

*The 12th RIES–Hokudai
International Symposium*

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KAN

November 21-22, 2011
Chateraise Gateaux Kingdom Sapporo

Organized by
Research Institute for Electronic Science (RIES)

Preface

On behalf of the symposium committee, it is my great pleasure to invite you to the 12th International Symposium of Research Institute of Electronic Science (RIES) of Hokkaido University, between 21st and 22nd, Nov., 2011 in Sapporo. This symposium aims to establish a wide area international relationship between the researchers in the scientific fields of “Optic”, “Molecule/Material”, “Life” and “Mathematic”, which should help to merge the several advanced topics in different scientific fields and to accelerate the innovations in related fields.

Since 2001, the aim of each symposium has been symbolized using a single “Kanji” (Chinese Character). Against such a background, the Kanji of this year is “觀”, which means to observe something at every angle.

We would like to share the opportunity for interdisciplinary and conscious discussion on Green and Life. This symposium is expected to provide a place for intensive exchange of various attitudes by your participation.

Sincerely yours,

Junji NISHII

Organizing Committee

Tomomi NEMOTO
Yoshinori NISHINO
Hidekazu KUMANO
Ryosuke KAWAKAMI
Yutaka YAMAGUCHI
Tatsuo YANAGITA

Secretaries

Kiyo SASAKI
Yuki SUGAWARA

PROGRAM

Chardonnay Floor in Chateraise Gateaux Kingdom Sapporo

Oral Session (November 21, 2011)

13:30 **Opening Remarks** Hiroaki MISAWA (Hokkaido Univ.)

Advanced Photonics and Energy (Chair: Junji NISHII)

13:40 Shigeru NIKI (AIST)

Progress and prospects of the CIGS solar cell and module technology.

14:10 Kosei UENO (Hokkaido Univ.)

Plasmon-enhanced photocurrent generation and its application to artificial photosynthesis system.

14:30 Yuan-Pern LEE (National Chiao Tung University)

Some applications of transient infrared absorption spectroscopy.

15:00 – 15:20 **Coffee Break**

Advanced Synthesis and Measurement (Chair: Akira ISHIBASHI)

15:20 Yasuyuki TSUBOI (Hokkaido Univ.)

Photochemistry and optical manipulation of nanoparticles on metallic nanostructures.

15:50 Yoshinori NISHINO (Hokkaido Univ.)

Exploring the nanoworld using coherent X-rays.

16:10 Nobuhiro OHTA (Hokkaido Univ.)

Fluorescence lifetime microscopy (FLIM) for the assessment of the intracellular conditions.

16:30 – 17:40 **Poster Session**

Keynote Lecture (Chair: Shigeki Takeuchi)

17:45 Tomoji KAWAI (Osaka Univ.)

Innovative nano-biodevices for DNA and related molecules: STM and gating nanopore.

18:30 - 20:30 **Reception**

Oral Session (November 22, 2011)

Photonics for Future (Chair: Hidekazu KUMANO)

- 9:00 Yong-Hee LEE (KAIST)
Nonlinear plasmonic nanocavities.
- 9:30 Masaya NOTOMI (NTT)
Integrated nanophotonics for green ICT.
- 10:00 Ikuo SUEMUNE (Hokkaido Univ.)
Photon generation and absorption processes in semiconductor nanostructures

10:20-10:40 Coffee Break

Life Science for Future (Chair: Tomomi NEMOTO)

- 10:40 Manho LIM (Pusan National University)
Structure of unfolded CO-ligated cytochrome c in 6 M guanidine HCl probed by femtosecond vibrational spectroscopy.
- 11:10 Tomomi SHINDOU, Mayumi OCHI-SHINDOU, Jeffery R. WICKENS (OIST)
A Ca²⁺ threshold for induction of spike-timing dependent depression in the mouse striatum.
- 11:40 Masanori MATSUZAKI (NIBB)
Neural functions revealed by two-photon imaging and stimulation methods.
- 12:10 Kengo KINOSHITA (Tohoku Univ.)
Seeing in silico is believing. Brief introduction and some recent topics in bioinformatics.

