

Fusion Materials:

Creative Development of Materials and Exploration of Their Function through Molecular Control
Funded by Grant-in-Aid for Scientific Research on Innovative Areas from the Ministry of Education,
Culture, Sports, Science and Technology (MEXT)

Achievements of 2012

2012 <A01 Molecular Control>

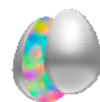
【Original Papers】

Masato KAKIHANA : Principal Investigator

1. Jihae Kim, Hideki Kato, and *Masato Kakihana, “Control of NaAlSiO₄:Eu²⁺ Photoluminescence Properties By Charge-Compensated Aliovalent Element Substitutions”, *J. Inf. Disp.*, **13**, 97-1000 (2012).
2. Chihiro Yasushita, Hideki Kato, and *Masato Kakihana, “Synthesis of an Oxynitride-Based Green Phosphor Ba₃Si₆O₁₂N₂:Eu²⁺ via an Aqueous Solution Process Using Propylene Glycol-Modified Silane”, *J. Inf. Disp.*, **13**, 107-111 (2012)..
3. Quang Duc Truong, and *Masato Kakihana, “Hydrothermal Growth of Cross-Linked Hyperbranched Copper Dendrites Using Copper Oxalate Complex”, *J. Cryst. Growth*, **348**, 65-70 (2012).
4. †*Kiyofumi Katagiri, Hitoshi Inami, Kunihito Koumoto, Kei Inumaru, ††Koji Tomita, Makoto Kobayashi, and Masato Kakihana, “Preparation of Hollow TiO₂ Spheres with Desired Polymorphs via Layer-by-Layer Assembly of Water-Soluble Titanium Complex and Hydrothermal Treatment”, *Eur. J. Inorg. Chem.*, **20**, 3287-3272 (2012). †A03 班 研究代表者, ††A03 班 研究分担者, A03 との共同研究
5. Kohei Yoshizawa, Hideki Kato, and *Masato Kakihana, “Synthesis of Zn₂SiO₄:Mn²⁺ by Homogeneous Precipitation Using Propylene Glycol-Modified Silane”, *J. Mater. Chem.*, **22**, 17272-17277 (2012).
6. *Makoto Kobayashi, Hideki Kato, and Masato Kakihana, “Synthesis of Spindle and Square Bipyramid-Shaped Anatase-Type Titanium Dioxide Crystals by a Solvothermal Method using Ethylenediamine”, *J. Ceram. Soc. Jpn.*, **120**, 494-499 (2012).

【Proceedings】

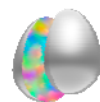
1. *Masato Kakihana, “Mineral Inspired Approach for Exploration of New Phosphors in Combination with the Solution Parallel Synthesis Technology”, *Tech. dig. 12th Int. Meet. Inf. Disp.*, 85-86 (2012): *The 12th International Meeting on Information*



- Display (IMID2012)*, Daegu, August 28-31, 2012.
2. Jihae Kim, Hideki Kato, and *Masato Kakihana, “Synthesis of a New $\text{Ca}_3\text{Al}_8\text{Si}_4\text{O}_{17}\text{N}_4:\text{Eu}^{2+}$ Phosphor and Its Luminescence Properties”, *Tech. dig. 12th Int. Meet. Inf. Disp.*, 87-88 (2012): *The 12th International Meeting on Information Display (IMID2012)*, Daegu, August 28-31, 2012.
 3. Minsung Kim, Makoto Kobayashi, Hideki Kato, and *Masato Kakihana, “Synthesis of $\text{KSrPO}_4:\text{Eu}^{2+}$ Phosphor with High Luminescence Property Using a Water-Soluble Phosphorus Precursor”, *Tech. dig. 12th Int. Meet. Inf. Disp.*, 130-131 (2012): *The 12th International Meeting on Information Display (IMID2012)*, Daegu, August 28-31, 2012.
 4. Jihong Min, Hideki Kato, Makoto Kobayashi, Hisanori Yamane, and *Masato Kakihana, “Synthesis of the New Compound in a Na-Sc-Si-O System and Luminescence Properties Activated by Eu^{2+} ”, *Tech. dig. 12th Int. Meet. Inf. Disp.*, 638-639 (2012): *The 12th International Meeting on Information Display (IMID2012)*, Daegu, August 28-31, 2012.

