

# THE 115TH ICR ANNUAL SYMPOSIUM

(11 December 2015)

## ORAL PRESENTATIONS

SHIZU, Katsuyuki (Molecular Materials Chemistry)  
“Theoretical and Computational Chemistry toward Organic Materials and Devices”

NGUYEN, Hao Canh (Bio-knowledge Engineering)  
“Machine Learning on Graphs for Biological Network Analysis”

UMETANI, Shigeo (Hydrospheric Environment Analytical Chemistry)  
“Development of Functional Separation Materials Selective for Rare Metals”

TAKEUCHI, Toshihide (Biofunctional Design-Chemistry)  
“Intercellular Chaperone Transmission via Exosomes Contributes to Maintenance of Organismal Proteostasis”

MATSUMIYA, Yumi (Molecular Rheology)  
“Dynamics of Associative Polymer System”

— ICR Award for Young Scientists —  
MURATA, Michihisa (Structural Organic Chemistry)  
“Electron-deficient Tetrabenzo-fused Pyracylene and Conversions into Curved and Planar  $\pi$ -Systems Having Distinct Emission Behaviors”

— ICR Award for Young Scientists —  
UEDA, Yoshihiro (Synthetic Organic Chemistry)  
“Final-stage Site-selective Acylation for the Total Syntheses of Multifidoides A-C”

— ICR Award for Young Scientists (Foreign Researchers' Category) —  
PATEL, Vijay Kumar (Polymer Controlled Synthesis)  
“Practical Synthesis of  $[n]$ Cycloparaphenylenes ( $n=5, 7-12$ ) by  $H_2SnCl_4$ -Mediated Aromatization of 1,4-Dihydroxycyclo-2,5-diene Precursors”

— ICR Award for Graduate Students —  
TAKEUCHI, Hironori (Synthetic Organic Chemistry)  
“Total Synthesis of Ellagitannins via Regioselective Sequential Functionalization of Unprotected Glucose”

— ICR Award for Graduate Students —  
SHIOYA, Nobutaka (Solution and Interface Chemistry)  
“A New Schematic for Poly(3-alkylthiophene) in an Amorphous Film Studied Using a Novel Structural Index in Infrared Spectroscopy”

— ICR Grants for Promoting Integrated Research —  
NAKANISHI, Yohei  
“Orientation Process of Brush-modified Nanoparticles by Synchrotron Small Angle X-ray Scattering”

ISOZAKI, Katsuhiko  
“Unprecedented Acceleration of Silane Alcoholysis Reaction in Self-assembled Monolayer on Gold Nanoparticle Catalysts”

## POSTER PRESENTATIONS

**LW**: Laboratory Whole Presentation

**LT**: Laboratory Topic

**GE**: General Presentation

### — Organoelement Chemistry —

**LW** “Research Topics in Organoelement Chemistry”

### — Structural Organic Chemistry —

**LW** “Research Activities in Structural Organic Chemistry Laboratory”

**GE** KAJI, Shoji; MURATA, Michihisa; WAKAMIYA, Atsushi; MURATA, Yasujiro  
“Synthesis and Structure of Gold Complexes Having Thianthrene Dithiolate Ligands”

**GE** SHIMOGAWA, Hiroyuki; WAKAMIYA, Atsushi; MURATA, Yasujiro  
“D-A Type Organic Dyes with Bis(Difluoroboron) Dipyrrolylethanedione as a New Electron-Accepting Unit”

### — Synthetic Organic Chemistry —

**LW** “Recent Advances of Research in Synthetic Chemistry Laboratory”

**GE** YELLA, Ramesh; BABA, Tomonori; TANAKA, Yuya; YAMAMOTO, Satoru; FURUTA, Takumi; KAWABATA, Takeo  
“Stereoselective Intramolecular Cross-aldol and Desymmetrization of Aliphatic Dials Enabled by Axially Chiral Aniline-type Catalyst”

### — Advanced Inorganic Synthesis —

**LW** “Research Activity of Advanced Inorganic Synthesis”

**GE** EGUCHI, Daichi; SAKAMOTO, Masanori; TERANISHI, Toshiharu  
“Structural Control of Porphyrin Face-coordinated Gold Clusters for Constructing Suprastructures”

**GE** MATSUMOTO Kenshi; SATO Ryota; TRINH, T. Thuy; SAKUMA Noritsugu; TERANISHI Toshiharu  
“High-Performance  $L1_0$ -FePd/ $\alpha$ -Fe Nanocomposite Magnets with Controlled Crystal Grain Size”

