

PUBLICATIONS

DIVISION OF SYNTHETIC CHEMISTRY

— Organoelement Chemistry —

Mieda, E.; Sasamori, T.; Sase, S.; Goto, K.; Tokitoh, N., Formation of a Unique Fluorosilene—KF Complex Bearing Bulky Substituents, *Chem. Lett.*, **40**, 196-197 (2011).

Sasamori, T.; Mieda, E.; Tokitoh, N., Unexpected Formation of Dihydrobenzosilole Derivative via the Intramolecular Cyclization in the Reaction of Overcrowded Dichloromethylsilane with Aryllithium, *Heterocycles*, **82**, 1103-1112 (2011).

Mizuhata, Y.; Tokitoh, N., Chemistry of Aromatic Compounds Containing a Heavier Group 14 Element, *J. Synth. Org. Chem. Jpn.*, **69**, 691-704 (2011) (in Japanese).

Sasamori, T.; Sugamata, K.; Tokitoh, N., Halogenation Reactions of a Ditelluride Having Bulky Aryl Groups Leading to the Formation of Organotellurium Halides, *Heteroatom Chem.*, **22**, 405-411 (2011).

Sugamata, K.; Sasamori, T.; Tokitoh, N., Fluorination Reaction of a Ditelluride Bearing Bulky Aryl Substituents: Formation of Mixed-Valent Te(IV)—Te(II) Ditelluride Difluoride, *Chem. Asian J.*, **6**, 2301-2303 (2011).

Tokitoh, N.; Yuasa, A.; Sasamori, T., Chalcogenation of 1,2-Bis(ferrocenyl)disilene: The First Isolation of 1,2,3,4-Dithiadisiletane, *Phosphorus, Sulfur, and Silicon and the Related Elements*, **186**, 1217-1219 (2011).

Tokitoh, N.; Inamura, K.; Mizuhata, Y., New Aspects in the Coordination Chemistry of Ge- and Sn-Containing Metallaaromatic Compounds, *Phosphorus, Sulfur, and Silicon and the Related Elements*, **186**, 1323-1325 (2011).

Tsurusaki, A.; Sasamori, T.; Wakamiya, A.; Yamaguchi, S.; Nagura, K.; Irlle, S.; Tokitoh, N., Synthesis of 1-Phospha-2-boraacenaphthenes: Reductive 1,2-Aryl Migration of 1-Diarylboryl-8-dichlorophosphinonaphthalenes, *Angew. Chem. Int. Ed.*, **50**, 10940-10943 (2011).

Mizuhata, Y.; Sato, T.; Tokitoh, N., Reactions of an Overcrowded Silylene with Pyridines: Formation of a Novel 2*H*-1,2-Azasilole and Its Further Cycloaddition, *Heterocycles*, **84**, 413-418 (2011).

Han, J. S.; Sasamori, T.; Mizuhata, Y.; Tokitoh, N., Evidence for a LiBr-Assisted Generation of a Silylene from a 1,2-Diaryl-1,2-dibromodisilene, *Chem. Asian J.*, **6**, 2301-2303 (2011).

Agou, T.; Sebastian, M.; Lescop, C.; Reau, R., Folding of a Coordination Polymer Framework Incorporating Swiveling Pins Driven by π - π Interactions, *Inorg. Chem.*, **50**, 3183-3185 (2011).

Perez, A. I. A.; Biet, T.; Graule, S.; Agou, T.; Lescop, C.; Branda, N. R.; Crassous, J.; Reau, R., Assembling N₂P₂ Pincers for Coordination-Driven Synthesis of Supramolecular [2,2]Paracyclophane Analogues, *Chem. Eur. J.*, **17**, 1337-1351 (2011).

Kimura, T.; Iwama, T.; Namao, T.; Suzuki, E.; Fukuda, T.; Kobayashi, N.; Sasamori, T.; Tokitoh, N., Preparation and Characterization of Nonclassical Tetraazaporphyrin, Bis(4-methylpyridine)[1,3,5,7,9,11,13,15-octaphenyltetra(3,4-thieno)-tetraazaporphyrinato]ruthenium(II), *Eur. J. Inorg. Chem.*, 888-894 (2011).

Segawa, Y.; Miyamoto, S.; Omachi, H.; Matsuura, S.; Senel, P.; Sasamori, T.; Tokitoh, N.; Itami, K., Concise Synthesis and Crystal Structure of [12]Cycloparaphenylene, *Angew. Chem. Int. Ed.*, **50**, 3244-3248 (2011).

— Structural Organic Chemistry —

Han, A.; Bai, J.; Murata, Y.; Komatsu, K., Synthesis and Characterization of the Fullerene-Terthiophene Dyads, *Heteroatom Chem.*, **22**, 72-78 (2011).

Shang, M.; Warrener, R. N.; Butler, D. N.; Murata, Y.; Margetic, D., Synthesis of Bis-peptides Attached on Poly[n]norbornane Molecular Scaffolds with Well-defined Relative Positions and Distances, *Mol. Divers.*, **15**, 541-560 (2011).

Nambo, M.; Segawa, Y.; Wakamiya, A.; Itami, K., Selective Introduction of Organic Groups to C₆₀ and C₇₀ Using Organoboron Compounds and Rhodium Catalyst: A New Synthetic Approach to Organo(hydro)fullerenes, *Chem. Asian J.*, **6**, 590-598 (2011).

Li, Y.; Lei, X. -G.; Lawler, R.; Murata, Y.; Komatsu, K.; Turro, N., Distance-dependent Para-H₂→Ortho-H₂ Conversion in H₂@C₆₀ Derivatives Covalently Linked to a Nitroxide Radical, *J. Phys. Chem. Lett.*, **2**, 741-744 (2011).

Ge, M.; Nagel, U.; Huevonen, D.; Room, T.; Mamone, S.; Carravetta, M.; Levitt, M. H.; Murata, Y.; Komatsu, K.; Chen, J. Y. -C.; Turro, N. J., Interaction Potential and Infrared Absorption of Endohedral H₂ in C₆₀, *J. Chem. Phys.*, **134**, [054507-1]-[054507-13] (2011).

Kurotobi, K.; Murata, Y., A Single Molecule of Water Encapsulated in Fullerene C₆₀, *Science*, **333**, 613-616 (2011).

Mercier, L. G.; Furukawa, S.; Piers, W. E.; Wakamiya, A.; Yamaguchi, S.; Parvez, M.; Harrington, R. W.; Clegg, W., Design, Synthesis, and Characterization of Functionalized Silepins: High Quantum Yield Blue Emitters, *Organometallics*, **30**, 1719-1729 (2011).

Li, Y.; Lei, X.; Lawler, R. G.; Murata, Y.; Komatsu, K.; Turro, N. J., Synthesis and Characterization of Bispyrrolidine Derivatives of H₂@C₆₀: Differentiation of Isomers Using ¹H NMR Spectroscopy of Endohedral H₂, *Chem. Commun.*, **47**, 2282-2284 (2011).

Margetic, D.; Troselj, P.; Murata, Y., Microwave-Accelerated Ruthenium Catalyzed [2+2] Cycloadditions of Dimethylacetylene Dicarboxylate with Norbornenes, *Synthetic Commun.*, **41**, 1239-1246 (2011).

Margetic, D.; Butler, D. N.; Warren, R. N.; Murata, Y., Domino Diels-Alder Reactions of N-Methoxyethyl-7-oxanorbornadiene-2,3-dicarboximide: an Elusive, Highly Reactive Dienophile, *Tetrahedron*, **67**, 1580-1588 (2011).

Wang, G. -W.; Wang, C. -Z.; Zhu, S. -E; Murata, Y., Manganese(III) Acetate-mediated Radical Reaction of [60]Fullerene with Phosphonate Esters Affording Unprecedented Separable Singly-bonded [60]Fullerene Dimers, *Chem. Commun.*, **47**, 6111-6113 (2011).

Murata, M.; Morinaka, Y.; Murata, Y.; Yoshikawa, O.; Sagawa, T.; Yoshikawa, S., Modification of σ -Framework of [60]Fullerene for Bulk-heterojunction Solar Cells, *Chem. Commun.*, **47**, 7335-7337 (2011).

Frunzi, M.; Jockusch, S.; Chen, J. Y. -C.; Calderon, R. K.; Lei, X.; Murata, Y.; Komatsu, K.; Guldi, D. M.; Lawler, R. G.; Turro, N. J., A Photochemical On-Off Switch for Tuning the Equilibrium Mixture of H₂ Nuclear Spin Isomers as a Function of Temperature, *J. Am. Chem. Soc.*, **133**, 14232-14235 (2011).

Ge, M.; Nagel, U.; Huvonen, D.; Room, T.; Mamone, S.; Levitt, M.; Carravetta, M.; Murata, Y.; Komatsu, K.; Lei, X.; Turro, N., Infrared Spectroscopy of Endohedral HD and D₂ in C₆₀, *J. Chem. Phys.*, **135**, [114511-1]-[114511-10] (2011).

Tsurusaki, A.; Sasamori, T.; Wakamiya, A.; Yamaguchi, S.; Nagura, K.; Irle, S.; Tokitoh, N., Synthesis of 1-Phospha-2-boraacenaphthenes: Reductive 1,2-Aryl Migration of 1-Diarylboryl-8-dichlorophosphinonaphthalenes, *Angew. Chem. Int. Ed.*, **50**, 10940-10943 (2011).

Ohno, O.; Chiba, T.; Todoroki, S.; Yoshimura, H.; Maru, N.; Maekawa, K.; Imagawa, H.; Yamada, K.; Wakamiya, A.; Suenaga, K.; Uemura, D., Halichonins A, B, and C, Novel Sesquiterpene Alkaloids from the Marine Sponge *Halichondria Okadae* Kadota, *Chem. Commun.*, **47**, 12453-12455 (2011).

[Others]

Murata, Y., Molecular Surgical Synthesis of Endohedral Fullerenes, *Chemistry & Education*, **59**, 364-365 (2011) (in Japanese).

— Synthetic Organic Chemistry —

Teraoka, F.; Fuji, K.; Ozturk, O.; Yoshimura, T.; Kawabata, T., Asymmetric Carbonyl Migration of α -Amino Acid Derivatives via Memory of Chirality, *Synlett*, 543-546 (2011).

Yoshida, A.; Hirooka, Y.; Sugata, Y.; Nitta, M.; Manabe, T.; Ido, S.; Murakami, K.; Saha, R. K.; Suzuki, T.; Ohshima, M.; Yoshida, A.; Itoh, K.; Shimizu, K.; Oku, N.; Furuta, T.; Asakawa, T.; Wakimoto, T.; Kan, T., Concise Synthesis of Catechin Probes Enabling Analysis and Imaging of EGCG, *Chem. Commun.*, 1794-1796 (2011).

Higashi, T.; Isobe, Y.; Ouchi, H.; Okazaki, Y.; Asakawa, T.; Furuta, T.; Wakimoto, T.; Kan, T., Stereocontrolled Synthesis of (+)-Methoxyphenylkainic Acid and (+)-Phenylkainic Acid, *Org. Lett.*, **13**, 1089-1091 (2011).

Yoshida, K.; Furuta, T.; Kawabata, T., Organocatalytic Chemoselective Monoacylation of 1,n-Linear Diols, *Angew. Chem. Int. Ed.*, **50**, 4888-4892 (2011).

[Others]

Furuta, T.; Kawabata, T., Catalytic Regioselective Functionalization. Next-generation Method of Molecular Conversion, *Kagaku*, **66**, 70-71 (2011) (in Japanese).

— Advanced Inorganic Synthesis —

Saruyama, M.; So, Y. -G.; Kimoto, K.; Taguchi, S.; Kanemitsu, Y.; Teranishi, T., Spontaneous Formation of Wurtzite-CdS/Zincblende-CdTe Heterodimers through a Partial Anion Exchange Reaction, *J. Am. Chem. Soc.*, **133**, 17598-17601 (2011).

He, C. -L.; Chen, H. -Y.; Wang, C. -Y.; Lin, M. -H.; Mitsui, D.; Eguchi, M.; Teranishi, T.; Gwo, S., Far-Field Optical Imaging of a Linear Array of Coupled Gold Nanocubes at Visible Wavelengths: Direct Visualization of Dark Plasmon Modes, *ACS Nano*, **5**, 8223-8229 (2011).

Azuma, Y.; Suzuki, S.; Maeda, K.; Okabayashi, N.; Tanaka, D.; Sakamoto, M.; Teranishi, T.; Buitelaar, M. R.; Smith, C. G.; Majima, Y., Nanoparticle Single-Electron Transistor with Metal-Bridged Top-Gate and Nanogap Electrodes, *Appl. Phys. Lett.*, **99**, [073109-1]-[073109-3] (2011).