Takashi KATO : Principal Investigator

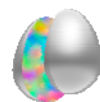
1. Hiromu Kumagai, Ryou Matsunaga, Tatsuya Nishimura, Yuya Yamamoto, Satoshi Kajiyama, †Yuya Oaki, Kei Akaiwa, Hirotaka Inoue, Hiromichi Nagasawa, Kohei Tsumoto, and *Takashi Kato, “ $\text{CaCO}_3/\text{Chitin}$ Hybrids: Effects of Recombinant Acidic Peptides Designed Based on a Peptide Extracted from an Exoskeleton of a Crayfish on Morphologies of the Hybrids”, *Faraday Discuss.*, **159**, 483-494 (2012).
†A03 班 連携研究者, A03 との共同研究.
2. Yong Wu, Yuki Hirai, Yoshihide Tsunobuchi, Hiroko Tokoro, Hiroki Eimura, Masafumi Yoshio, *Shin-ichi Ohkoshi, and *Takashi Kato, “Supramolecular Approach to the Formation of Magneto-Active Physical Gels”, *Chem. Sci.*, **3**, 3007-3010 (2012).
3. Kana Tanabe, Yuko Suzui, †Miki Hasegawa, and *Takashi Kato, “Full-Color Tunable Photoluminescent Ionic Liquid Crystals Based on Tripodal Pyridinium, Pyrimidinium, and Quinolinium Salts”, *J. Am. Chem. Soc.*, **134**, 5652-5661 (2012).
†A03 班 研究代表者, A03 との共同研究.
4. Hiroki Eimura, Masafumi Yoshio, Yoshiko Shoji, Kenji Hanabusa, and *Takashi Kato, “Liquid-Crystalline Gels Exhibiting Electrooptical Light Scattering Properties: Fibrous Polymerized Network of a Lysine-Based Gelator Having Acrylate Moieties”, *Polym. J.*, **44**, 594-599 (2012).



5. *Masafumi Yoshio, Reiku Konishi, Takeshi Sakamoto, and *Takashi Kato, “Bisphenylsulfone-Based Mmolecular Assemblies: Polar Columnar Liquid Crystals Aligned in Electric Fields and Fibrous Aggregates in Organic Solvents”, *New J. Chem.*, **37**, 143-147 (2013).
6. Shogo Yamane, Yoshimitsu Sagara, Toshiki Mutai, Koji Araki, and *Takashi Kato, “Mechanochromic Luminescent Liquid Crystals Based on a Bianthryl Moiety”, *J. Mater. Chem. C*, **1**, 2648-2656 (2013).
7. Shogo Yamane, Yoshimitsu Sagara, and *Takashi Kato, “Steric Effects on Excimer Formation for Photoluminescent Smectic Liquid-Crystalline Materials”, *Chem. Commun.*, **49**, 3839-3841 (2013).
8. Satoshi Kajiyama, Hiromu Kumagai, Tatsuya Nishimura, and *Takashi Kato, “Formation of Rectangular Plate-Like α -MnOOH and Sheet-Like γ -MnOOH by Slow Diffusion of Ammonia Vapor”, *Chem. Lett.*, **42**, 341-343 (2013).