**GE** KIMURA, Masato; SAKAMOTO, Masanori; FURUBE, Akihiro; ADACHI, Hiroyuki; SUGIMOTO, Toshiki; WATANABE, Kazuya; MATSUMOTO, Yoshiyasu; TERANISHI, Toshiharu  
“Synthesis and Visible Light-induced Charge Separation of Heterostructured Au/ZnS Nanoparticles”

### — Chemistry of Polymer Materials —

**LW** “Research Activities in Laboratory of Chemistry of Polymer Materials”

GE YAHATA, Yoshikazu; OHNO, Kohji; TSUJII, Yoshinobu  
“Polymer-brush-grafted Particles for Control of Phase Separation in Polymer/Ionic-Liquid Blend Films”

— **Polymer Controlled Synthesis** —

LW “Research Topics of Polymer Controlled Synthesis Laboratory”

GE ONISHI, Hiroaki; KAYAHARA, Eiichi; YAMAGO, Shigeru  
“Synthesis and Physical Property of Oxigenated [10] Cycloparaphenylene”

GE QU, Rui; KAYAHARA, Eiichi; YAMAGO, Shigeru  
“Synthetic Studies of CPP Derivatives via Bromination of CPPs”

GE FAN, Weijia; NAKAMURA, Yasuyuki; YAMAGO, Shigeru  
“Controlled Polymer Synthesis Based on Multi-functional TERP Initiators”

GE OGIHARA, Tasuku; NAKAMURA, Yasuyuki; YAMAGO, Shigeru  
“Elucidation of the Effect of Reaction Media in the Radical-radical Reaction”

— **Inorganic Photonics Materials** —

LT UEDA, Yuki; MASAI, Hirokazu; TOKUDA, Yomei  
“Structural Analysis of Lithium Silicate Glasses”

GE USUI, Takaaki; MASAI, Hirokazu; TOKUDA, Yomei  
“Optical Properties of Ce<sup>3+</sup>-doped Li<sub>2</sub>O-B<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> Glasses”

— **Nano Spintronics** —

LT “Development of Novel Spintronic Devices”

GE KAKIZAKAI, Haruka; YAMADA, Kihiro; KAWAGUCHI, Masashi; KOYAMA, Tomohiro; CHIBA, Daichi; Ono, Teruo  
“Approach to Electric Field Induced Domain Wall Motion in MgO/Co/Pt System”

GE YAMADA, Kihiro; KAKIZAKAI, Haruka; KOYAMA, Tomohiro; ONO, Shimpei; MIWA, Kazumoto; KAWAGUCHI, Masashi; CHIBA, Daichi; ONO, Teruo  
“Electric Field Control of Superparamagnetic Ni/Cu Structure”

— **Biofunctional Design-Chemistry** —

LW “Research Activity at Biofunctional Design Chemistry”

GE WATANABE, Kensuke; TAKEUCHI, Toshihide; NAKASE, Ikuhiko; FUTAKI, Shiroh  
“Analyzing Cellular Functions of Syndecan-4 Using Method for Controlling Dimer Formation of Membrane Proteins”

— **Chemistry of Molecular Biocatalysts** —

LW “Research Activities in the Laboratory of Chemistry of Molecular Biocatalysts”

— **Molecular Biology** —

LW “Research Activity in Laboratory of Molecular Biology”

— **Chemical Biology** —

LW “Create New World of Bioactive Synthetic Small Molecules”

— **Molecular Materials Chemistry** —

LT FUKUSHIMA, Tatsuya; SUZUKI, Hajime; SHIZU, Katsuyuki; SUZUKI, Katsuaki; KUBO, Shosei; KOMINO, Takeshi; OIWA, Hajime; SUZUKI, Furitsu; WAKAMIYA, Atsushi; MURATA, Yasujiro; ADACHI, Chihaya; KAJI, Hironori  
“Purely Organic Emitter for Organic Light-emitting Diodes with External Quantum Efficiency above 40%”

— **Hydropheric Environment Analytical Chemistry** —

LT MINAMI, Tomoharu; KONAGAYA, Wataru; Zheng, Linjie; SOHRIN, Yoshiki  
“Sectional Distributions of Bioactive Trace Metals in the Pacific Sector of the Southern Ocean and the Western Pacific”

GE UEHARA, Wataru; TAKANO, Shotaro; ZHENG, Linjie; MINAMI, Tomoharu; SOHRIN, Yoshiki  
“Development of Analytical Method for Nickel, Copper and Zinc Stable Isotopes in Seawater with an Off-line Automated Preconcentration System”