Sakai, N.; Ikeda, T.; Teranishi, T.; Tatsuma, T., Sensitization of TiO₂ with Pt, Pd, and Au Clusters Protected by Mercapto- and Dimercaptosuccinic Acid, *ChemPhysChem*, **12**, 2415-2418 (2011).

Teranishi, T.; Eguchi, M.; Kanehara, M.; Gwo, S., Controlled Localized Surface Plasmon Resonance Wavelength for Conductive Nanoparticles over the Ultraviolet to Near-Infrared Region, *J. Mater. Chem.*, **21**, 10238-10242 (2011).

Taguchi, S.; Saruyama, M.; Teranishi, T.; Kanemitsu, Y., Quantized Auger Recombination of Biexcitons in CdSe Nanorods Studied by Time-Resolved Photoluminescence and Transient-Absorption Spectroscopy, *Phys. Rev. B*, **83**, [155324-1]-[155324-7] (2011).

Azuma, Y.; Kobayashi, N.; Chorley, S.; Tanaka, D.; Prance, J.; Smith, C. G.; Kanehara, M.; Teranishi, T.; Majima, Y., Individual Transport of Electrons through a Chemisorbed Au Nanodot in Coulomb Blockade Electron Shuttles, *J. Appl. Phys.*, **109**, [024303-1]-[024303-5] (2011).

Sato, R.; Kanehara, M.; Teranishi, T., Homoepitaxial Size Control and Large-Scale Synthesis of Highly Monodisperse Amine-Protected Palladium Nanoparticles, *Small*, **7**, 469-473 (2011).

Sakuma, N.; Ohshima, T.; Shoji, T.; Suzuki, Y.; Sato, R.; Wachi, A.; Kato, A.; Kawai, Y.; Manabe, A.; Teranishi, T., Exchange Coupling Interaction in L1₀-FePd/ α -Fe Nanocomposite Magnets with Large Maximum Energy Products, *ACS Nano*, **5**, 2806-2814 (2011).

DIVISION OF MATERIALS CHEMISTRY

— Chemistry of Polymer Materials —

Ohno, K.; Ma, Y.; Huang, Y.; Mori, C.; Yahata, Y.; Tsujii, Y.; Maschmeyer, T.; Moraes, J.; Perrier, S., Surface-Initiated Reversible Addition-Fragmentation Chain Transfer (RAFT) Polymerization from Fine Particles Functionalized with Trithiocarbonates, *Macromolecules*, **44**, 8944-8953 (2011).

Tokita, M.; Sato, O.; Inagaki, Y.; Nomura, A.; Tsujii, Y.; Kang, S.; Fukuda, T.; Watanabe, J., High-Density Poly(methyl methacrylate) Brushes as Anchoring Surfaces of Nematic Liquid Crystals, *Jpn. J. Appl. Phys.*, **50**, [071701-1]-[071701-5] (2011).

- Nomura, A.; Okayasu, K.; Ohno, K.; Fukuda, T.; Tsujii, Y., Lubrication Mechanism of Concentrated Polymer Brushes in Solvents: Effect of Solvent Quality and Thereby Swelling State, *Macromolecules*, **44**, 5013-5019 (2011).
- Yamamoto, S.; Ruwan, G.; Tamada, Y.; Kohara, K.; Kusano, Y.; Sasano, T.; Ohno, K.; Tsujii, Y.; Kageyama, H.; Ono, T.; Takano, M., Transformation of Nano- to Mesosized Iron Oxide Cores to α -Fe within Organic Shells Preserved Intact, *Chem. Mater.*, **23**, 1564-1569 (2011).
- Goto, A.; Tsujii, Y.; Kaji, H., Living Radical Polymerizations with Organic Catalysts, *Kobunshi Ronbunshu*, **68**, 223-231 (2011) (in Japanese).
- Goto, A.; Suzuki, T.; Ohfuji, H.; Tanishima, M.; Fukuda, T.; Tsujii, Y.; Kaji, H., Reversible Complexation Mediated Living Radical Polymerization (RCMP) Using Organic Catalysts, *Macromolecules*, **44**, 8709-8715 (2011).
- Sato, T.; Morinaga, T.; Marukane, S.; Narutomi, T.; Igarashi, T.; Kawano, Y.; Ohno, K.; Fukuda, T.; Tsujii, Y., Novel Solid-State Polymer Electrolyte of Colloidal Crystal Decorated with Ionic-Liquid Polymer Brush, *Adv. Mater.*, **23**, 4868-4872 (2011).
- Nomura, A.; Goto, A.; Ohno, K.; Kayahara, E.; Yamago, S.; Tsujii, Y., Controlled Synthesis of Hydrophilic Concentrated Polymer Brushes and Their Friction/Lubrication Properties in Aqueous Solutions, *J. Polym. Sci. Part A: Polym. Chem.*, **49**, 5284-5292 (2011).
- Kitano, H.; Kondo, T.; Kamada, T.; Iwanaga, S.; Nakamura, M.; Ohno, K., Anti-Biofouling Properties of an Amphoteric Polymer Brush Constructed on a Glass Substrate, *Colloids Surf. B: Biointerfaces*, **88**, 455-462 (2011).
- Gam, S.; Corlu, A.; Chung, H. -J.; Ohno, K.; Hore, M. J. A.; Composto, R. J., A Jamming Morphology Map of Polymer Blend Nanocomposite Films, *Soft Matter*, **7**, 7262-7268 (2011).
- Kitano, H.; Suzuki, H.; Kondo, T.; Sasaki, K.; Iwanaga, S.; Nakamura, M.; Ohno, K.; Saruwatari, Y., Image Printing on the Surface of Anti-Biofouling Zwitterionic Polymer Brushes by Ion Beam Irradiation, *Macromol. Biosci.*, **11**, 557-564 (2011).
- Suzuki, H.; Muro, M.; Kitano, H.; Ohno, K.; Saruwatari, Y., Silica Particles Coated with Zwitterionic Polymer Brush: Formation of Colloidal Crystals and Anti-Biofouling Properties in Aqueous Medium, *Colloids Surf. B: Biointerfaces*, **84**, 111-116 (2011).
- Krishnan, V.; Sakakibara, K.; Mori, T.; Hill, J. P.; Ariga, K., Manipulation of Thin Film Assemblies: Recent Progress and Novel Concepts, *Curr. Opin. Colloid Interface Sci.*, **16**, 459-469 (2011).
- Abdullayev, E.; Sakakibara, K.; Okamoto, K.; Wei, W.; Ariga, K.; Lvov, Y., Natural Tubule Clay Template Synthesis of Silver Nanorods for Antibacterial Composite Coating, *ACS Appl. Mater. Interfaces*, **3**, 4040-4046 (2011).
- Ichihara, N.; Takano, T.; Sakakibara, K.; Kamitakahara, H.; Nakatsubo, F., Preparation of 6-Azafulleroid-6-deoxy-2,3-di-O-myrystoylcellulose, *Carbohydr. Res.*, **346**, 2515-2518 (2011).
- Russler, A.; Sakakibara, K.; Rosenau, T., Cellulose as Matrix Component of Conducting Films, *Cellulose*, **18**, 937-944 (2011).
- Sakakibara, K.; Hill, J. P.; Ariga, K., Thin-Film-Based Nanoarchitectures for Soft Matter: Controlled Assemblies into Two-Dimensional Worlds, *Small*, **7**, 1288-1308 (2011).
- Ariga, K.; Sakakibara, K.; Richards, G. J.; Hill, J. P., Dynamic Supramolecular Systems at Interfaces, *Supramol. Chem.*, **23**, 183-194 (2011).
- Mori, T.; Okamoto, K.; Endo, H.; Sakakibara, K.; Hill, J. P.; Shinoda, S.; Matsukura, M.; Tsukube, H.; Suzuki, Y.; Kanekiyo, Y.; Ariga, K., Mechanical Tuning of Molecular Machines for Nucleotide Recognition at the Air-Water Interface, *Nanoscale Res. Lett.*, **6**, [304-1]-[304-6] (2011).
- Sakakibara, K.; Takano, T.; Nakatsubo, F., Synthesis of Methylcellulose Model Copolymers with Heterogeneous Distribution and Their Solution Properties, *Cellulose*, **18**, 105-115 (2011).
- Polymer Controlled Synthesis —
- Nakamura, Y.; Kitada, Y.; Kobayashi, Y.; Biswajit, R.; Yamago, S., Quantitative Analysis of the Effect of Azo Initiators on the Structure of α -Polymer Chain Ends in Degenerative Chain Transfer-Mediated Living Radical Polymerization Reactions, *Macromolecules*, **44**, 8388-8397 (2011).
- Nomura, A.; Goto, A.; Ohno, K.; Kayahara, E.; Yamago, S.; Tsujii, Y., Controlled Synthesis of Hydrophilic Concentrated Polymer Brushes and Their Friction/Lubrication Properties in Aqueous Solutions, *J. Polym. Sci. Part A: Polym. Chem.*, **49**, 5284-5292 (2011).
- Hasegawa, G.; Kanamori, K.; Nakanishi, K.; Yamago, S., Fabrication of Highly Crosslinked Methacrylate-Based Polymer Monoliths with Well-Defined Macropores via Living Radical Polymerization, *Polymer*, **52**, 4644-4647 (2011).
- Yusa, S.; Awa, S.; Ito, M.; Kawase, T.; Takada, T.; Nakashima, K.; Yamago, S.; Morishima, Y., Solubilization of C_{60} by Micellization with a Thermoresponsive Block Copolymer in Water: Characterization, Singlet Oxygen Generation, and DNA Photocleavage, *J. Polym. Sci. Part A: Polym. Chem.*, **49**, 2761-2770 (2011).
- Iwamoto, T.; Watanabe, Y.; Sadahiro, T.; Haino, T.; Yamago, S., Size-Selective Encapsulation of C_{60} by [10]Cycloparaphenylene. Formation of the Shortest Fullerene-Peapod, *Angew. Chem. Int. Ed.*, **50**, 8342-8344 (2011).
- Kumar, S.; Changez, M.; Murthy, C. N.; Yamago, S.; Lee, J. -S., Synthesis of Well-Defined Amphiphilic Block Copolymers by Organotellurium-Mediated Living Radical Polymerization (TERP), *Macromol. Rapid Commun.*, **32**, 1576-1582 (2011).
- Iwamoto, T.; Watanabe, Y.; Sakamoto, Y.; Suzuki, T.; Yamago, S., Selective and Random Syntheses of [n]Cycloparaphenylenes (n = 8-13) and Size-Dependence of Their Electronic Properties, *J. Am. Chem. Soc.*, **133**, 8354-8361 (2011).
- Kayahara, E.; Yamada, H.; Yamago, S., Generation of Carbanions via Stibin-Metal and Bismuthine-Metal Exchange Reaction and Its Applications to Precision Synthesis of ω -End Functionalized Polymers, *Chem. Eur. J.*, **17**, 5272-5280 (2011).
- Mishima, E.; Yamago, S., Controlled Alternating Copolymerization of (Meth)acrylates and Vinyl Ethers by Organoheteroatom-Mediated Living Radical Polymerization, *Macromol. Rapid Commun.*, **32**, 893-898 (2011).

Kayahara, E.; Kondo, N.; Yamago, S., Substituent Effect on the Antimony Atom in Organostibine-Mediated Living Radical Polymerization, *Heteroatom. Chem.*, **22**, 307-315 (2011).

Mishima, E.; Yamada, T.; Watanabe, H.; Yamago, S., Precision Synthesis of Hybrid Block Copolymers by Organotellurium-Mediated Successive Living Radical and Cationic Polymerizations, *Chem. Asian. J.*, **6**, 445-451 (2011).

Tosaka, M.; Ichida, H.; Nakaoki, T., Formation of Gold Nanoparticle Chains in a Flow Cell Coated with Oriented Polymer Thin Films, *J. Soc. Mater. Sci., Jpn.*, **60**, 47-50 (2011) (in Japanese).

Tosaka, M., Orientation, Crystallization and Stress Relaxation of Vulcanized Rubbers by Extension, *Nippon Gomu Kyokaishi*, **84**, 81-85 (2011) (in Japanese).

Tosaka, M.; Toki, S.; Che, J.; Rong, L.; Hsiao, B. S., Development of Internal Fine Structure in Stretched Rubber Vulcanizates, *J. Polym. Sci., Part B: Polym. Phys.*, **49**, 1157-1162 (2011).