Ayae SUGAWARA NARUTAKI : Principal Investigator

1. Junzheng Wang, Ayae Sugawara-Narutaki, †Atsushi Shimojima, and *Tatsuya Okubo, “Biphasic Synthesis of Colloidal Mesoporous Silica Nanoparticles Using Primary Amine Catalysts”, *J. Colloid Interface Sci.*, **385**, 41-47 (2012).
†A01 班 研究代表者, A01 との共同研究
2. Junzheng Wang, Suminto Winardi, Ayae Sugawara-Narutaki, Akihito Kumamoto, Tetsuya Tohei, †Atsushi Shimojima, and *Tatsuya Okubo, “Chain-Like Nanostructures from Anisotropic Self-Assembly of Semiconducting Metal Oxide Nanoparticles with a Block Copolymer”, *Chem. Commun.*, **48**, 11115-11117 (2012).
†A01 班 研究代表者, A01 との共同研究
3. Yuko Wada, Kenta Iyoki, Ayae Sugawara-Narutaki, Tatsuya Okubo, and †*Atsushi Shimojima, “Diol-Linked Microporous Networks of Cubic Siloxane Cages”, *Chem. Eur. J.*, **19**, 1700-1705 (2013).
†A01 班 研究代表者, A01 との共同研究
4. Takaaki Ikuno, Atsuro Nomura, Kenta Iyoki, Ayae Sugawara-Narutaki, *Tatsuya Okubo, and †Atsushi Shimojima, “Facile Synthesis of Well-Dispersed Hollow Mesoporous Silica Nanoparticles Using Iron Oxide Nanoparticles as Template”, *Chem. Lett.*, in press. (DOI:10.1246/cl.2013.316)
†A01 班 研究代表者, A01 との共同研究
5. Duc H. T. Le, Ryo Hanamura, Dieu-Huong Pham, Masaru Kato, David A. Tirrell, Tatsuya Okubo, and *Ayae Sugawara-Narutaki, “Self-Assembly of Elastin-Mimetic Double Hydrophobic Polypeptides”, *Biomacromolecules*, in press.



(DOI:10.1021/bm301887m)

Atsushi YOSHIZAWA : Principal Investigator

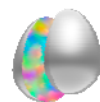
1. Daiki Tsusji, Yoichi Yakanishi, Jun Yamamoto and *Atsushi Yoshizawa, “Chiral Liquid Crystal Trimer Exhibiting an Optically Uniaxial Smectic Phase with a Double-Peak Polarization”, *J. Phys. Chem. C*, **116**, 8678-8687 (2012).
2. Masanobu Tanaka and *Atsushi Yoshizawa, “U-Shaped Oligomers with a Molecular Biaxiality Stabilizing Blue Phases”, *J. Mater. Chem. C*, **1**, 315-320 (2013).

Tomohisa OGAWA : Principal Investigator

1. Shoichiro Yoshimura, Masaaki Komatsu, Koichiro Kaku, Masatoshi Hori, Tomohisa Ogawa, Koji Muramoto, Tomohiro Kazama, Yukihiko Ito, Kinya Toriyama, “Production of Transgenic Rice Plants Expressing Dioscorea Batatas Tuber Lectin 1 to Confer Resistance Against Brown Plant Hopper”, *Plant Biotechnol.*, **29**: 501-504 (2012).
2. Mizuki Watanabe, Osamu Nakamura, Koji Muramoto, *Tomohisa Ogawa, “Allosteric Regulation of the Carbohydrate-Binding Ability of a Novel Conger Eel Galectin by D-Mannoside”, *J. Biol. Chem.*, **287**, 31061-31072 (2012).
3. Osamu Nakamura, Mizuki Watanabe, Tomohisa Ogawa, Koji Muramoto, Ogawa K., Tsutsui S., and Kamiya H, “Galectins in the Abdominal Cavity of Conger Eel, Conger Myriaster, Participate in the Cellular Encapsulation of Parasitic Nematode by Host Cells”, *Fish and Shellfish Immunol.*, **33**, 780-787 (2012)
4. Abayomi Peter Adebisi, Ayobamitale O. Adebisi, Junko Yamashita, Tomohisa Ogawa, Koji Muramoto, “Purification and Characterization of Antioxidative Peptides Derived from Rice Bran Protein Hydrolysates”, *Eur. Food Res. Technol.*, **228(4)**, 553-563 (2012).