— **Solution and Interface Chemistry** —

GE IZUMI, Naoki; SHIMOAKA, Takafumi; HASEGAWA, Takeshi  
“IR Spectroscopic Analysis of Polymer Thin Films of Fluoroacrylates Having an Rf Side Chain with Various Lengths”

GE UKAI, Hironori; SHIMOAKA, Takafumi; NODA, Takumu; YAMADA, Norihiro; HASEGAWA, Takeshi  
“Study on the Long-distance Interaction of Perfluoroalkyl Compounds Involving a Bulky Substituent”

LT HADA, Miyako; SHIOYA, Nobutaka; SHIMOAKA, Takafumi; EDA, Kazuo; HASEGAWA, Takeshi  
“Structure Analysis of a Semiconductor Thin Film of a Porphyrin Derivative Using IR pMAIRS and GXD”

— **Molecular Microbial Science** —

LW “Research of Molecular Microbial Science Laboratory”

GE TOKUNAGA, Tomohisa; WATANABE, Bunta; KAWAMOTO, Jun; KURIHARA, Tatsuo  
“Synthesis of ω-terminal Modified Polyunsaturated Fatty Acid and Its Application to Physiological Studies”

— **Polymer Materials Science** —

LW “Polymer Material Science”

GE MURAKAMI, Momoko; MAEDE, Tadahiko; OGAWA, Hiroki; NISHIDA, Koji; KANAYA, Toshiji  
“Structure Formation of Polyethylene Films during Uniaxial Drawing”

GE KISHIMOTO, Mizuki; INOUE, Riontaro; OGAWA, Hiroki; NISHIDA, Koji; KANAYA, Toshiji  
“Effect of Substrate Surface Modification on the Glass Transition Temperature and Its Distribution of Polymer Thin Films”

— **Molecular Rheology** —

[LW] “Research Activities in Molecular Rheology Laboratory”

— **Molecular Aggregation Analysis** —

[LT] MURDEY, Richard; NAKAO, Kazuto; SATO, Naoki  
“*In Situ* Electrical Measurements on Donor-Acceptor Thin Film Interfaces”

— **Particle Beam Science** —

[LW] “Status of Accelerator Laboratory, Advanced Research Center for Beam Science”

[GE] FUWA, Yasuhiro; IWASHITA, Yoshihisa; TONGU, Hiromu  
“Development of RF-Synchronized Short Pulse Laser Ion Source”

[GE] KITAHARA, Ryunosuke; IWASHITA, Yoshihisa; NOP Group  
“A Report of the Neutron Life Time Measurement at J-PARC/BL05”

[GE] IMAJO, Sohei  
“Ultracold Neutron Production with Doppler Shifter at J-PARC/BL05”

— **Laser Matter Interaction Science** —

[LW] “Research Activities in Laboratory of Laser Matter Interaction Science”

[GE] WATANABE, Kota; INOUE, Shunsuke; TERAMOTO, Kensuke; NEMOTO, Takashi; NAKAMIYA, Yoshihide; KURATA, Hiroki; HASHIDA, Masaki; SAKABE, Shuji  
“Development of the Ultrafast Electron Diffraction Instrument Using Laser-accelerated Electron Beams”

[GE] TERAMOTO, Kensuke; INOUE, Shunsuke; TOKITA, Shigeaki; YASUHARA, Ryo; MORI, Kazuaki; WATANABE, Kota; NAKAMIYA, Yoshihide; HASHIDA, Masaki; SAKABE, Shuji  
“Transmission of Electromagnetic Waves Emitted from Intense Laser Plasma Using a Metal Wire”

[GE] MORI, Kazuaki; HASHIDA, Masaki; NAGASHIMA, Takeshi; INOUE, Shunsuke; SAKABE, Shuji  
“Terahertz Wave Generation in the Interaction of Two-pulse Laser with Clusters”

[GE] NAKAJI, Ryosuke; INOUE, Shunsuke; TERAMOTO, Kensuke; FUJITA, Kazuhisa; MIMA, Kunioki; KATO, Yoshiaki; NAKAMIYA, Yoshihide; HASHIDA, Masaki; SAKABE, Shuji  
“Development of Diagnostics for Li-ion Batteries by Using Laser-driven Proton Beams”

— **Electron Microscopy and Crystal Chemistry** —

[LW] “Research Activities in Laboratory of Electron Microscopy and Crystal Chemistry”

