Curriculum Vitae

Satoru Miyamoto

Itoh Research Group
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Born March 1982 in Hamamatsu, Japan

Research Interests

– Electronic and optical characterization of group-IV semiconductor quantum dots
– Growth mechanism of self-assembled quantum dots
– Single-electron devices and their applications
– Physics and application of low-dimensional structures

Education

April 2007 - present	Doctor of Philosophy (Ph.D.) School of Fundamental Science and Technology, Keio University, Japan Dissertation title: "Self-Organization and Single-Electron Operation of Group-IV Semiconductor Quantum Dot Structures" Principal advisor: Prof. Kohei M. Itoh
April 2005 - March 2007	Master of Science in Engineering (MSE) School of Fundamental Science and Technology, Keio University, Japan
April 2001 - March 2005	Bachelor of Engineering (B.Eng.) Department of Applied Physics and Physico-Informatics, Keio University, Japan

Employment

August 2007 - present	Research Assistant: Global COE for High-Level Global Cooperation for Leading-Edge Platform on Access Spaces from MEXT Conducted research on single-electron transfer using silicon nanowire metal-oxide-semiconductor field-effect transistor
April 2007 - July 2007	Teaching Assistant: Electromagnetics and Exercise
April 2006 - July 2006	Teaching Assistant: Student Experiments in Dept. of Applied Physics and Physico-Informatics

Student Visitor

May 2007 - present	NTT Basic Research Laboratories, NTT Corporation Research topics: – Transfer dynamics of single-electron ratchet using silicon nanowire MOSFETs – Electronic transport properties of gate-defined silicon quantum dots

Activities

January 2007 - present	Member of Japan Society of Applied Physics.

Experience

Fabrication	Molecular Beam Epitaxy, Rapid Thermal Annealing
Spectroscopy	Raman Scattering Spectroscopy, Photoluminescence Spectroscopy, Rutherford Backscattering Spectroscopy, Electron Paramagnetic Resonance, Reflection High-Energy Electron Diffraction, X-ray Photoelectron Spectroscopy, Grazing-Incidence Small-Angle X-ray Scattering (SPring-8 BL46XU beamline)
Microscope	Atomic Force Microscope, Scanning Electron Microscope
Electrical Measurement	Cryogenic Probing Station, Dilution Refrigerator
Programming Skills	C++, Basic, LabVIEW, Mathematica, LaTeX
Languages	Japanese(mothertongue), English(fluent), German(basic knowledge)

Workshops

1. Technical University of Munich - Keio University Joint Workshop on Nanoelectronics, September 14-18, 2008, Munich, Germany.
2. The 3rd Keio - ECL NanoWorkshop, February 27-29, 2008, Lyon, France.
3. The 4th NTT-BRL School, "Recent status in quantum information technology," November 19-22, 2007, Atsugi, Japan.
4. The 2nd Nanotechnology Summer School, "Physics of quantum effect devices," August 13-27, 2006, Fujiyoshida, Japan.

Publications

1. O. Moutanabbir, S. Miyamoto, E. E. Haller, and K. M. Itoh, "Atomic transport in strain-mediated self-assembly studied by germanium stable isotopes," submitted for publication.
2. S. Miyamoto, K. Nishiguchi, Y. Ono, K. M. Itoh, and A. Fujiwara, "Resonant escape over an oscillating barrier in single-electron ratchet transfer," submitted for publication / preprint arXiv:1002.2422.[pdf]
3. S. Miyamoto, O. Moutanabbir, T. Ishikawa, M. Eto, K. Sawano, Y. Shiraki, E. E. Haller, and K. M. Itoh, "Excitonic Aharonov-Bohm effect in isotopically pure Ge/Si self-assembled type-II quantum dots," submitted for publication / preprint arXiv:1002.2393.[pdf]
4. S. Miyamoto, O. Moutanabbir, E. E. Haller, and K. M. Itoh, "Spatial correlation of self-assembled isotopically pure Ge/Si(001) nanoislands," Physical Review B **79**, 165415 (2009).[pdf]

5. S. Miyamoto, K. Nishiguchi, Y. Ono, K. M. Itoh, and A. Fujiwara, "Escape dynamics of a few electrons in a single-electron ratchet using silicon nanowire metal-oxide-semiconductor field-effect transistor," Applied Physics Letters **93**, 222103 (2008).[pdf]
6. O. Moutanabbir, S. Miyamoto, A. Sagara, H. Oshikawa, and K. M. Itoh, "Tuning the luminescence emission of {105}-faceted Ge QDs superlattice using proton implantation and thermal annealing," Thin Solid Films **517**, 391 (2008).[pdf]
7. O. Moutanabbir, S. Miyamoto, A. Fujimoto, and K. M. Itoh, "Isotopically controlled self-assembled Ge/Si nanostructures," Journal of Crystal Growth, **301-302**, 324 (2007).[pdf]

International Conferences

1. R. Hirano, S. Miyamoto, M. Yonemoto, S. Samukawa, K. Sawano, Y. Shiraki, and K. M. Itoh, "Room-temperature observation of quantum size effects in photoluminescence of $Si_{0.8}Ge_{0.2}$/Si nanocolumns prepared by neutral beam etching," International Symposium on Quantum Nanophotonics and Nanoelectronics 2009, November 18-20, 2009, Tokyo, Japan.
2. K. Nishiguchi, S. Miyamoto, and A. Fujiwara, "Single-electron stochastic resonance using Si nanowire transistors," 22nd International Microprocesses and Nanotechnology Conference, November 16-19, 2009, Sapporo, Japan.
3. S. Miyamoto, K. Nishiguchi, Y. Ono, K. M. Itoh, and A. Fujiwara, "Single-electron activation over an oscillating barrier in silicon nanowire MOSFETs," 18th International Conference on Electronic Properties of Two-Dimensional Systems, July 19-24, 2009, Kobe, Japan.
4. S. Miyamoto, O. Moutanabbir, E. E. Haller, and K. M. Itoh, "Nucleation and mass transport in strain-driven islanding studied by combination of Voronoi tessellation and Ge enriched isotope," 6th International Conference on Silicon Epitaxy and Heterostructures, May 17-22, 2009, Los Angeles, USA.
5. S. Miyamoto, K. Nishiguchi, Y. Ono, K. M. Itoh, and A. Fujiwara, "Escape dynamics of electrons in a single-electron ratchet using silicon nanowire MOSFETs," 2nd IEEE Nanotechnology Materials and Device Conference, October 20-22, 2008, Kyoto, Japan.
6. A. Fujiwara, S. Miyamoto, K. Nishiguchi, Y. Ono, and N. M. Zimmerman, "Dynamics of single-electron capture in Si nanowire MOSFETs," 2008 IEEE Silicon Nanoelectronics Workshop, June 15-16, 2008, Honolulu, USA
7. O. Moutanabbir, T. Kawamura, S. Miyamoto, S. Kimura, M. Mizumaki, and K. M. Itoh, "Anomalous x-ray scattering 3D mapping of strain and composition of Ge/Si shrinking islands during the initial stage of Si overgrowth," 5th International Conference on Silicon Epitaxy and Heterostructures, May 20-25, 2007, Marseille, France.
8. O. Moutanabbir, A. Sagara, S. Miyamoto, H. Oshikawa, and K. M. Itoh, "Tuning the luminescence emission of {105}-faceted Ge QDs superlattice using proton implantation and thermal annealing," 5th International Conference on Silicon Epitaxy and Heterostructures, May 20-25, 2007, Marseille, France.
9. O. Moutanabbir, S. Miyamoto, and K. M. Itoh, "Artificial manipulation of the isotopic composition of Ge-Si epitaxial nanostructures," 5th International Conference on Silicon Epitaxy and Heterostructures, May 20-25, 2007, Marseille, France.
10. O. Moutanabbir, S. Miyamoto, and K. M. Itoh, "Subtleties in the epitaxial growth of Ge/Si nanstructures revealed by Raman scattering in combination with stable isotopes tracing," 2nd International WorkShop on New Group IV Semiconductor Nanoelectronics, October 2-3, 2006, Sendai, Japan.
11. O. Moutanabbir, S. Miyamoto, A. Fujimoto, and K. M. Itoh, "Isotopically controlled self-assembled Ge/Si nanostructures," 14th International Conference on Molecular Beam Epitaxy, September 3-8, 2006,Tokyo, Japan.
12. O. Moutanabbir, S. Miyamoto, Y. Tabuchi, and K. M. Itoh, "Pure germanium isotopes for investigation interdiffusion in uncapped self-assembled Ge/Si nanostructures," 2006 Material Research Society Spring Meeting, April 17-21, 2006, San Francisco, USA.