Minoru OSADA : Principal Investigator

1. *Minoru Osada, Kanta Ono and Takayoshi Sasaki, “Nano-Materials Design for Ferromagnets of $Ti_{1-x}Co_xO_2$ Nanosheets”, *Intl. J. Appl. Ceram. Tech.*, **9**, 936-941 (2012).
2. Bao-Wen Li, *Minoru Osada, Tadashi C. Ozawa and Takayoshi Sasaki, “ $RbBiNb_2O_7$: A New Lead-Free High- T_C Ferroelectric”, *Chem. Mater.*, **24**, 3111-3113 (2012).
3. Pengzhan Sun, Renzhi Ma, Minoru Osada, Takayoshi Sasaki, Jinqun Wei, Kunlin



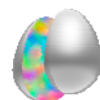
- Wang, Dehao Wu, Yao Cheng and *Hongwei Zhu, “The Formation of Graphene–Titania Hybrid Films and Their Resistance Change under Ultraviolet Irradiation”, *Carbon*, **50**, 4518-4523 (2012).
4. Yoon-Hyun Kim, *Minoru Osada, Hong-Ki Kim, and Song-Min Nam, “Percolative BaTiO₃/Carbon-Nanotube Composite Films Employing Aerosol Deposition”, *Jpn. J. Appl. Phys.*, **51**, 09LC07-1 (2012).
 5. Katsutoshi Fukuda, Jun Sato, Takahiro Saida, *Wataru Sugimoto, Yasuo Ebina, Tatsuo Shibata, Minoru Osada, and Takayoshi Sasaki, “Fabrication of Ruthenium Metal Nanosheets via Topotactic Metallization of Exfoliated Ruthenate Nanosheets”, *Inorg. Chem.*, **52**, 2280-2282 (2013).
 6. *Minoru Osada, Natalia Hajdukova-Smidova, Kosho Akatsuka, Satoshi Yoguchi, and Takayoshi Sasaki, “Gigantic Plasmon Resonance Effects on Magneto-Optical Activity of Molecularly-Thin Ferromagnets near Gold Surface”, *J. Mater. Chem. C*, **1**, 2520-2524 (2013). [Highlighted in Cover Picture]

Sota SATO : Principal Investigator

1. K. Takao, K. Suzuki, T. Ichijo, S. Sato, H. Asakura, K. Teramura, K. Kato, T. Ohba, T. Morita, and *M. Fujita, “Incarceration of (PdO)_n and Pd_n Clusters by Cage-Templated Synthesis of Hollow Silica Nanoparticles”, *Angew. Chem. Int. Ed.*, **51**, 5893–5896 (2012). [10.1002/anie.201201288]

Atsushi SHIMOJIMA : Principal Investigator

1. Junzheng Wang, †Ayae Sugawara-Narutaki, Atsushi Shimojima, and *Tatsuya Okubo, “Biphasic Synthesis of Colloidal Mesoporous Silica Nanoparticles Using Primary Amine Catalysts”, *J. Colloid Interface Sci.*, **385**, 41-47 (2012).
†A01 班 研究代表者, A01 鳴瀧グループとの共同研究
2. Junzheng Wang, Suminto Winardi, †Ayae Sugawara-Narutaki, Akihito Kumamoto, Tetsuya Tohei, Atsushi Shimojima, and *Tatsuya Okubo, “Chain-Like Nanostructures from Anisotropic Self-Assembly of Semiconducting Metal Oxide Nanoparticles with Block Copolymer”, *Chem. Commun.*, **48**, 11115-11117 (2012).
†A01 班 研究代表者, A01 鳴瀧グループとの共同研究
3. Takaaki Ikuno, Atsuro Nomura, Kenta Iyoki, †Ayae Sugawara-Narutaki, *Tatsuya Okubo, and Atsushi Shimojima, “Facile Synthesis of Hollow Mesoporous Silica Nanoparticles Using Iron Oxide Nanoparticles as Template”, *Chem. Lett.*, **42**, 316-317 (2013).



†A01 班 研究代表者, A01 鳴瀧グループとの共同研究

4. Yuko Wada, Kenta Iyoki, †Ayae Sugawara-Narutaki, Tatsuya Okubo, and *Atsushi Shimojima, “Diol-Linked Microporous Networks of Cubic Siloxane Cages”, *Chem. Eur. J.*, **19**, 1700-1705 (2013).

†A01 班 研究代表者, A01 鳴瀧グループとの共同研究

Hisakazu MIHARA : Principal Investigator

1. Toshiki Sawada, Masaki Tsuchiya, Tsuyoshi Takahashi, Hiroshi Tsutsumi, *Hisakazu Mihara, Cell-Adhesive Hydrogels Composed of Peptide Nanofibers Responsive to Biological Ions”, *Polymer J.*, **44**, 651-657 (2012).