[LT] KURATA, Hiroki; HARUTA, Mitsutaka; FUJIYOSHI, Yoshifumi; TOMISAKI, Yuriko; NEMOTO, Takashi  
“High Energy Resolution EELS of Organic Thin Films”

— **Structural Molecular Biology** —

[LW] “Introduction of Structural Molecular Biology Laboratory”

— **Organic Main Group Chemistry** —

[LW] “Research of Organic Main Group Chemistry”

[GE] ADAK, Laksmikanta; JIN, Masayoshi; NAKAMURA, Masaharu  
“Iron-Catalyzed Enantioselective Cross-Coupling Reaction of Racemic  $\alpha$ -Haloesters”

[GE] NAKAJIMA, Sho; ISOZAKI, Katsuhiko; NAKAGAWA, Naohisa; IMAYOSHI, Ryuji; HASHIMOTO, Toru; GOWER, Nicholas, J.; ADAK, Laksmikanta; HONMA, Tetsuo; TAKAGAKI, Masafumi; SUNADA, Yusuke; NAGASHIMA, Hideo; HASHIZUME, Daisuke; IWAMOTO, Takahiro; HATAKEYAMA, Takuji; TAKAYA, Hikaru; NAKAMURA, Masaharu  
“Mechanistic Study of Iron-Catalyzed Cross-Coupling Reaction Using Synchrotron X-Ray Absorption Spectroscopy”

[GE] AGATA, Ryosuke; IWAMOTO, Takahiro; NAKAGAWA, Naohisa; ISOZAKI, Katsuhiko; HATAKEYAMA, Takuji; TAKAYA, Hikaru; NAKAMURA, Masaharu  
“Development of Iron Fluoride-NHC Catalyzed Alkylation of Aryl Chlorides and XAFS Study on the Mechanism”

— **Advanced Solid State Chemistry** —

[LW] “Introduction of Advanced Solid State Chemistry Laboratory”

[GE] GUO, Haichuan; HOSAKA, Yoshiteru; SEKI, Hayato; SAITO, Takashi; ICHIKAWA, Noriya; SHIMAKAWA, Yuichi  
“The Synthesis and Peculiar Charge Disproportionation of the Novel A-site Layered Perovskite Oxide  $\text{LaCa}_2\text{Fe}_3\text{O}_9$  with Unusual High Valence Fe Ion”

— **Organotransition Metal Chemistry** —

[LW] “Activity Report: Organotransition Metal Chemistry Laboratory”

[GE] TAGUCHI, Hiroomi; SASAKI, Daichi; CHANG, Yung-Hung; TAKEUCHI, Katsuhiko; TSUJIMOTO, Shota; MATSUO, Tsukasa; TANAKA, Hiromasa; YOSHIZAWA, Kazunari; OZAWA, Fumiyuki  
“Synthesis and Reaction of Transition Metal Complexes with a Noninnocent PNP-Pincer Type Phosphaalkene Ligand Eind-PPEP”

[GE] IIZUKA, Eisuke; WAKIOKA, Masayuki; OZAWA, Fumiyuki  
“Development of A Mixed-Ligand Approach to Highly Selective Direct Arylation Polymerization”

— **Photonic Elements Science** —

[LW] “Recent Research Topics of Photonic Elements Science Group”

— **Chemical Life Science** —

[LW] “Research Topics in Laboratory of Chemical Life Science”

[GE] NISHIYAMA, Hiroki; OGATA, Hiroyuki; AOYAMA, Takashi  
“Characterization of Arabidopsis thaliana ARR1 Binding Sites Based on ChIP-Seq Data”

[GE] KHAIRIL ANUAR, Mohammad Fahmi Arief; ABDUL HALIM, Arhaime Hamezze; MUHAMAD, Rafidah; MOHD HASRI, Nurul Nadzirah; BLANC-MATHIEU, Romain; OGATA, Hiroyuki; GOTO, Susumu  
“GenomeNet Service and a New Computational Tool for Gene Function Annotation”

— **Mathematical Bioinformatics** —

□ “Predicting Heterodimeric Protein Complexes Using Novel Kernel Functions”

— **Bio-knowledge Engineering** —

□ NGUYEN, Hao Canh; MAMITSUKA, Hiroshi  
“Global Graph Comparison for Graph Cut-based Clustering”

— **Research Center for Low Temperature and Materials Sciences** —

□ TERASHIMA, Takahito  
“Hybrid Superlattices of Heavy Fermion Compounds”