12:40-13:40 Lunch

Numerical Analysis for Future (Chair: Yoshinori NISHINO)

- 13:40 Takashi ISHIKAWA (Paul Scherrer Institute)
Structural analysis of eukaryotic flagella/cilia by electron cryo-tomography.
- 14:10 Hiroshi HIRATA (Hokkaido Univ.)
Electron spin resonance-based molecular imaging for small animals.
- 14:40 Seiya IMOTO (Tokyo Univ.)
Systems biology for cancer research: Finding gene regulations specifying cancer Heterogeneity.

- 15:10 **Closing Remarks** Takayoshi NAKAMURA

Poster Session (16:25 – 17:40, November 21, 2011)

1. Detection of cellular environments using fluorescence lifetime, Takakazu NAKABAYASHI, Md. Serajul ISLAM, Ryoya SUMIKAWA, Masataka KINJO, Nobuhiro OHTA (RIES, Hokkaido Univ.)
2. Control of electrical and magnetic properties of organic conductors using photoirradiation and electric fields, Toshifumi IIMORI, Farzana SABETH, Toshio NAITO, Nobuhiro OHTA (RIES, Hokkaido Univ.)
3. Solid-state photonic quantum phase gates by using fiber-microsphere cavity and diamond NV centers, Masazumi FUJIWARA, Tetsuya NODA, Kiyota TOUBARU, Akira TANAKA, Hong-Quan ZHAO, and Shigeki TAKEUCHI (RIES, Hokkaido Univ.)
4. 3-Fluoro-1-adamantylammonium Crown Ether Supramolecular Rotators in $[\text{Ni}(\text{dmit})_2]$ Salts, Yan Yin-Nan, Tomoyuki AKUTAGAWA, Kazuya KUBO, Shin-ichiro NORO, Takayoshi NAKAMURA (RIES, Hokkaido Univ.)
5. Control of Gas Adsorption Properties in Copper(II) Coordination Polymers with Hetero Inorganic Anions, Katsuo FUKUHARA, Shin-ichiro NORO, Kazuya KUBO, Takayoshi NAKAMURA (RIES, Hokkaido Univ.)
6. Development of Pulsed Coherent X-ray Solution Scattering using Focused X-ray Free Electron Laser, Takashi KIMURA, Chie NAGASE, Shin MORI, Yoshinori NISHINO (RIES, Hokkaido Univ.)
7. Femto-second Three-Dimensional Imaging of Ultra-Fast Strain dynamics in anocrystals, Marcus C. NEWTON, Kei SOEDA, Yoshinori NISHINO (RIES, Hokkaido Univ.)
8. Fabrication of Ni/NiO/Ni Nanoscale Tunnel Junctions Utilizing Thin-Film Edges and Their Current-Voltage Characteristics, Hideo KAIJU, Kenji KONDO, Akira ISHIBASHI (RIES, Hokkaido Univ.)
9. For Fabrication of Multi-striped Orthogonal Photon-Photocarrier Propagation Solar Cells, Akira Ishibashi¹, K. Tsuzuku², Hideo Kaiju¹, Kenji Kondo¹, N. Kawaguchi¹, S. White¹ (RIES, Hokkaido Univ., P&D Ctr.)
10. Allometry of cell locomotion in the true slime mold: size, shape and speed, Shigeru KURODA, Seiji TAKAGI, Tetsuo UEDA (RIES, Hokkaido Univ.)
11. Decision making under conflict situation by the Physarum plasmodium, Seiji TAKAGI, Shigeru KURODA, Tetsuo UEDA (RIES, Hokkaido Univ.)
12. Fabrication of microfluidic devices with off-axis diffractive focusing reflectors, Shintaro OKAMOTO, Hiroaki NISHIYAMA, Junji NISHII (RIES, Hokkaido Univ.)
13. Guiding mode generation in photoresists using femtosecond laser-induced direct polymerization, Hiroaki NISHIYAMA¹, Yoshinori HIRATA², Junji NISHII¹ (1: RIES, Hokkaido Univ., 2: Osaka Univ.)
14. Thermodynamics and Dynamics in Wetting, Hiroyuki MAYAMA, Hiroaki NISHIYAMA, Junji NISHII (RIES, Hokkaido Univ.)
15. Efficient excitation of localized plasmons via a tapered fiber coupled microresonator,