Yoshioka, T.; Kawahara, Y.; Tsuji, M.; Schaper, A. K., Structural Modification of PVA Nanofibers by Water Vapor Annealing, *Sen'i Gakkaishi*, **67**, 138-140 (2011).

[Others]

Yamago, S., Function of σ -bonds between Heteroatom Species, In "Frontier of Organometallic Chemistry", Miyaura, N.; Suzuki, K.; Ozawa, F.; Yamamoto, Y.; Nagashima, E. Eds., 126-137 (2011) (in Japanese).

— Inorganic Photonics Materials —

Tokuda, Y.; Oku, S.; Yamada, T.; Takahashi, M.; Yoko, T.; Kitagawa, H.; Ueda, Y., Structure Manufacturing of Proton-Conducting Organic-Inorganic Hybrid Silicophosphate Membranes by Solventless Synthesis, *J. Mater. Res.*, **26**, 796-803 (2011).

Tokuda, Y.; Oka, T.; Takahashi, M.; Yoko, T., Inhomogeneous Distribution of Na^+ in Alkali Silicate Glasses, *J. Ceram. Soc. Japan*, **119**, 909-915 (2011).

Masai, H.; Fujiwara, T.; Matsumoto, S.; Takahashi, Y.; Iwasaki, K.; Tokuda, Y.; Yoko, T., High Efficient White Light Emission of Rare Earth-Free $\text{MnO-SnO-ZnO-P}_2\text{O}_5$ Glass, *J. Ceram. Soc. Japan*, **119**, 726-730 (2011).

Yoshida, K.; Masai, H.; Takahashi, Y.; Ihara, R.; Fujiwara, T., Fabrication of $\text{Sr}_{0.5}\text{Ba}_{0.5}\text{Nb}_2\text{O}_6$ -precipitated Microstructured Ceramics for Photocatalytic Application, *J. Ceram. Soc. Japan*, **119**, 731-735 (2011).

Masai, H.; Ueno, T.; Takahashi, Y.; Fujiwara, T., Precipitation of ZnO in the Al_2O_3 -doped Zincborate Glass-Ceramics, *Opt. Mater.*, **33**, 1980-1983 (2011).

Masai, H.; Ueno, T.; Takahashi, Y.; Fujiwara, T., Correlation between Surface-Crystallized ZnO and the Amount of Al_2O_3 in Borate-Based Glass-Ceramics, *J. Am. Ceram. Soc.*, **94**, 2452-2457 (2011).

Masai, H.; Fujiwara, T.; Matsumoto, S.; Takahashi, Y.; Iwasaki, K.; Tokuda, Y.; Yoko, T., White Light Emission of Mn-Doped $\text{SnO-ZnO-P}_2\text{O}_5$ Glass Containing No Rare Earth Cation, *Opt. Lett.*, **36**, 2868-2870 (2011).

Ando, M.; Takahashi, Y.; Iwasaki, K.; Masai, H.; Ihara, R.; Fujiwara, T., Fabrication and Photoluminescent Property of Transparent Nanocrystallized-Glass in $\text{Li}_2\text{O-ZnO-GeO}_2$ System, *IOP Conf. Series: Materials Science and Engineering*, **18**, 112002 (2011).

Takahashi, Y.; Osada, M.; Masai, H.; Ihara, R.; Fujiwara, T., Nucleation and Nanometric Inhomogeneity in Niobiogermanate Glass: In-situ Inelastic Light Scattering and TEM Studies, *IOP Conf. Series: Materials Science and Engineering*, **18**, 112009 (2011).

[Others]

Tokuda, Y., Structural Analysis of Glass, *New Glass Daigakuin*, (2011) (in Japanese).

Masai, H., Fabrication of Rare Earth-free Phosphor Possessing White Light Emission, *Ceramics Japan*, **7**, 594 (2011) (in Japanese).

Masai, H.; Fujiwara, T.; Matsumoto, S.; Yoko, T., Preparation of Rare Earth-free Glass Phosphor and the Application, *MATERIALSTAGE*, **11**, 5-7 (2011) (in Japanese).

Masai, H.; Fujiwara, T.; Matsumoto, S.; Yoko, T., Preparation of Rare Earth-free Glass Phosphor and the Application, *NEW GLASS*, **26**, 20-25 (2011) (in Japanese).

— Nanospintronics —

Koyama, T.; Chiba, D.; Ueda, K.; Kondou, K.; Tanigawa, H.; Fukami, S.; Suzuki, T.; Ohshima, N.; Ishiwata, N.; Nakatani, Y.; Kobayashi, K.; Ono, T., Electrical Control of the Ferromagnetic Phase Transition in Cobalt at Room Temperature, *Nature Materials*, **10**, 853-856 (2011).

Nakamura, S.; Yamauchi, Y.; Hashisaka, M.; Chida, K.; Kobayashi, K.; Ono, T.; Leturcq, R.; Ensslin, K.; Saito, K.; Utsumi, Y.; Gossard, A. C., Fluctuation Theorem and Microreversibility in a Quantum Coherent Conductor, *Phys. Rev. B*, **83**, [155431-1]-[155431-7] (2011).

Arakawa, T.; Sekiguchi, K.; Nakamura, S.; Chida, K.; Nishihara, Y.; Chiba, D.; Kobayashi, K.; Fukushima, A.; Yuasa, S.; Ono, T., Sub-Poissonian Shot Noise in CoFeB/MgO/CoFeB -based Magnetic Tunneling Junctions, *Applied Physics Letters*, **98**, [202103-1]-[202103-3] (2011).

Ueda, K.; Koyama, T.; Chiba, D.; Shimamura, K.; Tanigawa, H.; Fukami, S.; Suzuki, T.; Ohshima, N.; Ishiwata, N.; Nakatani, Y.; Ono, T., Current-Induced Magnetic Domain Wall Motion in Co/Ni Nanowire at Low Temperature, *Appl. Phys. Express*, **4**, [063003-1]-[063003-3] (2011).

Yamauchi, Y.; Sekiguchi, K.; Chida, K.; Arakawa, T.; Nakamura, S.; Kobayashi, K.; Ono, T.; Fujii, T.; Sakano, R., Evolution of the Kondo Effect in a Quantum Dot Probed by Shot Noise, *Physical Review Letters*, **106**, [176601-1]-[176601-4] (2011).

Kondou, K.; Hiramatsu, R.; Koyama, T.; Nakatani, Y.; Chiba, D.; Fukami, S.; Ishiwata, N.; Ono, T., Electrical Investigation of Notch Width Dependence of Domain Wall Structure in Co/Ni Nanowires, *Jpn. J. Appl. Phys.*, **50**, 73002 (2011).

Koyama, T.; Chiba, D.; Ueda, K.; Tanigawa, H.; Fukami, S.; Suzuki, T.; Ohshima, N.; Ishiwata, N.; Nakatani, Y.; Ono, T., Magnetic Field Insensitivity of Magnetic Domain Wall Velocity Induced by Electrical Current in Co/Ni Nanowire, *Appl. Phys. Lett.*, **98**, 192509 (2011).

Ohshima, N.; Koyama, T.; Tanigawa, T.; Kotsugi, M.; Ohkouchi, T.; Chiba, D.; Kinoshita, T.; Ono, T., Real Space Observation of Current-induced Magnetic Domain Wall Displacement in Co/Ni Nano-wire by Photoemission Electron Microscopy, *J. Phys.: Condensed Matter*, **23**, 382202 (2011).

Koyama, T.; Chiba, D.; Ueda, K.; Tanigawa, H.; Fukami, S.; Suzuki, T.; Ohshima, N.; Ishiwata, N.; Nakatani, Y.; Ono, T., Wire Width Dependence of Threshold Current Density for Domain Wall Motion in Co/Ni Nanowires, *IEEE Trans. Magn.*, **47**, 3089-3091 (2011).

Chiba, D.; Fukami, S.; Shimamura, K.; Ishiwata, N.; Kobayashi, K.; Ono, T., Observation of the Intrinsic Pinning of a Magnetic Domain Wall in a Ferromagnetic Nano-wire, *Nature Materials*, **10**, 194-197 (2011).

DIVISION OF BIOCHEMISTRY

— Biofunctional Design-Chemistry —

Imanishi, M.; Nakamura, A.; Doi, M.; Futaki, S.; Okamura, H., Control of Circadian Phase by an Artificial Zinc Finger Transcription Regulator, *Angew. Chem. Int. Ed.*, **50**, 9396-9399 (2011).

Looi, C. Y.; Imanishi, M.; Takaki, S.; Sato, M.; Chiba, N.; Sasahara, Y.; Futaki, S.; Tsuchiya, S.; Kumaki, S., Octa-Arginine Mediated Delivery of Wild-Type Lnk Protein Inhibits TPO-Induced M-MOK Megakaryoblastic Leukemic Cell Growth by Promoting Apoptosis, *PLoS One*, **6**, e23640 (2011).

Negi, S.; Imanishi, M.; Sasaki, M.; Tatsutani, K.; Futaki, S.; Sugiura, Y., An Arginine Residue Instead of a Conserved Leucine Residue in the Recognition Helix of the Finger 3 of Zif 268 Stabilizes the Domain Structure and Mediates DNA Binding, *Biochemistry*, **50**, 6266-6272 (2011).

Shaheen, S. M.; Akita, H.; Nakamura, T.; Takayama, S.; Futaki, S.; Yamashita, A.; Katoono, R.; Yui, N.; Harashima, H., KALA-modified Multi-layered Nanoparticles as Gene Carriers for MHC Class-I Mediated Antigen Presentation for a DNA Vaccine, *Biomaterials*, **32**, 6342-6350 (2011).

Sakurai, Y.; Hatakeyama, H.; Sato, Y.; Akita, H.; Takayama, K.; Kobayashi, S.; Futaki, S.; Harashima, H., Endosomal Escape and the Knockdown Efficiency of Liposomal-siRNA by the Fusogenic Peptide shGALA, *Biomaterials*, **32**, 5733-5742 (2011).

Kawamoto, S.; Takasu, M.; Miyakawa, T.; Morikawa, R.; Oda, T.; Futaki, S.; Nagao, H., Inverted Micelle Formation of Cell-penetrating Peptide Studied by Coarse-grained Simulation: Importance of Attractive Force between Cell-penetrating Peptides and Lipid Head Group, *J. Chem. Phys.*, **34**, 95-103 (2011).

Sonomura, K.; Kuyama, H.; Matsuo, E.; Tsunasawa, S.; Futaki, S.; Nishimura, O., Selective Isolation of N-blocked Peptide by Combining AspN Digestion, Transamination, and Tosylhydrazine Glass Treatment, *Anal. Biochem.*, **410**, 214-223 (2011).

Madani, F.; Lindberg, S.; Langel, Ü.; Futaki, S.; Gräslund, A., Mechanisms of Cellular Uptake of Cell Penetrating Peptides, *J. Biophys.*, **2011**, 414729 (2011).

Nakase, I.; Kogure, K.; Harashima, H.; Futaki, S., Application of a Fusogenic Peptide GALA for Intracellular Delivery, *Methods Mol. Biol.*, **683**, 525-533 (2011).

— Chemistry of Molecular Biocatalysts —

Koeduka, T.; Watanabe, B.; Suzuki, S.; Hiratake, J.; Mano, J.; Yazaki, K., Characterization of Raspberry Ketone/Zingerone Synthase, Catalyzing the α , β -Hydrogenation of Phenylbutenones in Raspberry Fruits, *Biochem. Biophys. Res. Commun.*, **412**, 104-108 (2011).

Joyce-Brady, M.; Hiratake, J., Inhibition Glutathione Metabolism in Lung Lining Fluid as a Strategy to Augment Antioxidant Defense, *Curr. Enz. Inhibit.*, **7**, 71-78 (2011).

Yamamoto, S.; Watanabe, B.; Hiratake, J.; Tanaka, R.; Ohkita, M.; Matsumura, Y., Preventive Effect of GGsTop, a Novel and Selective γ -Glutamyl Transpeptidase Inhibitor, on Ischemia/Reperfusion-Induced Renal Injury in Rats, *J. Pharmacol. Exp. Ther.*, **339**, 945-951 (2011).

— Molecular Biology —

Aki, S.; Nakai, H.; Aoyama, T.; Oka, A.; Tsuge, T., *AtSAP130/AtSF3b-3* Function Is Required for Reproduction in *Arabidopsis thaliana*, *Plant Cell Physiol.*, **52**, 1330-1339 (2011).

Tsuge, T.; Menon, S.; Tong, Y.; Wei, N., CSN1 Inhibits c-Jun Phosphorylation and Down-regulates Ectopic Expression of JNK1, *Protein Cell*, **2**, 423-432 (2011).

Luo, Y.; Qin, G.; Zhang, J.; Liang, Y.; Song, Y.; Zhao, M.; Tsuge, T.; Aoyama, T.; Liu, J.; Gu, H.; Qu, L. -J., D-myo-inositol-3-phosphate Affects Phosphatidylinositol-mediated Endomembrane Function in *Arabidopsis* and Is Essential for Auxin-regulated Embryogenesis, *Plant Cell*, **23**, 1352-1372 (2011).

[Others]

Tsuge, T.; Aki, S., Photoreceptors and Light Signal Transduction, *Latest Plant Physiological Chemistry, Daigaku-kyouiku-shuppan Okayama*, 22-50 (2011) (in Japanese).

— Chemical Biology —

Sato, S.; Murata, A.; Orihara, T.; Shirakawa, T.; Suenaga, K.; Kigoshi, H.; Uesugi, M., Marine Natural Product Aurilide Activates the OPA1-Mediated Apoptosis by Binding to Prohibitin, *Chem. Biol.*, **18(1)**, 131-139 (2011).

Shirakawa, T.; Kawazoe, Y.; Tsujikawa, T.; Jung, D.; Sato, S.; Uesugi, M., Deactivation of STAT6 through Serine 707 Phosphorylation by JNK, *J. Biol. Chem.*, **286(5)**, 4003-4010 (2011).

Sumiya, E.; Shimogawa, H.; Sasaki, H.; Tsutsumi, M.; Yoshita, K.; Ojika, M.; Suenaga, K.; Uesugi, M., Cell-Morphology Profiling of a Natural Product Library Identifies Bisebromoamide and Miuraenamides A as Actin-Filament Stabilizers, *ACS Chem. Biol.*, **6(5)**, 425-431 (2011).

Kawazoe, Y.; Shimogawa, H.; Sato, A.; Uesugi, M., A Mitochondrial Surface-Specific Fluorescent Probe Activated by Bioconversion, *Angew. Chem. Int. Ed.*, **50(24)**, 5478-5481 (2011).

Murata, A.; Sato, S.; Kawazoe, Y.; Uesugi, M., Small-Molecule Fluorescent Probes for Specific RNA Targets, *Chem. Commun.*, **47(16)**, 4712-4714 (2011).

Murakami, G.; Inoue, H.; Tsukita, K.; Asai, Y.; Amagai, Y.; Aiba, K.; Shimogawa, H.; Uesugi, M.; Nakatsuji, N.; Takahashi, R., Chemical Library Screening Identifies a Small Molecule That Downregulates SOD1 Transcription for Drugs to Treat Amyotrophic Lateral Sclerosis, *J. Biomol. Screen.*, **16**(4), 405-414 (2011).

Khambu, B.; Uesugi, M.; Kawazoe, Y., Translational Repression Stabilizes Messenger RNA of Autophagy-Related Genes, *Genes Cells*, **16**(8), 857-867 (2011).

Kamisuki, S.; Shirakawa, T.; Kugimiya, A.; Abu-Elheiga, L.; Choo, H.; Yamada, K.; Shimogawa, H.; Wakil, S. J.; Uesugi, M., Synthesis and Evaluation of Diarylthiazole Derivatives That Inhibit Activation of Sterol Regulatory Element-Binding Proteins, *J. Med. Chem.*, **54**(13), 4923-4927 (2011).

[Others]

Hirata, N.; Uesugi, M., Fluorescent Small Molecules That Detect Stem Cells, *Probes Development for Fluorescent and Magnetic Resonance Imaging*, 146-152 (2011) (in Japanese).

DIVISION OF ENVIRONMENTAL CHEMISTRY — Molecular Materials Chemistry —

Fukushima, T.; Kimura, H.; Shimahara, Y.; Kaji, H., Solid-State Nuclear Magnetic Resonance Analysis of Phase Separation Behavior of Regioregular Poly(3-hexylthiophene) and [6,6]-Phenyl-C₆₁-Butyric Acid Methyl Ester in Bulk Heterojunction Organic Solar Cells, *Appl. Phys. Lett.*, **99**, [223301-1]-[223301-3] (2011).

Kaji, H.; Hayashi, H.; Yamada, T.; Fukuchi, M.; Fujimura, S.; Ueda, M.; Kang, S.; Umeyama, T.; Matano, Y.; Imahori, H., Local Stoichiometry in Amorphous Supramolecular Composites Analyzed by Solid-State ¹³C Nuclear Magnetic Resonance MR, *Appl. Phys. Lett.*, **98**, [113301-1]-[113301-3] (2011).

Matano, Y.; Saito, A.; Fukushima, T.; Tokudome, Y.; Suzuki, F.; Sakamaki, D.; Kaji, H.; Ito, A.; Tanaka, K.; Imahori, H., Fusion of Phosphole and 1,1'-Biacenaphthene: Phosphorus(V)-Containing Extended π -Systems with High Electron Affinity and Electron Mobility, *Angew. Chem. Int. Ed.*, **50**, 8016-8020 (2011).

Sato, T.; Shizu, K.; Uegaito, K.; Iwahara, N.; Tanaka, K.; Kaji, H., Vibronic Interactions in Hole-Transporting Molecules: an Interplay with Electron-Hole Interactions, *Chem. Phys. Lett.*, **507**, 151-156 (2011).

Shizu, K.; Sato, T.; Ito, A.; Tanaka, K.; Kaji, H., Theoretical Design of a Hole-Transporting Molecule: Hexaaza₁₆parabiphenylophane, *J. Mater. Chem.*, **21**, 6375-6382 (2011).

Tokudome, Y.; Fukushima, T.; Goto, A.; Kaji, H., Enhanced Hole Injection in Organic Light-Emitting Diodes by Optimized Synthesis of Self-Assembled Monolayer, *Organic Electronics*, **12**, 1600-1605 (2011).

Yamada, T.; Suzuki, F.; Goto, A.; Sato, T.; Tanaka, K.; Kaji, H., Revealing Bipolar Charge-Transport Property of 4,4'-N,N'-dicarbazolylbiphenyl (CBP) by Quantum Chemical Calculations, *Organic Electronics*, **12**, 169-178 (2011).

Goto, A.; Suzuki, T.; Ohfuji, H.; Tanishima, M.; Fukuda, T.; Tsujii, Y.; Kaji, H., Reversible Complexation Mediated Living Radical Polymerization(RCMP) Using Organic Catalysts, *Macromolecules*, **44**, 8709-8715 (2011).

Nomura, A.; Goto, A.; Ohno, K.; Kayahara, E.; Yamago, S.; Tsujii, Y., Controlled Synthesis of Hydrophilic Concentrated Polymer Brushes and Their Friction/Lubrication Properties in Aqueous Solutions, *J. Polym. Sci. Part A: Polym. Chem.*, **49**, 5284-5292 (2011).

Pan, P.; Fujita, M.; Ooi, W.; Sudesh, K.; Takarada, T.; Goto, A.; Maeda, M., DNA-Functionalized Thermoresponsive Bioconjugates Synthesized via ATRP and Click Chemistry, *Polymer*, **52**, 895-900 (2011).

Goto, A.; Tsujii, Y.; Kaji, H., Living Radical Polymerizations with Organic Catalysts, *Kobunshi Ronbunshu*, **68**, 223-231 (2011) (in Japanese).

— Hydrospheric Environment Analytical Chemistry —

Firdaus, M. L.; Minami, T.; Norisuye, K.; Sohrin, Y., Strong Elemental Fractionation of Zr-Hf and Nb-Ta across the Pacific Ocean, *Nat. Geosci.*, **4**, 227-230 (2011).

Li, Y. H.; Sohrin, Y.; Takamatsu, T., Lake Biwa and the Ocean: Geochemical Similarity and Difference, *Limnology*, **12**, 89-101 (2011).

Sohrin, Y.; Bruland, K. W., Global Status of Trace Elements in the Ocean, *TrAC, Trends Anal. Chem.*, **30**, 1291-1307 (2011).

Cid, A. P.; Urushihara, S.; Minami, T.; Norisuye, K.; Sohrin, Y., Stoichiometry among Bioactive Trace Metals in Seawater on the Bering Sea Shelf, *J. Oceanogr.*, **67**, 747-764 (2011).

[Others]

Sohrin, Y., Germanium, Tin and Lead, *Analytical Chemistry Handbook 6th ed.*, 313-319 (2011) (in Japanese).

Sohrin, Y., Chromium, Molybdenum and Tungsten, *Analytical Chemistry Handbook 6th ed.*, 264-269 (2011) (in Japanese).

Sohrin, Y., Heavy Metals, *Environmental Analysis Guidebook*, 568-571 (2011) (in Japanese).

Sohrin, Y., Elemental Abundance, Elemental Avelage Concentration, *Rare Metal Handbook*, 137-139 (2011) (in Japanese).

Sohrin, Y., Dr. Masakazu Matsui Nominated for a Honorary Member of the Japan Society of Analytical Chemistry, *Bunseki*, **8**, 489 (2011) (in Japanese).

Sohrin, Y., Novel Tracer of Ocean Circulation: Sectional Distribution of Rare Metals from the Southern Ocean to the Pacific Ocean, *Oubaku*, **35**, 4 (2011) (in Japanese).

— Solution and Interface Chemistry —

Hasegawa, T., Structural Analysis of an Adhesive Interface and Thin Films Using, *J. Adhesion Soc. Jpn.*, **47**(11), 470-477 (2011) (in Japanese).

Kasuya, A.; Itoh, Y.; Okada, T.; Osawa, M.; Takahashi, Y.; Kazuma, E.; Tatsuma, T.; Hasegawa, T., Infrared Spectroscopy Aided by Chemometrics, *Phys. Chem. Chem. Phys.*, **13**, 9691-9696 (2011).

Sakuraba, S.; Matubayasi, N., Distribution-Function Approach to Free Energy Computation, *J. Chem. Phys.*, **135**, 114108-114118 (2011).

Yasaka, Y.; Klein, M. L.; Nakahara, M.; Matubayasi, N., Exploring the Reorientation of Benzene in an Ionic Liquid via Molecular Dynamics: Effect of Temperature and Solvent Effective Charge on the Slow Dynamics, *J. Chem. Phys.*, **134**, 191101-191104 (2011).

Karino, Y.; Matubayasi, N., Free-Energy Analysis of Hydration Effect on Protein with Explicit Solvent: Equilibrium Fluctuation of Cytochrome *c*, *J. Chem. Phys.*, **134**, 041105-041108 (2011).

Kimura, H.; Nakahara, M.; Matubayasi, N., In Situ Kinetic Study on Hydrothermal Transformation of D-Glucose into 5-Hydroxymethylfurfural through D-Fructose with ¹³C NMR, *J. Phys. Chem. A*, **115**, 14013-14021 (2011).

Yamaguchi, T.; Yamada, Y.; Matsuoka, T.; Koda, S.; Yasaka, Y.; Matubayasi, N., Frequency-Domain Investigation of the Ionic Mobility of Triflate Salts in Tetrahydrofuran, *J. Phys. Chem. B*, **115**, 12558-12565 (2011).

Shintani, M.; Yoshida, K.; Sakuraba, S.; Nakahara, M.; Matubayasi, N., NMR-NOE and MD Simulation Study on Phospholipid Membranes: Dependence on Membrane Diameter and Multiple Time Scale Dynamics, *J. Phys. Chem. B*, **115**, 9106-9115 (2011).

Takahashi, H.; Maruyama, K.; Karino, Y.; Morita, A.; Nakano, M.; Jungwirth, P.; Matubayasi, N., Energetic Origin of Proton Affinity to the Air/Water Interface, *J. Phys. Chem. B*, **115**, 4745-4751 (2011).

Deguchi, H.; Kubota, Y.; Furukawa, H.; Yagi, Y.; Imai, Y.; Tatsumi, M.; Yamazaki, N.; Watari, N.; Hirata, T.; Matubayasi, N.; Kameda, Y., Hydration Structure around CO₂ Captured in Aqueous Amine Solutions Observed by High Energy X-ray Scattering, *Int. J. Greenhouse Gas Control*, **5**, 1533-1539 (2011).

Karino, Y.; Akiyama, R.; Kinoshita, M., A Simple Theory for Entropic Interaction Induced between Large Spheres in a Binary Mixture of Small and Medium Spheres, *J. Phys. Soc. Jpn.*, **80**, [114802-1]-[114802-8] (2011).

