

Program

Tuesday, January 17

Opening/ Chair: Kazuyuki Kasuga

09:20 **Opening Address**

Dr. Masanori Tachiya

Chair of Organizing Committee,

Fellow, National Institute of Advanced Industrial Science and Technology (AIST)

Welcome Address

Dr. Kisaburo Kodama

Vice-President, AIST

Session 1/Chair: Masanori Tachiya

09:40 O-01 (Invited)

High-Efficiency Carrier Multiplication in Semiconductor Nanocrystals: Redefining the Limits of Conversion Efficiency of Light Quanta into Charge Carriers

Victor I. Klimov

Chemistry Division, Los Alamos National Laboratory, USA

10:20 O-02

Stochasticity of Photophysical Processes in Nanosystems

Alexander Barzykin¹, Masanori Tachiya²

1 Nanotechnology Research Institute, AIST

2 Fellow, AIST

10:50 O-03 (Invited)

Biological Processes on the Level of a Single Molecule

Joseph Klafter and Ophir Flomenbom

School of Chemistry, Raymond & Beverly Sackler Faculty of Exact Sciences, Tel Aviv University, Israel

11:30 Lunch

Session 2/Chair: Naoto Koshizaki

13:00 O-04 (Invited)

Synthesis of Colloidal Nanomaterials by Femtosecond Laser Ablation in Liquids

Michel Meunier, Andrei Kabashin, Sebastien Besner, Francoise Winnik, and Paul Boyer

Department of Engineering Physics, Ecole Polytechnique de Montreal, Canada

13:40 O-05

Nanomaterial Preparation Using Pulsed Laser Ablation in Liquid

Takeshi Sasaki, Yoshiki Shimizu, and Naoto Koshizaki

Nanoarchitectonics Research Center, AIST

14:10 **Poster Session 1** and Coffee Break

Session 3/Chair: Taisuke Nakanaga

- 16:10 O-06
Coherent Control of Laser Reaction: Selective Bond Breaking of Polyatomic Molecules
Hidekazu Nagai
Research Institute of Instrumentation Frontier, AIST
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- 16:40 O-07 (Invited)
Structural Dependence of Tunneling Ionization and Harmonic Generation of Simple Molecules by Short Pulse Lasers
Chii-Dong Lin¹ and X. M. Tong^{1,2}
1 Department of Physics, J. R. MacDonald Laboratory, Kansas State University, USA
2 Institute of Materials Science, Graduate School of Pure and Applied Science, University of Tsukuba
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- 17:20 O-08
Generation of Optical-field Controlled High-Intensity Laser Pulses and its Applications
Masayuki Kakehata, Hideyuki Takada, Yohei Kobayashi, and Kenji Torizuka
Photonics Research Institute, AIST
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- 17:50

Wednesday, January 18

Session 4/Chair: Takeshi Sasaki

- 09:00 O-09
Fabrication of Monodisperse Nanoparticles by Laser Process
Takafumi Seto^{1,2}, Makoto Hirasawa^{1,2}, Takaaki Orii^{1,2}, and Kenji Koga^{1,3}
1 Research Consortium for Synthetic Nano-Function Materials Project (SYNAF)
2 Advanced Manufacturing Research Institute, AIST
3 Nanotechnology Research Institute, AIST
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- 09:30 O-10
Self-Alignment of Ge Nano-Particles in Laser Induced Bragg Grating in Ge-B-SiO₂ Film
Junji Nishii¹ and Hiroaki Nishiyama²
1 Photonics Research Institute, AIST
2 Graduate School of Engineering, Osaka University
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- 10:00 Coffee Break

Session 5/Chair: Hiroyuki Niino

- 10:20 O-11 (Invited)
Selective Activation of Material Property Changes in Photostructurable Glass Ceramic Materials by Laser Photophysical Excitation
Frank E. Livingston and Henry Helvajian
Space Materials Laboratory, The Aerospace Corporation, USA
- 11:00 O-12
Rapid Prototyping of Silica Glass Microstructures by LIBWE Method: Fabrication of Deep Microtrenches
Yoshizo Kawaguchi, Tadatake Sato, Aiko Narazaki, Ryozi Kurosaki, and Hiroyuki Niino
Photonics Research Institute, AIST
- 11:30 Lunch

Session 6/Chair: Toshihide Kamata

- 13:00 O-13 (Invited)
Organic Semiconductors: New Materials and Processes for Room Temperature Spintronics
Valentin Dediu, Ilaria Bergenti, E. Lunedei, A. Riminucci, and Carlo Taliani
Istituto per lo Studio dei Materiali Nanostrutturati, Bologna, Consiglio Nazionale delle Ricerche, Italy
- 13:40 O-14
Organic Semiconductors - Correlation Between Molecular Packing and Physical Properties
Reiko Azumi¹, Shuichi Nagamatsu^{1,2}, Masayuki Chikamatsu¹, Yuji Yoshida¹, Ming Lu¹, Midori Goto³, and Kiyoshi Yase¹
1 Photonics Research Institute, AIST
2 Department of Computer Science and Electronics, Kyushu Institute of Technology
3 Research Facilities Department, Technical Service Center, AIST
- 14:10 **Poster Session 2** and Coffee Break

Session 7/Chair: Yuji Kawanishi

- 16:10 O-15 (Invited)
Azobenzene Polyelectrolytes for Self-Assembled Photo-Reversible Films and Structures
Christopher J. Barrett
Department of Chemistry, McGill University, Canada
- 16:50 O-16
Fabrication of High Density Bio-Photonic Device
Hirobumi Ushijima¹, Nobuko Fukuda¹, Masateru Ito², Fumio Nakamura², and Kaoru Tamada³
1 Photonics Research Institute, AIST
2 New Frontiers Research Laboratories, Toray Industries, Inc.
3 Department of Electronic Chemistry, Tokyo Institute of Technology
- 17:20
- 18:00 **Banquet**

Thursday, January 19

Session 8/Chair: Takashi Arimura

- 09:00 O-17
Controlling Electronic States and Photochemical Reactivities of C₆₀ by Chemical Functionalization
Akihiko Ouchi
Research Institute for Innovation in Sustainable Chemistry, AIST
- 09:30 O-18
Highly Efficient Catalytic Conversion of CO₂ by Water-Soluble and Recyclable Metal Complexes
Yuichiro Himeda
Energy Technology Research Institute, AIST
- 10:00 Coffee Break

Session 9/Chair: Ryuzi Katoh

- 10:20 O-19
Seeing Stress Distribution in Solid by Smart Coating of Elasticoluminescence
Chao-Nan Xu, Hiroshi Yamada, Yusuke Imai, and Yoshio Adachi
On-site Sensing and Diagnosis Research Laboratory, AIST
- 10:50 O-20 (Invited)
Electronic Processes in Nanostructured Semiconductors
Juan Bisquert
Departament de Ciències Experimentals, Universitat Jaume I, Spain
- 11:30 Lunch

Session 10/Chair: Hideki Sugihara

- 13:00 O-21
Ultrafast Visible-to-IR Transient Absorption Spectroscopy on Electron Injection in Dye-Sensitized Semiconductor Films
Akihiro Furube¹, Kohjiro Hara², Ryuzi Katoh¹, and Masanori Tachiya³
¹ *Research Institute of Instrumentation Frontier, AIST*
² *Research Center for Photovoltaics, AIST*
³ *Fellow, AIST*
- 13:30 O-22
Reverse Electron Transfer at the Interface of Semiconductor Film in Dye-Sensitized Solar Cells
Masatoshi Yanagida, Kazuhiro Sayama, Kazuyuki Kasuga, Mitsuhiro Kurashige, and Hideki Sugihara
Energy Technology Research Institute, AIST

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- 14:00 O-23 (Invited)
Towards Optimisation of Electron Transfer Dynamics in Dye Sensitised Solar Cells
James R. Durrant
Department of Chemistry, Imperial College London, U.K.
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- 14:40 O-24
Highly Efficient Organic Thin-Film Solar Cells Using Nanostructured Active Layers
Kazuhiro Saito¹, Susumu Toyoshima¹, Tetsuya Taima¹, Kohjiro Hara¹, and Kiyoshi Yase²
1 Research Center for Photovoltaics, AIST
2 Photonics Research Institute, AIST
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- 15:10 **Closing Remarks**
Dr. Kazuyuki Kasuga
Principal Research Scientist, Energy Technology Research Institute, AIST