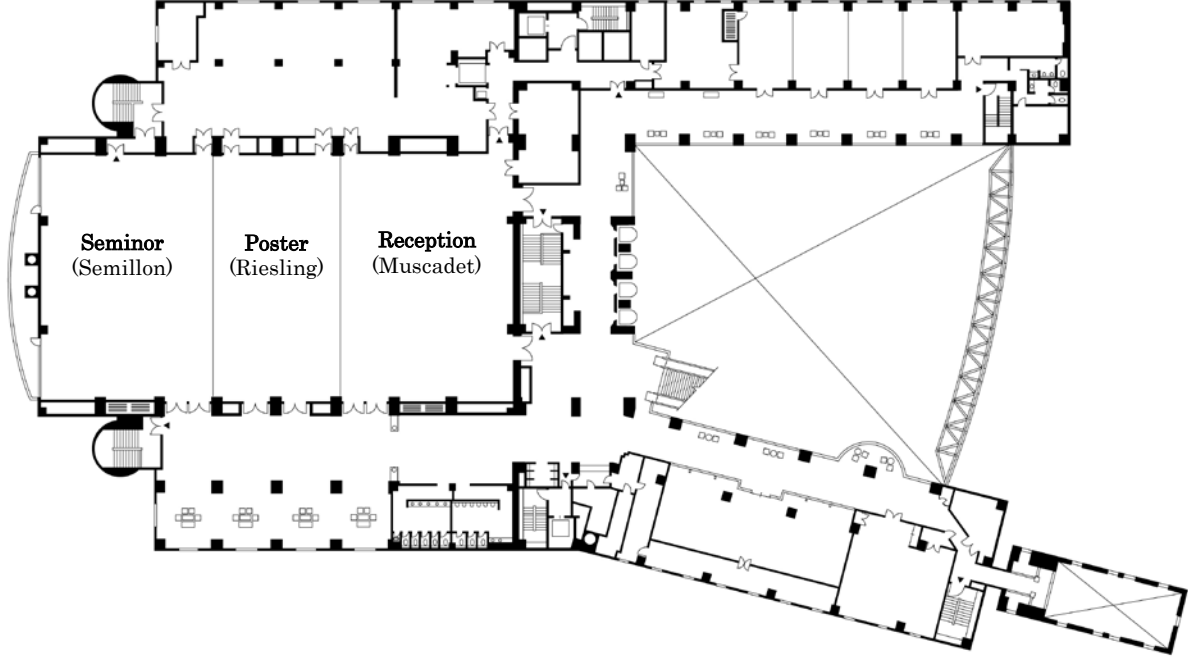
- Kazutaka KITAJIMA, Hideaki TAKASHIMA, Hideki FUJIWARA, Junji NISHII, Keiji SASAKI (RIES, Hokkaido Univ.)
16. Nano-optical trapping of small particles with plasmonic nanostructures, Akio SANADA, Yoshito TANAKA, Keiji SASAKI (RIES, Hokkaido Univ.)
 17. Deterministic property of second rank saddles with two reactive degrees of freedom, Yutaka NAGAHATA, Shinnosuke KAWAI, Hiroshi TERAMOTO, Chun BIU LI, Tamiki KOMATSUZAKI (RIES, Hokkaido Univ.)
 18. Extracting many-body interaction laws from an observation, Naoki MIYAGAWA, Hiroshi TERAMOTO, Chun Biu LI, Tamiki KOMATSUZAKI (RIES, Hokkaido Univ.)
 19. Extracting the reaction network buried in single Molecule Time Series of Epidermal Growth Factor Receptor (EGFR) and Growth factor receptor-bound protein 2 (Grb2), Tahmina SULTANA, Hiroshi TERAMOTO, Chun Biu LI, Tamiki KOMATSUZAKI (RIES, Hokkaido Univ.)
 20. Close correlation between ATP level and cellular morphology during plant immune response revealed by ATP imaging at single cell level, Noriyuki HATSUGAI (RIES, Hokkaido Univ.)
 21. High performance auto-luminescent genetically-encoded Ca^{2+} indicators applicable in conjunction with optogenetic technology, Yu-Fen CHANG (RIES, Hokkaido Univ.)
 22. Improvement of multi-photon microscopy for deeper-tissue imaging in living mice, Terumasa HIBI, Ryosuke KAWAKAMI, Tomomi NEMOTO (RIES, Hokkaido Univ.)