Masamichi YAMANAKA : Principal Investigator

1. *Masamichi Yamanaka, Masashi Kawaharada, Yuki Nito, Hikaru Takaya, and Kenji Kobayashi, “Structural Alteration of Hybrid Supramolecular Capsule Induced by Guest Encapsulation”, *J. Am. Chem. Soc.*, **133**, 16650-16656 (2011).
2. Yuki Jinno and *Masamichi Yamanaka, “Ionic Surfactants Induce Amphiphilic Tris-Urea Hydrogel Formation”, *Chem. Asian J.*, **7**, 1768-1771 (2012).
3. Tomoe Nakagawa, Mawo Amakatsu, Kanako Munenobu, Hiromitsu Fujii, and *Masamichi Yamanaka, “Effect of Optical Purity of C3-Symmetric Chiral Tris-Ureas on Supramolecular Gel Formation”, *Chem. Lett.*, **42**, 229-231 (2013).

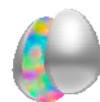
Kenji HIGASHIGUCHI : Principal Investigator

1. *Kenji Higashiguchi, Masafumi Inoue, Tomohiro Oda, and *Kenji Matsuda, “Solvent-Responsive Structural Colored Balloons”, *Langmuir*, **28**, 5432-5437 (2012).
2. Kenji Higashiguchi, Kei Yasui, Masaaki Ozawa, Keisuke Odoi, and *†Hirotsugu Kikuchi, “Spatial Distribution Control of Polymer Nanoparticles by Liquid Crystal Disclinations”, *Polym. J.*, **44**, 632-638 (2012).

†A02 班 研究代表者, A02 との共同研究

Yasuhiro MORISAKI : Principal Investigator

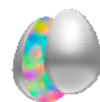
1. *Yasuhiro Morisaki, Shizue Ueno, Akinori Saeki, Atsushi Asano, Shu Seki, *Yoshiki



- Chujo, “ π -Electron-System-Layered Polymer: Through-Space Conjugation and Properties as a Single Molecular Wire”, *Chem. Eur. J.*, **18**, 4216-4224 (2012).
- Hiroaki Imoto, Ryosuke Kato, *Yasuhiro Morisaki, *Yoshiki Chujo, “Synthesis of Unsymmetrical P-Stereogenic Oligophosphines and Chemoselective Cleavage of Phosphine-Borane Coordinate Bonds”, *Polym. J.*, **44**, 579-585 (2012).
 - *Yasuhiro Morisaki, *Yoshiki Chujo, “ π -Electron-System-Layered Polymers Based on [2.2]Paracyclophane”, *Chem. Lett.*, **41**, 840-846 (2012).
 - *Yasuhiro Morisaki, Masato Tominaga, *Yoshiki Chujo, “Synthesis and Properties of Thiophene-Fused Benzocarborane”, *Chem. Eur. J.*, **18**, 11251-11257 (2012).
 - *Yasuhiro Morisaki, Ryoyu Hifumi, Lin Lin, Kenichi Inoshita, *Yoshiki Chujo, “Practical Optical Resolution of Planar Chiral Pseudo-*Ortho*-Disubstituted [2.2]Paracyclophane”, *Chem. Lett.*, **41**, 990-992 (2012).
 - *Yasuhiro Morisaki, Hiroaki Imoto, Ryosuke Kato, Yuko Ouchi, *Yoshiki Chujo, “Stereospecific Synthesis of *Trans*-1,4-Diphosphacyclohexanes”, *Heterocycles* **85**, 2543-2550 (2012).
 - *Yasuhiro Morisaki, Ryoyu Hifumi, Lin Lin, Kenichi Inoshita, *Yoshiki Chujo, “Through-Space Conjugated Polymers Consisting of Planar Chiral Pseudo-*Ortho*-Linked [2.2]Paracyclophane”, *Polym. Chem.*, **3**, 2727-2730 (2012).
 - *Yasuhiro Morisaki, Shizue Ueno, *Yoshiki Chujo, “[2.2]Paracyclophane-Based Through-Space Conjugated Polymers with Fluorescence Quenchers”, *J. Polym. Sci. Part A: Polym. Chem.*, **51**, 334-339 (2013).
 - *Yasuhiro Morisaki, Ryosuke Kato, *Yoshiki Chujo, “Synthesis of Enantiopure P-Stereogenic Diphosphacrowns Using P-Stereogenic Secondary Phosphines”, *J. Org. Chem.*, **78**, 2769-2774 (2013).
 - *Yasuhiro Morisaki, Masayuki Gon, *Yoshiki Chujo, “Conjugated Microporous Polymers Consisting of Tetrasubstituted [2.2]Paracyclophane Junctions”, *J. Polym. Sci. Part A: Polym. Chem.* (2013), Early View (DOI: 10.1002/pola.26600).

Takumi KONNO : Principal Investigator

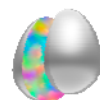
- Asako Igashira-Kamiyama, Natsuko Matsushita, Raeeun Lee, Kiyoshi Tsuge, and *Takumi Konno, “Synthesis and Structure of a Neutral $Au^I_4Ni^{II}_2$ Hexanuclear Complex Containing D-Penicillamine and 1,2-Bis(diphenylphosphino)ethane”, *Bull. Chem. Soc. Jpn.*, **85**, 706-708 (2012).
- Yusuke Takino, Nobuto Yoshinari, Tatsuya Kawamoto, and *Takumi Konno, “Thiolato-Bridged $Au^I_2Cu^I_2$ and Cu^I_4 Metallorings Derived from Benzothiazoline: Can Gold(I) Plus Copper(I) Make Silver(I)?”, *Chem. Lett.*, **41**, 834-836 (2012).



3. Asako Igashira-Kamiyama and *Takumi Konno, “Rational Creation of Chiral Multinuclear and Metallo-supramolecular Compounds from Thiol-Containing Amino Acids”, *Dalton Trans.*, **40**, 7249-7263 (2011).
4. Nobuto Yoshinari, Yoshinori Nagao, Anzu Yokoi, Asako Igashira-Kamiyama, and *Takumi Konno, Conversion of D-Penicillaminato Trinuclear to Mononuclear Palladium(II) Structure by Diamine Ligands: “Remarkable Enantioselectivity toward Racemic 1,2-Cyclohexanediamine”, *Dalton Trans.*, **41**, 11259-11262 (2012).
5. Kosuke Igawa, Nobuto Yoshinari, and *Takumi Konno, “An Optically Resolved Crystal of Thiomalate: (S)-1-Phenylethylammonium (R)-Thiomalate”, *Acta Crystallogr., Sect. C*, **68**, o332-o334 (2012).
6. *Nobuto Yoshinari, Naoki Kitani, and Takumi Konno, “The First Crystal Structure of an Alkaline Metal Salt of Thioglucose: Potassium 1-Thio-β-D-Glucoside Monohydrate”, *Acta Crystallogr., Sect. C*, **68**, m363-m366 (2012).
7. *Asako Igashira-Kamiyama, Motoshi Tamura, and *Takumi Konno, “(2-Aminoethanethiolato-κ²N,S)bis(1,2-bis(diphenylphosphino)ethane-κ²P,P) ruthenium(II) Hexafluorophosphate”, *Acta Crystallogr., Sect. E*, **68**, m1432 (2012).
8. Arihiro Kanazawa, Shota Shibutani, Nobuto Yoshinari, Takumi Konno, †Shokyoku Kanaoka, and ††*Sadahito Aoshima, “Structure Effects of Lewis Acids on Cationic Polymerization of *p*-Methoxystyrene: Grand Design for Living Polymerization Systems”, *Macromolecules*, **45**, 7749–7757 (2012). †A02 班 連携研究者, ††A02 班 研究代表者, A02 との共同研究
9. *Tatsuya Kawamoto, Narumi Suzuki, Takeshi Ono, Dafei Gong, and Takumi Konno, Chirality Transfer Based on Reversible C-C Bond Formation/Breaking in Nickel(II) Complexes, *Chem. Commun.*, **49**, 668-670 (2013).

Akira SHIGENAGA : Principal Investigator

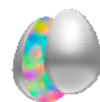
1. *Akira Shigenaga, Keiji Ogura, Hiroko Hirakawa, Jun Yamamoto, Koji Ebisuno, Licht Miyamoto, Keisuke Ishizawa, Koichiro Tsuchiya, *Akira Otaka, “Development of a Reduction-Responsive Amino Acid That Induces Peptide Bond Cleavage in Hypoxic Cells”, *ChemBioChem*, **13**, 968-971 (2012).
2. Keiji Ogura, Akira Shigenaga, Koji Ebisuno, Hiroko Hirakawa, *Akira Otaka, “Fmoc-Based Solid Phase Synthesis of Adenylylated Peptides Using Diester-Type Adenylylated Amino Acid Derivatives”, *Tetrahedron Lett.*, **53**, 3429-3432 (2012).
3. Ken Sakamoto, Kohei Sato, Akira Shigenaga, Kohei Tsuji, Shugo Tsuda, Hajime Hibino, Yuji Nishiuchi, *Akira Otaka, “Synthetic Procedure for *N*-Fmoc Amino Acyl-*N*-sulfanylethylaniline Linker as Crypto-Peptide Thioester Precursor with



- Application to Native Chemical Ligation”, *J. Org. Chem.*, **77**, 6948-6958 (2012).
4. Ken Sakamoto, Kohei Sato, Akira Shigenaga, Kohei Tsuji, Shugo Tsuda, Hajime Hibino, Yuji Nishiuchi, *Akira Otaka, “Development of Efficient Synthetic Protocol for Fmoc Amino Acid-Incorporated *N*-Sulfanylethyl-Aniline Linker as Peptide Thioester Precursor”, *Peptide Science 2012*, in press.
 5. Kohei Tsuji, Kosuke Tanegashima, Akira Shigenaga, Keisuke Aihara, Masaya Denda, Hao Ding, Takahiko Hara, *Akira Otaka, “Synthesis of Antagonistic Peptide for Putative CXCL14 Receptor Protein and Their Identification”, *Peptide Science 2012*, in press.
 6. Kohei Sato, Keisuke Kitakaze, Ken Sakamoto, Akira Shigenaga, Daisuke Tsuji, Kohji Itoh, *Akira Otaka, “Convergent Chemical Synthesis of Human GM2 Activator Protein Analog Using SEALide Chemistry”, *Peptide Science 2012*, in press.
 7. *Akira Shigenaga, Keiji Ogura, Hiroko Hirakawa, Jun Yamamoto, Koji Ebisuno, Licht Miyamoto, Keisuke Ishizawa, Koichiro Tsuchiya, Akira Otaka, “Design and Synthesis of Hypoxia-Responsive Amino Acid Which Causes Peptide Bond Cleavage in Hypoxic Cells”, *Peptide Science 2012*, in press.
 8. *Akira Shigenaga, “Development of Stimulus-Responsive Amino Acid and Their Application to Peptide Based Chemical Biology”, *Peptide Science 2012*, in press.

Kazunori MATSUURA : Principal Investigator

1. *Kazunori Matsuura, Kenta Watanabe, Yoshihiro Matsushita, Nobuo Kimizuka, “Guest-Binding Behavior of Peptide Nanocapsules Self-Assembled from Viral Peptide Fragments”, *Polym. J.*, in press. [DOI: 10.1038/pj.2012.235]



2012 <A01 Molecular Control>

【Reviews】

Masato KAKIHANA : Principal Investigator

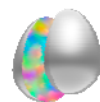
1. 小林 亮, *垣花真人, “水を溶媒に用いた機能性酸化物の低温合成のためのグリーンプレカーサーの開発”, 月刊機能材料, **33**, 4-10 (2013). (査読無)

Takashi KATO : Principal Investigator

1. Shogo Yamane, Kana Tanabe, Yoshimitsu Sagara, and *Takashi Kato, “Stimuli-Responsive Photoluminescent Liquid Crystals”, *Curr. Top. Chem.*, **318**, 395-406 (2012). (査読有)
2. *西村達也, *加藤隆史, “有機高分子テンプレートを用いる有機/無機複合体の開発”, 表面, **50**, 219 (2012). (査読無)
3. 坂本 健, †新垣篤史, ††清水克彦, 西村達也, *加藤隆史, “有機分子の制御による異方的結晶成長と無機/有機ハイブリッド構造の形成”, セラミックス, **47**, 285-290 (2012). (査読無)
†A02 班 研究代表者, ††A01 班 研究代表者, 3 グループによる共同執筆
4. 加藤隆史, “日本の化学、これからが本当の勝負—今から世界に貢献できなければ意味がない”, 化学, 2012 年 4 月号, 18-19 (2012). (査読無)
5. *加藤隆史, †大槻主税, “融合マテリアル: 分子制御による材料創成と機能開拓”, 未来材料, 12 巻 3 号, 49-53 (2012).
†A02 班 研究代表者, A02 との共同執筆. (査読無)
6. *Takashi Kato and Sandeep Kumar, “Editorial: Special Issue: Functional Liquid Crystals” *Isr. J. Chem.*, **52**, 799 (2012). (査読無)
7. Junji Sakuda, Takuma Yasuda, and *Takashi Kato, “Liquid-Crystalline Catenanes and Rotaxanes”, *Isr. J. Chem.*, **52**, 854-862 (2012). (査読有)
8. 西村達也, “高分子テンプレートを用いる有機無機複合体の開発”, 高分子, **62**, 89 (2013). (査読無)

Hiroki NADA : Principal Investigator

1. *Hiroki Nada, Yoshinori Furukawa, “Antifreeze Proteins: Computer Simulation studies on the Mechanism of Ice Growth Inhibition”, *Polymer J.*, **44**, 690-698 (2012). (招待論文) (査読有)
2. *灘 浩樹, “不凍タンパク質の氷界面吸着に関する分子動力学シミュレーション研究”, 低温科学, 印刷中. (査読有)



Ayae SUGAWARA NARUTAKI : Principal Investigator

1. *Ayae Sugawara-Narutaki, “Bio-Inspired Synthesis of Polymer-Inorganic Nanocomposite Materials in Mild Aqueous Systems”, *Polym. J.*, **45**, 269-276 (2013). (査読有)

Atsushi YOSHIZAWA : Principal Investigator

1. *吉澤 篤, “多彩な形の分子が創り出す新しい液晶の世界”, 液晶, 印刷中 (2013). (査読有)

Tomohisa OGAWA : Principal Investigator

1. 小川智久, “シャボン玉から貝殻までの干渉による虹色”, 季刊 理科の探検, (*RikaTan*) 2013 年春号, 46-48 (2013)

Minoru OSADA : Principal Investigator

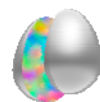
1. *長田 実, 佐々木高義, “無機ナノシートが拓く新しい分子膜技術”, 応用物理, **81**, 774-778 (2012).
2. 鈴木宗泰, *長田 実, 明渡 純, Song-Min Nam, “セラミックスコーティング技術と傾斜材料への応用”, セラミックス **47**, 935-940 (2012).
3. *長田 実, 佐々木高義, “2次元酸化物ナノシートの構造と機能”, 日本結晶学会誌, **6**, 352-358 (2012).

Atsushi SHIMOJIMA : Principal Investigator

1. *下嶋 敦, “かご型シルセスキオキサンを用いた多孔性材料の創製”, 工業材料, **61**, 38-41 (2013). (査読無)

Hisakazu MIHARA : Principal Investigator

1. Hiroshi Tsutsumi, *Hisakazu Mihara, “Soft Materials Based on Designed Self-Assembling Peptides: from Design to Application”, *Mol. BioSyst.*, in press (2013).



Masamichi YAMANAKA : Principal Investigator

1. *Masamichi Yamanaka and Kenji Kobayashi, “Capsular Assemblies of Calix[4]resorcinarene-Based Cavitands”, *Asian J. Org. Chem.*, *in press*. (招待論文) (査読有)
2. *Masamichi Yamanaka, “Urea Derivatives as Low-Molecular-Weight Gelators”, *J. Incl. Phenom. Mol. Recognit. Chem.*, *in press*. (招待論文) (査読有)

Yasuhiro MORISAKI : