹, X. Zhao¹, S. Komuro², A. Ohata³;

¹*Tokyo University of Science*, ²*Toyo University*, ³*Gunma University*

“Formation of erbium silicide nanowires on Si(100) substrates”

P06 T. Kawamura¹, S. Bhunia¹, S. Fujikawa², Y. Watanabe¹, J. Matsui²,

Y. Kagoshima², Y. Tsusaka²;

¹*NTT Basic Research Laboratories*, ²*Himeji Institute of Technology*

“Structural Analysis of Vertically Standing InP Nanowires by Using Grazing Incidence X-ray Diffraction”

P07 Y. Watanabe¹, H. Hibino¹, S. Bhunia¹, K. Tateno¹, T. Sekiguchi²;

¹*NTT Basic Research Laboratories*, ²*National Institute for Materials Science*

“Site-controlled InP nanowires grown on patterned Si substrates”

- P08 S. Bhunia¹, T. Kawamura¹, S. Fujikawa², Y. Watanabe¹;
¹*NTT Basic Research Laboratories*, ²*Himeji Institute of Technology*
“Systematic investigation of growth of III-V compound nanowires by MOVPE”
- P09 A. Komoto, S. Maenosono, Y. Yamaguchi; *The University of Tokyo*
“Photoluminescence Oscillation in Semiconductor Nanocrystal Suspension”
- P10 L.F. Houlet¹, H. Yamaguchi¹, S. Miyashita², Y. Hirayama^{1,3};
¹*NTT Basic Research Laboratories*, ²*NTT Advanced Technology*,
³*CREST-JST*
“Characterization and fabrication of InAs-based freestanding nanostructures using Atomic Force Microscope”
- P11 M. Yamaguchi, Y. Nishimoto, N. Sawaki; *Nagoya University*
“MBE Growth of GaAs/AlGaAs Quantum Well on a Patterned GaAs (001) Substrate”
- P12 K.M. Kim, Y.J. Park, S.H. Son, S.H. Lee, J.I. Lee, J.H. Park;
Korea Institute of Science and Technology (KIST)
“Artificial array of InAs/GaAs quantum dots on a strain-engineered superlattice”
- P13 T. Fleischmann, K. Kubota, P. O. Vaccaro, T.-S. Wang, S. Saravanan,
N. Saito; *ATR Adaptive Communications Research Laboratories*
“Self-assembling GaAs mirror with electrostatic actuation using micro-origami”
- P14 A. Taguchi; *NTT Basic Research Laboratories*
“Importance of the sp²-like Orbital Formation for Stabilizing Surface Local Structures”
- P15 T. Akiyama, H. Kageshima; *NTT Basic Research Laboratories*
“Theoretical Study of Oxygen Reaction Mechanism at SiO₂/Si Interfaces”
- P16 H. Hibino, Y. Watanabe, Y. Homma; *NTT Basic Research Laboratories*
“LEEM studies on growth of twinned epitaxial layers on Si(111) 3×3 B”
- P17 Z. Zhang¹, K. Sumitomo², F. Lin², H. Omi², T. Ogino³; ¹*Peking University*,
²*NTT Basic Research Laboratories*, ³*Yokohama National University*
“Structure Transition of Ge/Si(113) Surfaces during Ge Epitaxial Growth”
- P18 K. Sumitomo¹, F. Lin¹, Y. Homma¹, T. Ogino²;
¹*NTT Basic Research Laboratories*, ²*Yokohama National University*
“Step rearrangements and nanostructure formation inside a hole on Si(111) studied by scanning tunneling microscopy”
- P19 H. Omi¹, Y. Homma², T. Ogino¹, S. Stoyanov², V. Tonchev²;
¹*NTT Basic Research Laboratories*, ²*Institute of Physical Chemistry, Bulgarian Academy of Sciences*
“Wafer-scale strain engineering on Si(111) for design of atomic step networks”

- P20 X. P. Zou¹, H. Abe¹, T. Shimizu¹, H. Tokumoto², S. M. Zhu³, H. S. Zhou³;
¹Nanotechnology Research Institute, AIST, ²Hokkaido University,
³Energy Electronics Institute, AIST
“Simple Thermal Chemical Vapor Deposition Synthesis and Electrical Property of Multi-walled Carbon Nanotubes”
- P21 **Withdrawn**
- P22 F. Maeda¹, E. Laffosse¹, Y. Watanabe¹, S. Suzuki¹, Y. Homma¹,
M. Suzuki², T. Kitada², T. Ogiwara², A. Tanaka³, M. Kimura⁴,
V. A. Mihai⁵, H. Yoshikawa⁵, S. Fukushima⁵;
¹NTT Basic Research Laboratories, ²NTT Advanced Technology Corporation,
³ULVAC-PHI, ⁴SPRING-8 Service Corporation Ltd,
⁵National Institute for Materials Science
“Surface and Interface Reactions of Catalysts for Carbon Nanotube Growth on Si Substrates Studied by Soft X-ray Photoelectron Spectroscopy”
- P23 S. Suzuki¹, Y. Watanabe¹, F. Maeda¹, Y. Homma¹, Y. Ogino²;
¹NTT Basic Research Laboratories, ²Yokohama National University
“Non-rigid band shift behavior of potassium-filled carbon nanotubes”
- P24 Y. Kobayashi¹, D. Takagi², Y. Ueno³, Y. Homma¹;
¹NTT Basic Research Laboratories, NTT Corporation, ²Meiji University,
³NTT Microsystem Integration Laboratories
“Characterization of carbon nanotubes suspended between nanostructures using micro-Raman spectroscopy”
- P25 N. Mora, P. Murugaraj, D. Mainwaring;
Royal Melbourne Institute of Technology
“Temperature Dependent Transport Properties in the Semiconducting Regime of Carbon-Polyimide Nanocomposite Films”
- P26 I. Takesue^{1,2}, T. Akazaki¹, S. Miyadai^{1,2}, N. Kobayashi², A. Tokita², M. Nomura², J. Haruyama¹⁻³, H. Takayanagi¹;
¹NTT Basic Research Laboratories, ²Aoyama Gakuin University, ³JST, CREST
“Multi-walled carbon nanotubes with NbN superconducting electrodes”
- P27 T. Shimizu¹, H. Abe¹, A. Ando², H. Tokumoto³;
¹NRI-AIST, ²NeRI-AIST, ³Hokkaido University
“Electric transport measurement of Multi-Walled Carbon nanotubes in scanning transparent electron microscope”
- P28 H. Abe¹, T. Shimizu¹, A. Ando², H. Tokumoto³;
¹NRI-AIST, ²NeRI-AIST, ³Hokkaido University
“Electric transport and mechanical strength measurements of carbon nanotubes in scanning electron microscope”
- P29 S. Moriyama^{1,2}, K. Toratani¹, M. Suzuki^{1,3}, D. Tsuya^{1,2}, Y. Aoyagi², K. Ishibashi^{1,3};
¹The Institute of Physical and Chemical Research (RIKEN),
²Tokyo Institute of Technology, ³CREST, JST
“Electrical transport in semiconducting single-wall carbon nanotubes”