— Molecular Microbial Science —

Kawamoto, J.; Sato, T.; Nakasone, K.; Kato, C.; Mihara, H.; Esaki, N.; Kurihara, T., Favourable Effects of Eicosapentaenoic Acid on the Late Step of the Cell Division in a Piezophilic Bacterium, *Shewanella violacea* DSS12, at High-Hydrostatic Pressures, *Environ. Microbiol.*, **13**, 2293-2298 (2011).

Sato, S. B.; Sato, S.; Kawamoto, J.; Kurihara, T., Differential Roles of Internal and Terminal Double Bonds in Docosahexaenoic Acid: Comparative Study of Cytotoxicity of Polyunsaturated Fatty Acids to HT-29 Human Colorectal Tumor Cell Line, *Prostaglandins Leukot. Essent. Fatty Acids*, **84**, 31-37 (2011).

Vasudevan, A.; Fujita, M.; Kurata, A.; Kawamoto, J.; Esaki, N.; Kurihara, T., Function of FADH₂-Dependent 2-Haloacrylate Hydratase from a 2-Chloroacrylate-Utilizing Bacterium, *Burkholderia* sp. WS, *Trace Nutrients Research*, **28**, 58-64 (2011).

Masanari, M.; Wakai, S.; Tamegai, H.; Kurihara, T.; Kato, C.; Sambongi, Y., Thermal Stability of Cytochrome *c* of Pressure-Sensitive *Shewanella livingstonensis*, *Biosci. Biotechnol. Biochem.*, **75**, 1859-1861 (2011).

Tamegai, H.; Ota, Y.; Haga, M.; Fujimori, H.; Kato, C.; Nogi, Y.; Kawamoto, J.; Kurihara, T.; Sambongi, Y., Piezotolerance of the Respiratory Terminal Oxidase Activity of the Piezophilic *Shewanella violacea* DSS12 as Compared with Non-Piezophilic *Shewanella* Species, *Biosci. Biotechnol. Biochem.*, **75**, 919-924 (2011).

Omori, T.; Honda, A.; Mihara, H.; Kurihara, T.; Esaki, N., Identification of Novel Mammalian Phospholipids Containing Threonine, Aspartate, and Glutamate as the Base Moiety, *J. Chromatogr. B Analyt. Technol. Biomed. Life Sci.*, **879**, 3296-3302 (2011).

Kurokawa, S.; Takehashi, M.; Tanaka, H.; Mihara, H.; Kurihara, T.; Tanaka, S.; Hill, K.; Burk, R.; Esaki, N., Mammalian Selenocysteine Lyase Is Involved in Selenoprotein Biosynthesis, *J. Nutr. Sci. Vitaminol.*, **57**, 298-305 (2011).

Hidese, R.; Mihara, H.; Kurihara, T.; Esaki, N., *Escherichia coli* Dihydropyrimidine Dehydrogenase Is a Novel NAD-Dependent Heterotetramer Essential for the Production of 5,6-Dihydrouracil, *J. Bacteriol.*, **193**, 989-993 (2011).

Kurihara, T., Mechanistic Analysis of Enzymatic Degradation of Organohalogen Compounds, *Biosci. Biotechnol. Biochem.*, **75**, 189-198 (2011).

Kawamoto, J.; Kurihara, T., Physiological Function of Long-chain Polyunsaturated Fatty Acid-containing Phospholipids of a Cold-adapted Microorganism, *Bioscience and Biotechnology*, **69**, 305-307 (2011) (in Japanese).

DIVISION OF MULTIDISCIPLINARY CHEMISTRY — Polymer Materials Science —

Inoue, R.; Kawashima, K.; Matsui, K.; Nakamura, M.; Nishida, K.; Kanaya, T.; Yamada, N. L., Interfacial Properties of Polystyrene Thin Films as Revealed by Neutron Reflectivity, *Phys. Rev. E*, **84**, [031802-1]-[031802-7] (2011).

Kawabata, J.; Matsuba, G.; Nishida, K.; Inoue, R.; Kanaya, T., Melt Memory Effects on Recrystallization of Polyamide 6 Revealed by Depolarized Light Scattering and Small-Angle X-ray Scattering, *J. App. Polym. Sci.*, **122**, 1913-1920 (2011).

Masunaga, H.; Ogawa, H.; Takano, T.; Sasaki, S.; Goto, S.; Tanaka, T.; Seike, T.; Takahashi, S.; Takashita, K.; Nariyama, N.; Ohashi, H.; Ohta, T.; Furukawa, Y.; Matsushita, T.; Ishizawa, Y.; Yagi, N.; Takata, M.; Kitamura, H.; Sakurai, K.; Tashiro, K.; Takahara, A.; Amamiya, Y.; Horie, K.; Takenaka, M.; Kanaya, T.; Jinnai, H.; Okuda, H.; Akiba, I.; Takahashi, I.; Yamamoto, K.; Hikosaka, M.; Sakurai, S.; Shinohara, Y.; Okuda, A.; Sugihara, Y., Multi-purpose Soft-Material SAXS/WAXS/GISAXS Beamline at SPring-8, *Polymer Journal*, **43**, 1-7 (2011).

Yamada, M.; Iwashita, Y.; Kanaya, T.; Ichikawa, M.; Tongu, H.; Kennedy, S. J.; Shimizu, H. M.; Mishima, K.; Yamada, N. L.; Hirota, K.; Carpenter, J. M.; Lal, J.; Andersen, K.; Geltenbort, P.; Guerard, B.; Manzin, G.; Hino, M.; Kitacuchi, M.; Bleuel, M., The Performance of Magnetic Lens for Focusing VCN-SANS, *Nucl. Instr. Meth. Phys. Res. A*, **634**, S156-S160 (2011).

Inoue, R.; Kawashima, K.; Matsui, K.; Kanaya, T.; Nishida, K.; Matsuba, G.; Hino, M., Distributions of Glass-Transition Temperature and Thermal Expansivity in Multilayered Polystyrene Thin Films Studied by Neutron Reflectivity, *Phys. Rev. E*, **83**, [21801-1]-[21801-7] (2011).

Asakawa, H.; Nishida, K.; Matsuba, G.; Kanaya, T.; Ogawa, H., Crystallization of Isotactic Polypropylene from Mesomorphic Phase: a Constant Heating Rate Study, *Journal of Physics: Conf. Ser.*, **272**, [012024-1]-[012024-4] (2011).

Ogawa, H.; Kanaya, T., Studies on Polymer Thin Film Structure by X-ray and Neutron Reflectivity and Grazing Incidence Small Angle Scattering, *Nippon Gomu Kyokaishi*, **84**, 37-41 (2011) (in Japanese).

Yamada, M.; Iwashita, Y.; Kanaya, T.; Yamada, N. L.; Shimazu, H. M.; Mishima, K.; Hino, M.; Kitaguchi, M.; Hirota, K.; Geltenbort, P.; Guerard, B.; Manzin, G.; Andersen, K.; Lal, J.; Carpenbort, J. M.; Bleuel, M.; Kennedy, S. J., A Compact TOF-SANS Using Focusing Lens and Very Cold Neutrons, *Physica B*, **406**, 2453-2457 (2011).

Imae, T.; Kanaya, T.; Furusaka, M.; Torikai, N., Neutrons in Soft Matter (2011).

[Others]

Nishida, K.; Asakawa, H., Fundamental Characteristics of Solid State Polymer -Mesophase of Isotactic Polypropylene, Part 2-, *Seikei-Kakou*, **23**, 326-328 (2011) (in Japanese).

— Molecular Rheology —

Uneyama, T.; Horio, K.; Watanabe, H., Anisotropic Mobility Model for Polymers under Shear and Its Linear Response Functions, *Phys. Rev. E*, **83(6)**, [061802-1]-[061802-15] (2011).

Uneyama, T.; Horio, K., Equilibrium Statistics of Weakly Slip-Linked Gaussian Polymer Chains, *J. Polym. Sci. B: Polym. Phys.*, **49(13)**, 966-977 (2011).

Miyata, T.; Yamamoto, Y.; Uneyama, T.; Nakamura, Y.; Zhang, S. L., Optimization of the Multishift QR Algorithm with Coprocessors for Non-Hermitian Eigenvalue Problems, *East Asian J. Appl. Math.*, **1(2)**, 187-196 (2011).

Kawasaki, Y.; Watanabe, H.; Uneyama, T., A Note for Kohlrausch-Williams-Watts Relaxation Function, *Nihon Reoroji Gakkaishi (J. Soc. Rheol. Japan)*, **39(3)**, 127-131 (2011).

Rakkapao, N.; Vao-soongnern, V.; Masubuchi, Y.; Watanabe, H., Miscibility of Chitosan/Poly(ethylene oxide) Blends and Effect of Doping Alkali and Alkali Earth Metal Ions on Chitosan/PEO Interaction, *Polymer*, **52(12)**, 2618-2627 (2011).

Chung, C.; Uneyama, T.; Masubuchi, Y.; Watanabe, H., Numerical Study of Chain Conformation on Shear Banding Using Diffusive Rolie-Poly Model, *Rheologica Acta*, **50(9-10)**, 753-766 (2011).

Matsumiya, Y.; Uno, A.; Watanabe, H.; Inoue, T.; Urakawa, O., Dielectric and Viscoelastic Investigation of Segmental Dynamics of Polystyrene above Glass Transition Temperature: Cooperative Sequence Length and Relaxation Mode Distribution, *Macromolecules*, **44(11)**, 4355-4365 (2011).

Chen, Q.; Matsumiya, Y.; Masubuchi, Y.; Watanabe, H.; Inoue, T., Dynamics of Polyisoprene-Poly(p-tert-butylstyrene) Diblock Copolymer in Disordered State, *Macromolecules*, **44(6)**, 1585-1602 (2011).

Watanabe, H.; Chen, Q.; Kawasaki, Y.; Matsumiya, Y.; Inoue, T.; Urakawa, O., Entanglement Dynamics in Miscible Polyisoprene/Poly(p-tert-butylstyrene) Blends, *Macromolecules*, **44(6)**, 1570-1584 (2011).

Masubuchi, Y.; Yaoita, T.; Matsumiya, Y.; Watanabe, H., Primitive Chain Network Simulations for Asymmetric Star Polymers, *J. Chem. Phys.*, **134**, [194905-1]-[194905-7] (2011).

Uneyama, T., Single Chain Slip-Spring Model for Fast Rheology Simulations of Entangled Polymers on GPU, *Nihon Reoroji Gakkaishi (J. Soc. Rheol. Japan)*, **39(4)**, 135-152 (2011).

Uneyama, T.; Masubuchi, Y., Detailed Balance Condition and Effective Free Energy in the Primitive Chain Network Model, *J. Chem. Phys.*, **135(18)**, [184904-1]-[184904-15] (2011).

[Others]

Uneyama, T., Molecular Theories for Entangled Polymer Rheology, *Koubunshi*, **60(4)**, 199-200 (2011) (in Japanese).

Uneyama, T., Linkage between Meso and Micro-Scale Models for Entangled Polymers, *Ensemble*, **13(3)**, 112-117 (2011) (in Japanese).

Masubuchi, Y., Simulations for Polymer Dynamics, *Koubunshi*, **60(2)**, 85-88 (2011) (in Japanese).

Masubuchi, Y., Melt Properties of Polymers, *Seikeikakou*, **23(7)**, 414-417 (2011) (in Japanese).

Shiromoto, S.; Tsutsubuchi, M.; Togawa, Y.; Masubuchi, Y., Primitive Chain Network Simulations for Start-up Shear Flow, *Seikeikakou*, **23(4)**, 211-215 (2011) (in Japanese).

Matsumiya, Y., Fundamental Investigation of Polymer Dynamics with Dielectric and Viscoelastic Methods, *Nihon Reoroji Gakkaishi (J. Soc. Rheol. Japan)*, **39(5)**, 197-204 (2011) (in Japanese).

— Molecular Aggregation Analysis —

Asami, K., Effectiveness of “Thin-Layer” and “Effective Medium” Approximations in Numerical Simulation of Dielectric Properties of Biological Cell Suspensions, *Jpn. J. Appl. Phys.*, **49**, [127001-1]-[127001-5] (2010).

Hayashi, Y.; Katsumoto, Y.; Omori, S.; Yasuda, A.; Asami, K.; Kaibara, M.; Uchimura, I., Dielectric Coagulometry: A New Approach to Estimate Venous Thrombosis Risk, *Anal. Chem.*, **82**, 9769-9774 (2010).