 23. Development of in vivo multi-photon microscopy for elucidation of neural activity with morphological changes in living mouse brain, Ryosuke KAWAKAMI, Terumasa HIBI, Tomomi NEMOTO (RIES, Hokkaido Univ.)
 24. Improvement of spatial resolution in laser scanning microscopy with higher-order radially polarized beam generated by liquid crystal device, Sari IPPONJIMA¹, Terumasa HIBI^{1,2}, Yuichi KOZAWA^{2,3}, Hibiki HORANAI¹, Aya SATO^{2,4}, Makoto KURIHARA⁵, Nobuyuki HASHIMOTO⁵, Hiroyuki YOKOYAMA^{2,4}, Shunichi SATO^{2,3}, Tomomi NEMOTO^{1,2} (1: RIES, Hokkaido Univ., 2: JST,CREST, 3: IMRAM, Tohoku Univ., 4: NICHe, Tohoku Univ., 5: Citizen Holdings Co.,Ltd)
 25. Two-photon microscopic analysis of acid vesicle dynamics in osteoclast, Kazuki TAKEDA^{1,2}, Terumasa HIBI^{1,2,3}, Ryosuke KAWAKAMI^{1,2,3}, Tomomi NEMOTO^{1,2,3} (1: RIES, Hokkaido Univ., 2: Grad. Sch. Info. Sci. Tech., Hokkaido Univ., 3: JST CREST)
 26. Heterogeneity-induced pulse generators, Masaaki YADOME¹, Takashi TERAMOTO², Yasumasa NISHIURA¹ (1:RIES, Hokkaido Univ., 2: Chitose Institute of Science and Technology)
 27. Comprehensive analysis of the genes involved in the biogenic amine systems in the field cricket *Gryllus bimaculatus*, Takayuki WATANABE, Hitoshi AONUMA (RIES, Hokkaido Univ.)
 28. Manipulation of aggressive behavior of the cricket using a small robot, Hitoshi AONUMA,

- Takayuki WATANABE, Rodrigo da Silva GUERRA, Koh HOSIDA (RIES, Hokkaido Univ.)
29. Detection of female sex pheromone by male and female cockroaches: a comparative study, Hiroshi NISHINO¹, Masazumi IWASAKI¹ and Makoto MIZUTANI² (1: RIES, Hokkaido Univ., 2: Grad. Sch. Life. Sci., Hokkaido Univ.)
 30. A neural network model of memory retrieval with Top-Down cholinergic modulation, Hiromichi TSUKADA¹, Yutaka YAMAGUTI², Hiroshi FUJII³, Ichiro TSUDA² (1: Department of Mathematics, Graduate School of Science Hokkaido Univ, 2: RIES, Hokkaido Univ, 3: Department of Intelligent Systems, Kyoto Sangyo Univ.)
 31. Making neurons with genetic algorithm, Hiroshi WATANABE¹, Takao ITO², Ichiro TSUDA¹ (1: RIES, Hokkaido Univ, 2: Hokkaido Prefectural Police)
 32. Driving and Photoregulation of Motility of a Bio-nano-motor by a Novel Photoresponsive Nucleotide Analogue, Takashi KAMEI, Tuyoshi FUKAMINATO, Nobuyuki TAMAOKI (RIES, Hokkaido Univ.)
 33. Shape Dependence of Antigen-coated Gold Nanomaterials on the Vaccine Activity, Tatsuya MATSUNAGA¹, Kenichi NIKURA², Tadaki SUZUKI³, Keita NAGAKAWA⁴, Shintaro KOBAYASHI⁵, Hiroki YAMAGUCHI⁵, Hirofumi SAWA⁵, Kuniharu IJIRO² (1: Grad. School of Chemical Sciences and Engineering, Hokkaido Univ., 2: RIES, Hokkaido Univ., 3: NIID, 4: Grad. School of Sci., Hokkaido Univ., 5: CZC, Hokkaido Univ.)
 34. Preparation of DNA brush-immobilized tissue culture substrate that enables cell ablation by DNase, Asumi EGUCHI¹, Yasutaka MATSUO², Kenichi NIKURA², Kuniharu IJIRO² (1: Grad. School of Chemical Sciences and Engineering, Hokkaido Univ., 2: RIES, Hokkaido Univ.)
 35. SERS Active Hollow Assembly of Gold Nanoparticles in Solutions, Naoki IYO¹, Kenichi NIKURA², and Kuniharu IJIRO² (1: Grad. School of Chemical Science and Engineering, Hokkaido Univ., 2: RIES, Hokkaido Univ.)
 36. Positive aspects of shrinkage in fabrication of micro/nanostructures in resists by direct laser writing, Quan SUN¹, Kosei UENO^{1,2}, Hiroaki MISAWA¹ (1: RIES-Hokkaido. Univ., 2: PRESTO-JST)
 37. Plasmon resonant enhancement of photocurrent conversion at gold nanoparticles loaded TiO₂, Xu SHI¹, Kosei UENO^{1,2}, Hiroaki MISAWA¹ (1: RIES-Hokkaido. Univ., 2: PRESTO-JST)
 38. Isotropic shape of InAs/GaAs Quantum Disk and its optical properties --- reduction of exciton-state splitting ---, Seiya SAKURAI (RIES, Hokkaido Univ.)
 39. Fabrication of a highly efficient single photon emitter with metal and its optical properties, Hitoshi IJIMA (RIES, Hokkaido Univ.)
 40. Telecommunication band photoluminescence of InAs quantum dots and dashes embedded in different barrier materials, Nahid Akhter JAHAN (RIES, Hokkaido Univ.)
 41. Generation and characterization of Werner states employed with polarization entangle-classical hybrid photon source, Kosuke MATSUDA (RIES, Hokkaido Univ.)

42. Investigation on pure single photon emission by a metal-embedded structure, Hideaki NAKAJIMA (RIES, Hokkaido Univ.)
43. Nanotechnology and Low-Carbon research Network project in Hokkaido University, Yasutaka MATSUO (RIES, Hokkaido Univ.)
44. Thin film micro grating on hydro-gels for fine measurement, Naonobu SHIMAMOTO, Hideyuki MITOMO, Ryuzo KAWAMURA, Yoshihito OSADA, Kuniharu IJIRO (RIES, Hokkaido Univ.)

Floor Plan in Chateraise Gateaux Kingdom Sapporo

3F Chardonnay Floor



Advanced Photonics and Energy

Advanced Synthesis and Measurement

Keynote Lecture

Photonics for Future

Life Science for Future

Numerical Analysis for Future

Poster