- P30 D. Tsuya^{1,2}, M. Suzuki^{1,3}, S. Moriyama^{1,2}, Y. Aoyagi², K. Ishibashi^{1,3};
¹*The Institute of Physical and Chemical Research (RIKEN)*,
²*Tokyo Institute of Technology*, ³*CREST, JST*
“Observation of the discrete quantum levels in multi-wall carbon nanotube quantum dots”
- P31 K. Kurachi¹, M. Torigoe¹, K. Matsumoto², T. Nemoto¹;
¹*Meiji University*, ²*Osaka University, AIST, CREST/JST*
“Application of RT Carbon Nanotube Single Electron Transistor to Methanol Sensor”
- P32 H. Ishii¹, T. Nakayama¹, J. Inoue²; ¹*Department of Physics, Chiba University*, ²*Center for Frontier Science, Chiba University*
“Flat-band excitons in two-dimensional Kagome quantum-wire and dot systems”
- P33 M. Steiner^{1,2}, J. Nitta^{1,3};
¹*NTT Basic Research Laboratories*, ²*University of Hamburg*, ³*CREST, JST*
“Magnetic transitions of permalloy rings in hybrid devices”
- P34 S. N. Shevchenko^{1,2}, Y. V. Pershin^{1,3}, I. D. Vagner^{1,3,4};
¹*Grenoble High Magnetic Fields Laboratory, MPI/FKF and CNRS*,
²*B. Verkin Institute for Low Temperature Physics*, ³*Clarkson University*,
⁴*Holon Academic Institute of Technology*
“Magnetization of nuclear-spin-polarization-induced quantum ring”
- P35 S. W. Jung^{1,2}, T. Fujisawa¹, Y. H. Jeong², Y. Hirayama^{2,3};
¹*NTT Basic Research Laboratories*, ²*POSTECH*, ³*CREST*
“1/f noise in single electron tunneling current through a GaAs quantum dot”
- P36 K. Takashina¹, Y. Hirayama^{1,2}, A. Fujiwara¹, S. Horiguchi¹, Y. Takahashi²; ¹*NTT Basic Research Laboratories*, ²*CREST-JST*
“Valley Splitting Control in SIMOX based SiO₂/Si/SiO₂ Quantum Wells”
- P37 L. Yu, O. Voskoboynikov; *National Chiao Tung University*
“The Rashba and Dresselhaus Spin-Orbit Interactions and Spin Filtering”
- P38 B. C. Lee, O. Voskoboynikov, C. P. Lee; *National Chiao Tung University*
“III-V Semiconductor Nano-Rings”
- P39 T. Morimoto¹, A. Shailos², V. I. Puller³, L. G. Mourokh³, N. Aoki¹, T. Sasaki¹,
Y. Ochiai¹, J. P. Bird², M. P. Lilly⁴, J. L. Reno⁴, J. A. Simmons⁴;
¹*Chiba University*, ²*Arizona State University*, ³*Stevens Institute of Technology*, ⁴*Sandia National Laboratories*
“Non-local resonance peak in a high mobility quantum wire”
- P40 K. Hashimoto^{1,2}, K. Muraki¹, T. Saku³, Y. Hirayama²;
¹*NTT Basic Research Laboratories*, ²*CREST-JST*, ³*NTT-AT*
“Effects of Confinement Potential Asymmetry on the $\nu = 2/3$ Quantum Hall Ferromagnet”

- P41 K. Suzuki¹, K. Takashina¹, S. Miyashita², Y. Hirayama^{1,3};
¹*NTT Basic Research Laboratories*, ²*NTT Advance Technology*, ³*CREST-JST*
“Landau level crossing and the quantum Hall effect in InAs/GaSb heterostructures”
- P42 K. Kanisawa¹, S. Perraud^{1,2}, H. Yamaguchi¹, Y. Hirayama^{1,3};
¹*NTT Basic Research Laboratories*, ²*ESPCI*, ³*CREST-JST*
“Scanning Tunneling Spectroscopy Study of Coupled InAs Nanostructures”
- P43 Y. Nakajima, K. Sasaki, T. Hanajiri, T. Toyabe, T. Morikawa, T. Sugano;
Toyo University
“New measurement technique for characterization of carrier lifetime in thin SOI MOSFETs”
- P44 V. Ryzhii: *University of Aizu*
“Absolute Negative Conductivity in Two-Dimensional Electron Systems under Microwave Radiation”

November 13th, Thursday

9:30-10:10 Plenary Session

- ThA-1 K. v. Klitzing (Plenary); *Max Planck Institute for Solid State Research*
“Electronic Properties of Two-Dimensional Electron Systems under Microwave Radiation”

10:10-12:10 Novel Semiconductor Nanosystems

10:10-10:30

- ThA-2 Y. Hirayama^{1,2}, K. Hashimoto^{1,2}, K. Muraki¹, G. Yusa¹, T. Saku³;
¹*NTT Basic Research Laboratories*, ²*CREST-JST*, ³*NTT-AT*
“Anomalous transport characteristics in the fractional quantum Hall regime induced by nuclear spin polarization”

10:30-10:50 Break (20 min.)

10:50-11:20

- ThA-3 K. H. Ploog (Invited); *Paul Drude Institute for Solid State Electronics*
“Interplay of Elastic and Magnetic Properties in MnAs/GaAs Heterostructures”

11:20-11:50

- ThA-4 T. Fukui, F. Nakajima, Y. Miyoshi, J. Motohisa (Invited); *Hokkaido University*
“GaAs single electron devices and integrated circuits based on selectively grown quantum nanostructure”

11:50-12:10

- ThA-5 K. Shiraishi¹, H. Tamura^{2,3}, H. Takayanagi^{2,3};
¹*University of Tsukuba*, ²*NTT Basic Research Laboratories*, ³*CREST-JST*
“Design of New Properties and Functions Based on Quantum Wire Networks”

12:10-13:20 Lunch (70 min.)

13:20-15:10 Nanomechanical systems

13:20-13:50

ThP-1 M. L. Roukes (Invited); *California Institute of Technology*
“Functional Nanoelectromechanical Systems”

13:50-14:20

ThP-2 C. Gerber (Invited); *Univ. of Basel and IBM Research Lab.*
“Nanomechanics: opening new frontiers in bio analyses and diagnostics”

14:20-14:40

ThP-3 H. Yamaguchi¹, Y. Tokura¹, S. Miyashita², Y. Hirayama^{1,3};
¹*NTT Basic Research Laboratories*, ²*NTT Advanced Technology*, ³*CREST-JST*
“Piezoresistive Cantilevers using InAs-based 2D Heterostructures”

14:40-15:10

ThP-4 V. Ya. Prinz (Invited); *Institute of Semiconductor Physics*
“Precise semiconductor nanotubes and nanocorrugated quantum systems”

15:40-16:40 Bus transfer to Banquet Site

17:00-19:00 Banquet at "Gotemba Beer Brewery"

November 14th, Friday

9:30-11:10 Characterization of Nanowires and Nanotubes

9:30-10:00

FrA-1 Y. Kuk (Invited); *Seoul National University*
“One-dimensional wires”

10:00-10:20

FrA-2 M. Suzuki^{1,2}, T. Fuse^{1,3}, D. Tsuya^{1,3}, S. Moriyama^{1,3},
H. Maki¹, Y. Ishiwata¹, K. Ishibashi^{1,2};
¹*RIKEN*, ²*CREST-JST*, ³*Tokyo Institute of Technology*
“Carbon nanotubes as a building block of quantum-dot based nanodevices”

10:20-10:40

FrA-3 J. -F. Lin, J. P. Bird, Z. He, P. Bennett; *Arizona State University*
“Robust Quantum Transport Phenomena in Self-Assembled Nickel Silicide Nanowires”

10:40-11:10

FrA-4 K. Matsumoto (Invited); *Osaka University*
“Application of Carbon Nanotube Single Electron Transistor with Ultra-High Coulomb Energy”

11:10-11:30 Break (20 min.)

11:30-12:00

FrA-5 P. Finnie¹, Y. Homma², J. M. Fraser¹, J. Lefebvre¹(Invited);
¹*National Research Council Canada*, ²*NTT Basic Research Laboratories*
“Photoluminescence from Single Walled Carbon Nanotubes”

12:00-12:20

FrA-6 K. Yamamoto, K. Nagasawa, T. Ohmori; *Chiba University*
“Preparation and characterization of ZnO nano-wires”

12:20-13:30 Lunch (70 min.)

13:30-15:20 Advanced Nanoprobe Technologies

13:30-14:00

FrP-1 R. Wiesendanger (Invited); *University of Hamburg*
“Nano-Scale Studies of Low-Dimensional Systems by Low-Temperature Scanning Tunneling Spectroscopy”

14:00-14:30

FrP-2 R.M. Westervelt, M.A. Topinka, B.J. LeRoy, A.C. Bleszynski, K.E. Aidala, S.E.J. Shaw, E.J. Heller, K.D. Maranowski, A.C. Gossard (Invited);
Harvard University,
“Imaging Coherent Flow of Electron Waves in a Two-Dimensional Electron Gas”

14:30-14:50

FrP-3 S. Fölsch¹, J. Lagoute¹, K. Kanisawa², R. Koch¹, K.H. Ploog¹;
¹*Paul-Drude-Institut für Festkörperelektronik*, ²*NTT Basic Research Laboratories*
“Single pentacene molecules on Cu(111) and their interaction with assembled Cu quantum wires”

14:50-15:20

FrP-4 M. Aono, Y. Kuwahara, M. Akai, A. Saitoh, Y. Okawa, T. Nakayama, T. Hasegawa, K. Terabe (Invited); *Osaka University, NIMS, JST*
“Dynamic Processes of Molecular Wiring and Atomic Switching”

15:20-15:30

Closing Remarks