Tsutsumi, J.; Yoshida, H.; Murdey, R.; Sato, N., Decay Mechanism of Spontaneously Built-up Surface Potential in a Thin Film of a Zwitterionic Molecule Having Noncentrosymmetric Crystal Structure, *J. Phys. Chem. C*, **115**, 2356-2359 (2011).

Yoshida, H.; Sato, N., The Depth Profile of Core Energy Levels: Electronic Structure of Buried Organic/Metal Interfaces Examined by X-ray Photoemission and Target Factor Analysis, *Chem. Phys. Lett.*, **511**, 146-150 (2011).

Murdey, R.; Sato, N., *In Situ* Conductance Measurements of Copper Phthalocyanine Thin Film Growth on Sapphire [0001], *J. Chem. Phys.*, **134**, [234702-1]-[234702-5] (2011).

Asami, K., Dielectric Properties of Microvillous Cells Simulated by the Three-Dimensional Finite-Element Method, *Bioelectrochemistry*, **81**, 28-33 (2011).

Asami, K., Design of a Measurement Cell for Low-Frequency Dielectric Spectroscopy of Biological Cell Suspensions, *Meas. Sci. Technol.*, **22**, [085801-1]-[085801-7] (2011).

— Interdisciplinary Chemistry for Innovation —

Kondo, T.; Yamamoto, K.; Takagi, D.; Shen, L.; Yoshida, Y.; Kimura, Y.; Toshimitsu, A., Selective Trimerization of Ethylene to Isohexenes Catalyzed by a Ruthenium(0) Complex, *ChemCatChem*, **2**, 1565-1568 (2010).

ADVANCED RESEARCH CENTER FOR BEAM SCIENCE
— Particle Beam Science —

Shimizu, H. M.; Iwashita, Y.; Kitaguchi, M.; Mishima, K.; Yoshioka, T., A Transport Optics for Pulsed Ultracold Neutrons, *Nucl. Instrum. Meth.*, **A634**, S25-S27 (2011).

Iwashita, Y.; Nagae, T.; Tanimori, T.; Fujioka, H.; Shimizu, H. M., Satellite Pulsed Tiny Neutron Source at Kyoto University Sakyo, *Nucl. Instrum. Meth.*, **A634**, S97-S99 (2011).

Yamada, M.; Iwashita, Y.; Kanaya, T.; Yamada, N. L.; Shimizu, H. M.; Mishima, K.; Hino, M.; Kitaguchi, M.; Hirota, K.; Geltenbort, P.; Guerard, B.; Manzin, G.; Andersen, K.; Lal, J.; Carpenter, J. M.; Bleuel, M.; Kennedy, S. J., A Compact TOF-SANS Using Focusing Lens and Very Cold Neutrons, *Physica B. Cond. Matt.*, **406**, 2453-2457 (2011).

Arimoto, Y.; Yoshioka, T.; Shimizu, H. M.; Mishima, K.; Ino, T.; Taketani, K.; Muto, S.; Kitaguchi, M.; Imajo, S.; Iwashita, Y.; Yamashita, S.; Kamiya, Y.; Yoshimi, A.; Asahi, K.; Shima, T.; Sakai, K., Longitudinal-gradient Magnet for Time Focusing of Ultra-cold Neutrons, *Phys. Proc.*, **17**, 20-29 (2011).

Yoshioka, T.; Mishima, K.; Ino, T.; Taketani, K.; Muto, S.; Morishima, T.; Shimizu, H. M.; Oku, T.; Suzuki, J.; Shinohara, T.; Sakai, K.; Sato, H.; Hirota, K.; Otake, Y.; Kitaguchi, M.; Hino, M.; Seki, Y.; Iwashita, Y.; Yamada, M.; Ichikawa, M.; Sugimoto, T.; Kawasaki, S.; Komamiya, S.; Otono, H.; Kamiya, Y.; Yamashita, S.; Geltenbort, P., Polarization of Very Cold Neutron Using a Permanent Magnet Quadrupole, *Nucl. Instrum. Meth.*, **634**, S17-S20 (2011).

[Others]

Noda, A.; Nakao, M.; Souda, H.; Tongu, H.; Fujimoto, T.; Iwata, S.; Shibuya, S.; Ito, K.; Okamoto, H.; Jimbo, K.; Grieser, M.; Noda, K.; Shirai, T., Present Status of Beam Cooling and Related Research at S-LSR, *Proc. of IPAC2011*, 3436-3438 (2011).

Iwashita, Y.; Fukuda, S., Development of Permanent Magnet Focusing for Klystrons, *Proc. of IPAC11*, 1743-1745 (2011).

Jimbo, K.; Hiromasa, T.; Nakao, M.; Noda, A.; Souda, H.; Tongu, H., Investigation of Synchro-Betatron Couplings at S-LSR, *Proceedings of 2011 Particle Accelerator Conference*, 367-369 (2011).

Noda, A.; Nakao, M.; Souda, H.; Tongu, H.; Jimbo, K.; Noda, K.; Shirai, T.; Meshkov, I. N.; Smirnov, A. V.; Syresin, E.; Grieser, M., Recent Status of Beam Cooling at S-LSR, *Proc. of COOL'11*, 19-24 (2011).

Noda, A.; Souda, H.; Tongu, H.; Nakao, M.; Nasu, Y.; Jimbo, K.; Okamoto, H.; Osaki, K.; Noda, K.; Shibuya, S.; Fujimoto, T.; Iwata, S.; Grieser, M.; Zhengqi, H., Present Status of Ion Accumulation and Cooler Ring S-LSR, *Proceedings of 8th Annual Meeting of Particle Accelerator Society of Japan*, MOPS009 (2011) (in Japanese).

Iwashita, Y.; Kitaguchi, M.; Yoshioka, T.; Imajo, S.; Mishima, K.; Nasu, Y.; Fuwa, Y.; Arimoto, Y.; Shimizu, H. M., Rebuncher Resonator for Pulsed Ultra-Cold Neutrons, *Proceedings of 8th Annual Meeting of Particle Accelerator Society of Japan*, MOMH04 (2011) (in Japanese).

Iwashita, Y.; Fukuda, S., Permanent Magnet Focusing for Klystron, *Proceedings of 8th Annual Meeting of Particle Accelerator Society of Japan*, MOPS036 (2011) (in Japanese).

Nasu, Y.; Fuwa, Y.; Yamada, M.; Ushijima, S.; Shimizu, H. M.; Iwashita, Y., Rotating Coil System for Multipole Magnets, *Proceedings of 8th Annual Meeting of Particle Accelerator Society of Japan*, MOPS040 (2011) (in Japanese).

Fuwa, Y.; Iwashita, Y.; Nasu, Y.; Shimizu, H.; Tongu, H.; Yamada, M., Modulating Permanent Sextupole Triple Magnet Lens, *Proceedings of 8th Annual Meeting of Particle Accelerator Society of Japan*, MOPS054 (2011) (in Japanese).

Arimoto, Y.; Iwashita, Y.; Kitaguchi, M.; Yoshioka, T.; Imajo, S.; Mishima, K.; Shimizu, H. M., Development of Anisotropic-interpole Magnet for Time Focusing of Ultra-cold Neutrons, *Proceedings of 8th Annual Meeting of Particle Accelerator Society of Japan*, MOPS123 (2011) (in Japanese).

Tongu, H.; Iwashita, Y.; Hayano, H.; Watanabe, K.; Yamamoto, Y., Development for Inspection System of the Superconducting Cavities at Kyoto University, *Proceedings of 8th Annual Meeting of Particle Accelerator Society of Japan*, TUPS141 (2011) (in Japanese).

Souda, H.; Nakao, M.; Nasu, Y.; Tongu, H.; Noda, A.; Jimbo, K.; Okamoto, H.; Zhengqi, H., Beam Current Dependence of the Equilibrium, *Proceedings of the 8th Annual Meeting of Particle Accelerator Society of Japan*, TUPS084 (2011) (in Japanese).

— Laser Matter Interaction Science —

Jahangiri, F.; Hashida, M.; Tokita, S.; Nagashima, T.; Hangyo, M.; Sakabe, S., Directional Elliptically Polarized Terahertz Emission from Air Plasma Produced by Circularly Polarized Intense Femtosecond Laser Pulses, *Appl. Phys. Lett.*, **99**, 161505 (2011).

Otani, K.; Tokita, S.; Nishoji, T.; Inoue, S.; Hashida, M.; Sakabe, S., Efficient Laser-Proton Acceleration from an Insulating Foil with an Attached Small Metal Disk, *Appl. Phys. Lett.*, **99**, 161501 (2011).

Inoue, S.; Tokita, S.; Otani, K.; Hashida, M.; Sakabe, S., Femtosecond Electron Deflectometry for Measuring Transient Fields Generated by Laser-Accelerated Fast Electrons, *Appl. Phys. Lett.*, **99**, 31501 (2011).

Tokita, S.; Murakami, M.; Shimizu, S.; Hashida, M.; Sakabe, S., 12W Q-switched Er:ZBLAN Fiber Laser at 2.8 μm , *Opt. Lett.*, **36**, 2812-2814 (2011).

Tokita, S.; Otani, K.; Nishoji, T.; Inoue, S.; Hashida, M.; Sakabe, S., Collimated Fast Electron Emission from Long Wires Irradiated by Intense Femtosecond Laser Pulses, *Phys. Rev. Lett.*, **106**, 255001 (2011).

Hashida, M.; Miyasaka, Y.; Ikuta, Y.; Tokita, S.; Sakabe, S., Crystal Structures on a Copper Thin Film with a Surface of Periodic Self-Organized Nanostructures Induced by Femtosecond Laser Pulses, *Phys. Rev. B*, **83**, 235413 (2011).

Hashida, M.; Sakabe, S.; Izawa, Y., Symmetric Charge-transfer Cross Sections of IIIa Rare-Earth-Metal Elements, *Phys. Rev. A*, **83**, 32704 (2011).

— Electron Microscopy and Crystal Chemistry —

Haruta, M.; Kurata, H.; Matsumoto, K.; Inoue, S.; Shimakawa, Y.; Isoda, S., Local Electronic Structure Analysis for Brownmill-erite $\text{Ca}(\text{Sr})\text{FeO}_{2.5}$ Using Site-resolved Energy-loss Near-edge Structures, *J. Appl. Phys.*, **110**, [033708-1]-[033708-8] (2011).

Matsumoto, K.; Haruta, M.; Kawai, M.; Sakaiguchi, A.; Ichikawa, N.; Kurata, H.; Shimakawa, Y., Selective Reduction of Layers at Low Temperature in Artificial Superlattice Thin Films, *Sci. Rep.*, **1**, [27-1]-[27-4] (2011).

Imahori, H.; Kang, S.; Hayashi, H.; Haruta, M.; Kurata, H.; Isoda, S.; Canton, S. E.; Infahsaeng, Y.; Kathiravan, A.; Pascher, T.; Chabera, P.; Yartsev, A. P.; Sundstro, V., Photoinduced Charge Carrier Dynamics of Zn-Porphyrin- TiO_2 Electrodes: The Key Role of Charge Recombination for Solar Cell Performance, *J. Phys. Chem.*, **A115**, 3679-3690 (2011).

Nagamatsu, D.; Nemoto, T.; Kurata, H.; Jiu, J. T.; Adachi, M.; Isoda, S., Interface Structure of Gold Particles on TiO_2 Anatase, *Mater. Trans.*, **52**, 280-284 (2011).

Kawasaki, N.; Sugiyama, N.; Otsuka, Y.; Hashimoto, H.; Kurata, H.; Isoda, S., Analytical Electron Microscopy Investigation of Elemental Composition and Bonding Structure at the Sb-doped Ni-fully-silicide/ SiO_2 Interface, *J. Appl. Phys.*, **109**, [063716-1]-[063716-6] (2011).

Tezuka, N.; Umeyama, T.; Matano, Y.; Shishido, T.; Yoshida, K.; Ogawa, T.; Isoda, S.; Stranius, K.; Chukharev, V.; Tkachenko, N. V.; Lemmetyinen, H.; Imahori, H., Photophysics and Photoelectrochemical Properties of Nanohybrids Consisting of Fullerene-Encapsulated Single-Walled Carbon Nanotubes and Poly(3-hexylthiophene), *Energy Environ. Sci.*, **4**, 741-750 (2011).

— Structural Molecular Biology —

Yamauchi, T.; Fujii, T.; Yoshida, M.; Oikawa, T.; Hata, Y., Crystal Structure of Flavin Reductase from *Rhizobium* sp. Strain MTP-10005, *Acta Cryst.*, **A67**, C779 (2011).

