

Program

December 4 (Tue)

9:00 ~ 9:15 Opening Session

Welcome Address: Tateo Shimosawa, Director of RIES

Opening Remarks: Ikuo Suemune, Chair of Organizing Committee

9:15 ~ 10:55 Session 1: Quantum Information Processing with 彩(SAI)

Chairperson: Toshirou Yagi (RIES)

9:15 ~ 9:45 **S1-1** Alfred Forchel (Univ. Würzburg, Germany) “Single and Coupled Quantum Dots in Externally Controllable Fields - From Exciton Physics to Quantum Information Processing”

9:45 ~ 10:15 **S1-2** Toshio Hasegawa (Mitsubishi Electric Co., Kamakura) “An Experimental Realization of Quantum Cryptosystem”

10:15~10:45 **S1-3** Glen S. Solomon, Charles Santori, Matthew Pelton, and Yoshihisa Yamamoto (Stanford University, USA) “Towards High-Efficiency Triggered Photons using Single Optical Mode Coupling of Single Quantum Dot Emission”

(Short presentation on related topics)

10:45 ~ 10:50 **S1-4** Hiroataka Sasakura, Satoru Adachi, Kenichi Shiramine, and Shunich Muto (Division of Applied Physics, Hokkaido Univ.) “A Basic Unit for Quantum Gates Using Two Electron Spins in Triple Quantum Dot”

10:50 ~ 10:55 **S1-5** Kenji Tsujino, Shigeki Takeuchi and Keiji Sasaki (RIES, Hokkaido Univ.) “The Experimental Realization of Quantum Teleportation using Photons”

10:55 ~ 11:15 Break

11:15 ~ 11:55 Session 2: Measurements with 彩(SAI)

Chairperson: Takayoshi Nakamura (RIES)

11:15 ~ 11:45 **S2-1** Yuhji Tsujimi (RIES, Hokkaido Univ.) “Initial Process of the Ferroelectric Soft Mode Studied by Femto-second Spectroscopy”

(Short presentation on related topics)

11:45 ~ 11:50 **S2-2** A. Ishizumi, S. Yamamoto, M. Kasami, T. Mishina and J. Nakahara (Graduate School of Science, Hokkaido Univ.) “Low-Frequency Light Scattering in Carbon Disulfide”

11:50~ 11:55 **S2-3** Hidekazu Kumano, Akio Ueta, and Ikuo Suemune (RIES, Hokkaido Univ.) “Observation of Modified Light-matter Coupling in Novel Three-dimensional Semiconductor Microcavities”

11:55 ~ 13:15 Lunch Break (take a picture)

13:15 ~ 14:25 Session 3: Imaging and processing with 彩(SAI)

Chairperson: Shinya Kuriki (RIES)

13:15 ~ 13:45 **S3-1** John Rogers (Bell Laboratory, USA) “Electric Paper for Flexible Display”

13:45 ~ 14:15 **S3-2** Keiji Sasaki (RIES, Hokkaido Univ.) “Photon Confinement by Micro- and Nano-Particles”

(Short presentation on related topics)

14:15 ~ 14:20 **S3-3** Tsukasa Torimoto, Hiroshi Yoneyama, and Bunsho Ohtani (Catalysis Research

Center, Hokkaido Univ.) “Preparation and Photoelectrochemical Properties of CdS Nanoparticle Arrays”

14:20 ~ 14:25 **S3-4** Katsuhiko Ishii and Toshiaki Iwai (RIES, Hokkaido Univ.) “Dynamic Light Scattering Using a Low-coherent Interferometer”

14:25 ~ 16:05 Session 4: Photonic crystals for 彩(SAI)

Chairperson: Toshiaki Iwai (RIES)

14:25 ~ 14:55 **S4-1** Shawn-Yu Lin (Sandia National Lab., USA) “Preparation and Characterization of Silicon-based Three-dimensional Photonic Crystals”

14:55 ~ 15:25 **S4-2** Hideki Miyazaki (Materials Engineering Laboratory, National Institute for Materials Science, Tsukuba) “Assembly of Three-dimensional Microstructures in a Scanning Electron Microscope: the Technique and its Application to the Photonic Science”

15:25 ~ 15:55 **S4-3** Kuon Inoue (Chitose Institute of Science and Technology, Chitose) “Optical Properties of AlGaAs-based Two-dimensional Photonic Crystal Slabs and Their Application to Novel Devices”

(Short presentation on related topics)

15:55 ~ 16:00 **S4-4** Masanori Koshiba and Kunimasa Saitoh (Division of Electronics and Information Engineering, Hokkaido Univ.) “Full-Vector Finite Element Analysis of Photonic Crystal Holey Fibers”

16:00 ~ 16:05 **S4-5** Takunori Ito and Kazuaki Sakoda (RIES, Hokkaido Univ.) “Analytical and computational studies on the role of resonant polarizations in optical response of photonic crystals”

16:05 ~ 16:30 Break

16:30 ~ 18:35 Session 5: Recognition of 彩(SAI)

Chairperson: Mamoru Tamura (RIES)

16:30 ~ 17:00 **S5-1** Amiram Grinvald (Weizmann Institute of Science, Israel) “Spatio-temporal Interaction between Cortical Electrical Activity and the Microcirculation”

17:00 ~ 17:30 **S5-2** Manabu Tanifuji (RIKEN, Wako) “Combination Study of Intrinsic Signal Imaging and Extracellular Recordings for Understanding Neural Representation of Objects in Visual Association Cortex”

17:30 ~ 18:00 **S5-3** Kikuro Fukushima (Graduate School of Medicine, Hokkaido Univ.) “Coding of Smooth Gaze Movements in 3-dimensional Space by Frontal Cortex”

18:00 ~ 18:30 **S5-4** Tetsuo Kobayashi (RIES, Hokkaido Univ.) “Brain Mechanisms of Visual Awareness: Functional Neuroimaging Studies on Binocular Rivalry”

(Short presentation on related topics)

18:30 ~ 18:35 **S5-5** M. Tamura, Y. Hoshi, M. Nemoto, C. Sato and S. Kohri (RIES, Hokkaido Univ.) “Quantitative Optical Imaging of Brain Activity - Human and Animal Studies”

18:40 ~ 21:00 (Poster session together with conference dinner)

December 5 (Wed)

9:00 ~ 10:40 Session 6: Molecular dynamics with 彩(SAI)

Chairperson: Masatsugu Shimomura (RIES)

9:00 ~ 9:30 **S6-1** Kaoru Yamanouchi (Univ. Tokyo, Tokyo) “Exotic Behavior of Molecules and Clusters in Intense Laser Fields”

9:30 ~ 10:00 **S6-2** Hirohiko Kono (Tohoku University, Sendai) “Intense-laser-induced Electron Transfer in Molecules: Toward Manipulation of Electronic Motion”

10:00 ~ 10:30 **S6-3** Nobuhiro Ohta (RIES, Hokkaido Univ.) “Effects of Static Electric Field on Photochemical Dynamics”

(Short presentation on related topics)

10:30 ~ 10:40 **S6-4** Iwao Yamazaki, Seiji Akimoto, Yoshinobu Nishimura, Shin-ichiro Sato (Division of Molecular Chemistry, Hokkaido Univ.) “Quantum Interference of Energy Transfer in π -conjugated Systems and its Application to Photoswitching Devices”

10:40 ~ 11:00 Break

11:00 ~ 12:40 Session 7: Generation and Applications of 彩(SAI)

Chairperson: Satoru Tanaka (RIES)

11:00 ~ 11:30 **S7-1** Hajime Asahi (Osaka University, Osaka) “TI-containing New III-V Semiconductors for Temperature-independent Wavelength Semiconductor Lasers”

11:30 ~ 12:00 **S7-2** Satoshi Kawata (Osaka University, Osaka) “Microphoto Lithography Using a Femto Second Laser”

12:00 ~ 12:30 **S7-3** Satoshi Koizumi(Advanced Materials Institute, National Institute for Materials Science, Tsukuba) “Formation of Diamond pn Junction and Its UV-LED Operation”

(Short presentation on related topics)

12:30 ~ 12:35 **S7-4** Hiroshi Ohno*, Kanji Yoh**, Y.Katano**, K.Sueoka*, and K.Mukasa* (*Division of Electronics and Information Engineering., Hokkaido University, **Research Center for Integrated Quantum Electronics, Hokkaido University) "Electroluminescence of Spin-polarized Electrons in an Fe/InAs Hybrid Structure"

12:35 ~ 12:40 **S7-5** Katsuhiko Uesugi and Ikuo Suemune (RIES, Hokkaido Univ.) "Preparation and Characterization of Narrow-gap GaAsN-based Alloy Semiconductors for Long-wavelength Optoelectronic Devices"

12:40 ~ Closing Remarks

Poster Presentation

P1

“Palette in Condensed Matter”

Toshirou Yagi, Yuhji Tsujimi, Masaru Kasahara and Masaki Takesada
Phase Transition Group, RIES, Hokkaido University

P2

“Morphology Control of Nanowires Composed of Dialkylmacrocylic TTF”

Y. Tatewaki, K. Kakiuchi, H. Miyata, T. Ohta, T. Akutagawa, T. Hasegawa and T. Nakamura
Y. Tatewaki¹, K. Kakiuchi¹, H. Miyata¹, T. Ohta¹, T. Akutagawa¹, T. Hasegawa¹, J. Becher² and T. Nakamura¹

¹ Molecular Electronics Laboratory, RIES, Hokkaido University

² Department of Chemistry, Odense University

P3

“Current Research in the Laboratory of Quantum Electronics”

Jun Kawamata and Kazuaki Sakoda

Laboratory of Quantum Electronics, RIES, Hokkaido University

P4

“Fabrication and Characterization of Regular Porous Polymer Films Formed by Self-assembly”

Masaru Tanaka, Masafumi Takebayashi, Katsuhisa Sato, Masashi Miyama, Kazutaka Nishikawa, Jin Nishida, and Masatsugu Shimomura

Laboratory of Molecular Devices, RIES, Hokkaido University

P5

“Mesoscale Pattern Formation by Dissipative Process”

Hiroshi Yabu¹, Shin-ichiro Nishimura¹, Kuniharu Ijiro² and Masatsugu Shimomura^{2,3}

¹ Graduate School of Science, Hokkaido University

² Laboratory of Molecular Devices, RIES, Hokkaido University

³ Frontier Research System, The Institute of Physical and Chemical Research (RIKEN)

P6

“Template Polymerization of Diacetylene-Nucleobase Monolayers Organized by Oligo-DNA at the Air-Water Interface”

Jin Matsumoto¹, Kuniharu Ijiro^{1,2}, Shin-ichiro Nishimura³ and Masatsugu Shimomura²

¹ PRESTO, Japan Science and Technology Corporation (JST)

² Laboratory of Molecular Devices, RIES, Hokkaido University

³ Graduate School of Science, Hokkaido University

P7

“Formation of Two-Dimensional Mesoscopic Patterns of Ultra-Fine Particles by Dissipative Structures”

Tetsuro Sawadaishi¹, Kuniharu Ijiro² and Masatsugu Shimomura^{1,2}

¹ Spatio-Temporal Functional Materials Group, Frontier Research System, The Institute of Physical and Chemical Research (RIKEN)

² Laboratory of Molecular Devices, RIES, Hokkaido University

P8

“A CFD Study on the Flow and LDL Concentration on a Vascular Endothelium”

Shigeo Wada, Koichi Niwa and Takeshi Karino

Laboratory of Biofluid Dynamics, RIES, Hokkaido University

P9

“Systems Approaches to Heart Failure”

Koichi Kawahara, Takeru Naiki, Yoshiko Yamauchi and Takayuki Nakajima

Laboratory of BioMedical Control, RIES, Hokkaido University

P10

“Nitregic Modulation of The Identified Interneurons in The Crayfish”

Hitoshi Aonuma and Tateo Shimozawa

Laboratory of Neuro-Cybernetics, RIES, Hokkaido University

P11

“Structural and Electrical Studies of AlN Films Grown on Atomically Smooth 6H-SiC Substrates”
Satoshi Yamada¹, Jun-ichi Kato¹, Satoru Tanaka¹, I. Suemune¹, Adrian Avramescu², and Yoshinobu Aoyagi²

¹Laboratory of Optoelectronics, RIES, Hokkaido University

²The Institute of Physical and Chemical Research (RIKEN)

P12

“High-density InAs Quantum Dots Ensembles with Well-resolved Excitonic Shells”

Sasikala Ganapathy, Xi Qing Zhang, Katsuhiko Uesugi, Hidekazu Kumano, and Ikuo Suemune
Laboratory of Optoelectronics, RIES, Hokkaido University