Hata, Y.; Fujii, T.; Ishiyama, M.; Yamauchi, T.; Gogami, Y.; Oikawa, T., Crystal Structure of Aspartate Rasemase from *Lactobacillus sakei* NBRC-15893, *Acta Cryst.*, **A67**, C782-C783 (2011).

INTERNATIONAL RESEARCH CENTER FOR ELEMENTS SCIENCE

— Organic Main Group Chemistry —

Hatakeyama, T.; Hashimoto, S.; Nakamura, M., Tandem Phospho-Friedel-Crafts Reaction toward Curved π -Conjugated Frameworks with a Phosphorus Ring Junction, *Org. Lett.*, **13**, 2130-2133 (2011).

Hatakeyama, T.; Okada, Y.; Yoshimoto, Y.; Nakamura, M., Tuning Chemoselectivity in Iron-Catalyzed Sonogashira-type Reaction Using a Bisphosphine Ligand with Peripheral Steric Bulk: Selective Alkynylation of Non-activated Alkyl Halides, *Angew. Chem. Int. Ed.*, **50**, 10973-10976 (2011).

Hatakeyama, T.; Fujiwara, Y.; Okada, Y.; Itoh, T.; Hashimoto, T.; Kawamura, S.; Ogata, K.; Takaya, H.; Nakamura, M., Kumada-Tamao-Corriu Coupling of Alkyl Halides Catalyzed by an Iron-Diphosphine Complex, *Chem. Lett.*, **40**, 1030-1032 (2011).

Jin, M.; Nakamura, M., Iron-catalyzed Chemoselective Cross-coupling of α -Bromocarboxylic Acid Derivatives with Aryl Grignard Reagents, *Chem. Lett.*, **40**, 1012-1014 (2011).

Hatakeyama, T.; Hashimoto, S.; Seki, S.; Nakamura, M., Synthesis of BN-fused Polycyclic Aromatics via Tandem Intramolecular Electrophilic Arene Borylation, *J. Am. Chem. Soc.*, **133**, 18614-18617 (2011).

Hatakeyama, T.; Ishizuka, K.; Nakamura, M., Cross-Coupling Reactions Catalyzed by Iron Group Metals and *N*-Heterocyclic Carbenes via Nonconventional Reaction Mechanisms, *J. Synth. Org. Chem. Jpn.*, **69**, 1282-1298 (2011).

Yamanaka, M.; Kawaharada, M.; Nito, Y.; Takaya, H.; Kobayashi, K., Structural Alteration of Hybrid Supramolecular Capsule Induced by Guest Encapsulation, *J. Am. Chem. Soc.*, **133**, 16650-16656 (2011).

— Advanced Solid State Chemistry —

Matsumoto, K.; Haruta, M.; Kawai, M.; Sakaiguchi, A.; Ichikawa, N.; Kurata, H.; Shimakawa, Y., Selective Reduction of Layers at Low Temperature in Artificial Superlattice Thin Films, *Sci. Reports*, **1**, [00027-1]-[00027-4] (2011).

Mizumaki, M.; Chen, W. -T.; Saito, T.; Yamada, I.; Atfield, J. P.; Shimakawa, Y., Direct Observation of the Ferrimagnetic Coupling of *A*-Site Cu and *B*-Site Fe Spins in Charge-Disproportionated $\text{CaCu}_3\text{Fe}_4\text{O}_{12}$, *Phys. Rev. B*, **84**, [094418-1]-[094418-4] (2011).

Kan, D.; Shimakawa, Y., Controlled Cation Stoichiometry in Pulsed Laser Deposition-Grown BaTiO_3 Epitaxial Thin Films with Laser Fluence, *Appl. Phys. Lett.*, **99**, [081907-1]-[081907-3] (2011).

Saito, T.; Tohyama, T.; Woodward, P. M.; Shimakawa, Y., Material Design and High-Pressure Synthesis of Novel *A*-Site-Ordered Perovskites $\text{AMn}_3\text{Al}_4\text{O}_{12}$ (*A* = Y, Yb, and Dy) with Square-Planar-Coordinated Mn^{3+} , *Bull. Chem. Soc. Jpn.*, **84**, 802-806 (2011).

Haruta, M.; Kurata, H.; Matsumoto, K.; Inoue, S.; Shimakawa, Y.; Isoda, S., Local Electronic Structure Analysis for Brownmill-erite $\text{Ca}(\text{Sr})\text{FeO}_{2.5}$ Using Site-Resolved Energy-Loss Near-Edge Structures, *J. Appl. Phys.*, **110**, [033708-1]-[033708-8] (2011).

Azuma, M.; Chen, W. -T.; Seki, H.; Czpski, M.; Olga, S.; Oka, K.; Mizumaki, M.; Watanuki, T.; Ishimatsu, N.; Kawamura, N.; Ishiwata, S.; Tucker, M. G.; Shimakawa, Y.; Attfield, J. P., Colossal Negative Thermal Expansion in BiNiO₃ Induced by Intermetallic Charge Transfer, *Nature Comm.*, **2**, [347-1]-[347-5] (2011).

Teng, Y.; Kusano, Y.; Azuma, M.; Haruta, M.; Shimakawa, Y., Morphology Effects of Co₃O₄ Nanocrystals Catalyzing CO Oxidation in a Dry Reactant Gas Stream, *Cryst. Sci. Tech.*, **1**, 920-922 (2011).

Wang, H. J.; Teng, Y.; Radhakrishnan, L.; Nemoto, Y.; Imura, M.; Shimakawa, Y.; Yamauchi, Y., Mesoporous Co₃O₄ for Low Temperature CO Oxidation, Effect of Calcination Temperatures on Their Catalytic Performance, *J. Nanosci. Nanotech.*, **11**, 3843-3850 (2011).

Sudayama, T.; Wakisaka, Y.; Mizokawa, T.; Wadati, H.; Sawatzky, G. A.; Hawthorn, D. G.; Regier, T. Z.; Oka, K.; Azuma, M.; Shimakawa, Y., Co-O-O-Co Superexchange Pathways Enhanced by Small Charge-Transfer Energy in Multiferroic BiCoO₃, *Phys. Rev. B*, **83**, [235105-1]-[235105-5] (2011).

Nakamura, Y.; Kawai, M.; Azuma, M.; Kubota, M.; Shimada, M.; Aiba, T.; Shimakawa, Y., Enhanced Piezoelectric Constant of (1-x)BiFeO₃-xBiCoO₃ Thin Films Grown on LaAlO₃ Substrate, *Jpn. J. Appl. Phys.*, **50**, [031505-1]-[031505-4] (2011).

Shimakawa, Y.; Azuma, M.; Ichikawa, N., Multiferroic Compounds with Double-Perovskite Structures, *Materials*, **4**, 153-168 (2011).

Shimakawa, Y.; Inoue, S.; Haruta, M.; Kawai, M.; Matsumoto, K.; Sakaiguchi, A.; Ichikawa, N.; Isoda, S.; Kurata, H., Topotactic Changes in Thin Films of Brownmillerite SrFeO_{2.5} Grown on SrTiO₃ Substrates to Infinite-Layer Structure SrFeO₂, *Crystal Growth & Design*, **10**, 4713-4715 (2010).

— Organotransition Metal Chemistry —

Asai, K.; Konishi, G.; Nakajima, Y.; Kawauchi, S.; Ozawa, F.; Mizuno, K., Enhanced Absorption and Fluorescence Efficiency of Silylethynyl-Functionalized Oligothiophenes and Thieno[3,2-b]thiophene, *J. Organomet. Chem.*, **696**, 1266-1271 (2011).

Takita, R.; Fujita, D.; Ozawa, F., Direct Arylation of Heteroarenes Catalyzed by a Pd/1,10-Phenanthroline Complex, *Synlett*, **7**, 959-963 (2011).

Nakajima, Y.; Shiraishi, Y.; Tsuchimoto, T.; Ozawa, F., Synthesis and Coordination Behavior of Cu^I Bis(phosphaethenyl)pyridine Complexes, *Chem. Commun.*, **47**, 6332-6334 (2011).

Okazaki, M.; Tsuchimoto, T.; Nakazawa, Y.; Takano, M.; Ozawa, F., Reactions of Bromoacetylene with Primary Amine on a Butterfly-Type Tetrairon Core to Give Isonitrile and Methyne through Oxidation and Deprotonation, *Organometallics*, **30**, 3487-3489 (2011).

Kameo, H.; Nakajima, Y.; Namura, K.; Suzuki, H., Heterometallic Effects in Nitrogen-Hydrogen Bond Cleavage by Trinuclear Mixed-Metal Polyhydrido Clusters Containing Ruthenium and Osmium, *Organometallics*, **30**, 6703-6712 (2011).

[Others]

Miyaura, N.; Suzuki, H.; Ozawa, F.; Yamamoto, Y.; Nagashima, H., Frontiers in Organometallic Chemistry: How to Use the Various Functions of Elements, *Gendai Kagaku Zokan (Tokyo Kagaku Dojin)* (2011).

Ozawa, F., Chapter 3. Homogeneous Catalyst: Olefin Methathesis (Ruthenium Catalyst), *Handbook of Preparation of Catalyst*, Iwamoto, M. Ed. (NTS) (2011).

— Photonic Elements Science —

Okano, M.; Matsunaga, R.; Matsuda, K.; Masubuchi, S.; Machida, T.; Kanemitsu, Y., Raman Study on the Interlayer Interactions and the Band Structure of Bilayer Graphene Synthesized by Alcohol Chemical Vapor Deposition, *Appl. Phys. Lett.*, **99**, [151916-1]-[151916-3] (2011).

Yamada, Y.; Suzuki, K.; Kanemitsu, Y., Blue Photoluminescence and Auger Recombination of Carriers in SrTiO₃ Nanoparticles, *Appl. Phys. Lett.*, **99**, [093101-1]-[093101-3] (2011).

Kanemitsu, Y., Excitons in Semiconducting Carbon Nanotubes: Diameter-Dependent Photoluminescence Spectra, *Phys. Chem. Chem. Phys.*, **13**, 14879-14888 (2011).

Taguchi, S.; Saruyama, M.; Teranishi, T.; Kanemitsu, Y., Quantized Auger Recombination of Biexcitons in CdSe Nanorods Studied by Time-Resolved Photoluminescence and Transient-Absorption Spectroscopy, *Phys. Rev. B*, **83**, [155324-1]-[155324-6] (2011).

Yamada, Y.; Kanemitsu, Y., Blue Light Emission from Strongly Photoexcited and Electron-doped SrTiO₃, *J. Appl. Phys.*, **109**, [102410-1]-[102410-4] (2011).

Tayagaki, T.; Fukatsu, S.; Kanemitsu, Y., Auger Recombination in Si_{1-x}Ge_x/Si Quantum Wells under High-Density Photoexcitation, *Phys. Stat. Sol. (c)*, **8**, 1049-1054 (2011).

Kanemitsu, Y.; Matsuda, K., Energy Transfer between Excitons and Plasmons in Semiconductor-Metal Hybrid Nanostructures, *J. Lumin.*, **131**, 510-514 (2011).

Kanemitsu, Y.; Yamada, Y., Light Emission from SrTiO₃, *Phys. Stat. Sol. (b)*, **248**, 416-421 (2011).

Matsunaga, R.; Matsuda, K.; Kanemitsu, Y., Observation of Charged Excitons in Hole-Doped Carbon Nanotubes Using Photoluminescence and Absorption Spectroscopy, *Phys. Rev. Lett.*, **106**, [037404-1]-[037404-4] (2011).

BIOINFORMATICS CENTER

— Chemical Life Science —

Sakurai, N.; Ara, T.; Ogata, Y.; Sano, R.; Ohno, T.; Sugiyama, K.; Hiruta, A.; Yamazaki, K.; Yano, K.; Aoki, K.; Aharoni, A.; Hamada, K.; Yokoyama, K.; Kawamura, S.; Otsuka, H.; Tokimatsu, T.; Kanehisa, M.; Suzuki, H.; Saito, K.; Shibata, D., KaPPA-View4: a Metabolic Pathway Database for Representation and Analysis of Correlation Networks of Gene Co-expression and Metabolite Co-accumulation and Omics Data, *Nucleic Acids Res.*, **39**, D677-D684 (2011).

Kirwan, G. M.; Diez, D.; Haeggstrom, J. Z.; Goto, S.; Wheelock, C. E., Systems Biology Approaches for Investigating the Relationships between Lipids and Cardiovascular Disease, *Curr. Cardiovasc. Risk Rep.*, **5**, 52-61 (2011).

Yamada, T.; Letunic, I.; Okuda, S.; Kanehisa, M.; Bork, P., iPath2.0: Interactive Pathway Explorer, *Nucleic Acids Res.*, **39**, W412-W415 (2011).

Kotera, M.; Tokimatsu, T.; Kanehisa, M.; Goto, S., MUCHA: Multiple Chemical Alignment Algorithm to Obtain Building Block Substructures of Orphan Metabolites, *BMC Bioinformatics*, **12 (Suppl 14)**, [S1-1]-[S1-13] (2011).

Takarabe, M.; Shigemizu, D.; Kotera, M.; Goto, S.; Kanehisa, M., Network-based Analysis and Characterization of Adverse Drug-drug Interactions, *J. Chem. Inf. Model.*, **51**, 2977-2985 (2011).

[Others]

Tokimatsu, T.; Kotera, M.; Goto, S.; Kanehisa, M., KEGG and GenomeNet Resources for Predicting Protein Function from Omics Data Including KEGG PLANT Resource, In "Protein Function Prediction for Omics Era" (Kihara, D., ed.), Springer, 271-288 (2011).

Goto, S., KEGG Database and GenomeNet, *Experimental Medicine (Jikken Igaku)*, **29**, 2355-2361 (2011) (in Japanese).

Kotera, M., Selection and Usage of Pathway Databases, *Experimental Medicine (Jikken Igaku)*, **29**, 2438-2443 (2011) (in Japanese).

— Mathematical Bioinformatics —

Shimizu, M.; Nagamochi, H.; Akutsu, T., Enumerating Tree-like Chemical Graphs with Given Upper and Lower Bounds on Path Frequencies, *BMC Bioinformatics*, **12 Suppl 14**, [S3-1]-[S3-9] (2011).

Imada, T.; Ota, S.; Nagamochi, H.; Akutsu, T., Efficient Enumeration of Stereoisomers of Outerplanar Chemical Graphs Using Dynamic Programming, *Journal of Chemical Information and Modeling*, **51**, 2788-2807 (2011).

Tamura, T.; Cong, Y.; Akutsu, T.; Ching, W. K., An Efficient Method of Computing Impact Degrees for Multiple Reactions in Metabolic Networks with Cycles, *IEICE Transactions on Information and Systems*, **E94-D**, 2393-2399 (2011).

Hayashida, M.; Akutsu, T., Measuring the Similarity of Protein Structures Using Image Compression Algorithms, *IEICE Transactions on Information and Systems*, **E84-D**, 2468-2478 (2011).

Nacher, J. C.; Akutsu, T., On the Degree Distribution of Projected Networks Mapped from Bipartite Networks, *Physica A*, **390**, 4636-4651 (2011).

Imada, T.; Ota, S.; Nagamochi, H.; Akutsu, T., Efficient Enumeration of Stereoisomers of Tree Structured Molecules Using Dynamic Programming, *Journal of Mathematical Chemistry*, **49**, 910-970 (2011).

Akutsu, T.; Nagamochi, H., Kernel Methods for Chemical Compounds: From Classification to Design, *IEICE Transactions on Information and Systems*, **E94-D**, 1846-1853 (2011).

Poolsap, U.; Kato, Y.; Sato, K.; Akutsu, T., Using Binding Profiles to Predict Binding Sites of Target RNAs, *Journal of Bioinformatics and Computational Biology*, **9**, 697-713 (2011).

Demir-Kavuk, O.; Kamada, M.; Akutsu, T.; Knapp, E. W., Prediction Using Step-wise L1, L2 Regularization and Feature Selection for Small Data Sets with Large Number of Features, *BMC Bioinformatics*, **12**, [412-1]-[412-10] (2011).

Hayashida, M.; Kamada, M.; Song, J.; Akutsu, T., Conditional Random Field Approach to Prediction of Protein-protein Interactions Using Domain Information, *BMC Systems Biology*, **5 Suppl 1**, [S8-1]-[S8-9] (2011).

Sato, K.; Kato, Y.; Hamada, M.; Akutsu, T.; Asai, K., IPknot: Fast and Accurate Prediction of RNA Secondary Structures with Pseudoknots Using Integer Programming, *Bioinformatics*, **27**, i85-i93 (2011).

Akutsu, T.; Melkman, A. A.; Tamura, T.; Yamamoto, M., Determining a Singleton Attractor of a Boolean Network with Nested Canalizing Functions, *Journal of Computational Biology*, **18**, 1275-1290 (2011).

Fukagawa, D.; Tamura, T.; Takasu, A.; Tomita, E.; Akutsu, T., A Clique-based Method for the Edit Distance between Unordered Trees and Its Application to Analysis of Glycan Structures, *BMC Bioinformatics*, **12 Suppl 1**, [S13-1]-[S13-9] (2011).

Song, J.; Tan, H.; Boyd, S. E.; Shen, H.; Mahmood, K.; Webb, G. I.; Akutsu, T.; Whisstock, J. C.; Pike, R. N., Bioinformatic Approaches for Predicting Substrates of Proteases, *Journal of Bioinformatics and Computational Biology*, **9**, 149-178 (2011).

Akutsu, T.; Fukagawa, D.; Takasu, A.; Tamura, T., Exact Algorithms for Computing Tree Edit Distance between Unordered Trees, *Theoretical Computer Science*, **421**, 352-364 (2011).

Kamada, M.; Hayashida, M.; Song, J.; Akutsu, T., Discriminative Random Field Approach to Prediction of Protein Residue Contacts, *Proc. 5th IEEE International Conference on Systems Biology*, 285-291 (2011).

Wang, M.; Shen, H. B.; Akutsu, T.; Song, J., Predicting Functional Impact of Single Amino Acid Polymorphisms by Integrating Sequence and Structural Features, *Proc. 5th IEEE International Conference on Systems Biology*, 18-26 (2011).

Akutsu, T.; Mori, T.; Tamura, T.; Fukagawa, D.; Takasu, A.; Tomita, E., An Improved Clique-based Method for Computing Edit Distance between Unordered Trees and Its Application to Comparison of Glycan Structures, *Proc. 5th International Conference on Complex, Intelligent and Software Intensive Systems*, 536-540 (2011).

[Others]

Tomita, E.; Akutsu, T.; Matsunaga, T., Efficient Algorithms for Finding Maximum and Maximal Cliques: Effective Tools for Bioinformatics, *Biomedical Engineering, Trends in Electronics, Communications and Software (Laskovski AN, ed.)*, 625-640 (2011).

Akutsu, T., Optimization in Bioinformatics, *IFORS NEWS*, **5(4)**, 17 (2011).

— Bio-knowledge Engineering —

Natsume-Kitatani, Y.; Shiga, M.; Mamitsuka, H., Genome-wide Integration on Transcription Factors, Histone Acetylation and Gene Expression Reveals Genes Co-regulated by Histone Modification Patterns, *PLoS One*, **6(7)**, e22281 (2011).

Nguyen, C. H.; Mamitsuka, H., Discriminative Graph Embedding for Label Propagation, *IEEE Transactions on Neural Networks*, **22(9)**, 1395-1405 (2011).

Nguyen, C. H.; Mamitsuka, H., Kernels for Link Prediction with Latent Feature Models, *Lecture Notes in Computer Science*, **6912**, 517-532 (2011).

Shiga, M.; Mamitsuka, H., Clustering Genes with Expression and Beyond, *WIREs Data Mining and Knowledge Discovery*, **1(6)**, 496-511 (2011).

du Verle, D.; Ono, Y.; Sorimachi, H.; Mamitsuka, H., Calpain Cleavage Prediction Using Multiple Kernel Learning, *PLoS One*, **6(5)**, e19035 (2011).

Kayano, M.; Takigawa, I.; Shiga, M.; Tsuda, K.; Mamitsuka, H., ROS-DET: Robust Detector of Switching Mechanisms in Gene Expression, *Nucleic Acids Research*, **39(11)**, e74 (2011).

Takigawa, I.; Tsuda, K.; Mamitsuka, H., Mining Significant Substructure Pairs for Interpreting Polypharmacology in Drug-target Network, *PLoS One*, **6(2)**, e16999 (2011).

Shiga, M.; Takigawa, I.; Mamitsuka, H., A Spectral Approach to Clustering Numerical Vectors as Nodes in a Network, *Pattern Recognition*, **44(2)**, 236-251 (2011).

Takigawa, I.; Mamitsuka, H., Efficiently Mining d-Tolerance Closed Frequent Subgraphs, *Machine Learning*, **82(2)**, 95-121 (2011).

Hu, X.; Mamitsuka, H.; Zhu, S., Ensemble Approaches for Improving HLA Class I-peptide Binding Prediction, *Journal of Immunological Methods*, **374(1/2)**, 47-52 (2011).

[Others]

Mamitsuka, H., Glycoinformatics: Data Mining-based Approaches, *Chimia*, **65(1/2)**, 10-13 (2011).

Takahashi, K.; Takigawa, I.; Mamitsuka, H., Enumerating Biclusters on Gene Expression Data by Mining Frequent Itemsets, *Poster Abstracts, JSBi2011*, JSBi-41 (2011).

Nguyen, C. H.; Mamitsuka, H., Link Prediction on PPI and GRN Networks, *Poster Abstracts, JSBi2011*, JSBi-54 (2011).

du Verle, D.; Mamitsuka, H., Improving Gene Regulatory Network Inference Using Network Motifs with Time Course Expression Data, *Poster Abstracts, JSBi2011*, JSBi-65 (2011).

ENDOWED RESEARCH SECTION

— Water Chemistry Energy (AGC) —

Yasaka, Y.; Klein, M. L.; Nakahara, M.; Matubayasi, N., Communication: Exploring the Reorientation of Benzene in an Ionic Liquid via Molecular Dynamics: Effect of Temperature and Solvent Effective Charge on the Slow Dynamics, *J. Chem. Phys.*, **134**, 191101-191104 (2011).

Shintani, M.; Yoshida, K.; Sakuraba, S.; Nakahara, M.; Matubayasi, N., NMR-NOE and MD Simulation Study on Phospholipid Membrane: Dependence on Membrane Diameter and Multiple Time Scales Dynamics, *J. Phys. Chem. B*, **115**, 9106-9115 (2011).

Kimura, H.; Nakahara, M.; Matubayasi, N., In Situ Kinetic Study on Hydrothermal Transformation of D-Glucose into 5-Hydroxymethylfurfural through D-Fructose with ¹³C NMR, *J. Phys. Chem. A*, **115**, 14013-14021 (2011).

— Nano-Interface Photonics (SEI Group CSR Foundation) —

Okano, M.; Matsunaga, R.; Matsuda, K.; Masubuchi, S.; Machida, T.; Kanemitsu, Y., Raman Study on the Interlayer Interactions and the Band Structure of Bilayer Graphene Synthesized by Alcohol Chemical Vapor Deposition, *Appl. Phys. Lett.*, **99**, [151916-1]-[151916-3] (2011).

Yamada, Y.; Suzuki, K.; Kanemitsu, Y., Blue Photoluminescence and Auger Recombination of Carriers in SrTiO₃ Nanoparticles, *Appl. Phys. Lett.*, **99**, [093101-1]-[093101-3] (2011).

Kohmoto, T.; Koyama, Y.; Moriyasu, T.; Okamura, H.; Yamada, Y.; Tanaka, K., Photoinduced Dynamics in Pure and Ca-Doped SrTiO₃ Studied by Transient Birefringence and Absorption Measurements, *J. Phys. Soc. Jpn.*, **80**, [104605-1]-[104605-6] (2011).

Okano, M.; Huai, P.; Yoshita, M.; Inada, S.; Akiyama, H.; Kamide, K.; Asano, K.; Ogawa, T., Robust Carrier-Induced Suppression of Peak Gain Inherent to Quantum-Wire Lasers, *J. Phys. Soc. Jpn.*, **80**, [114716-1]-[114716-9] (2011).

Yamada, Y.; Kanemitsu, Y., Blue Light Emission from Strongly Photoexcited and Electron-doped SrTiO₃, *J. Appl. Phys.*, **109**, [102410-1]-[102410-4] (2011).

Kanemitsu, Y.; Yamada, Y., Light Emission from SrTiO₃, *Phys. Stat. Sol. B*, **248**, 416-421 (2011).

Yamada, Y.; Kanemitsu, Y., Photoluminescence Spectrum and Dynamics in Highly Photoexcited Rutile TiO₂, *Phys. Stat. Sol. C*, **8**, 104-107 (2011).

Yamada, Y.; Kanemitsu, Y., Photocarrier Recombination Dynamics of SrTiO₃, *Proceedings of SPIE*, **7937**, [793710-1]-[793710-8] (2011).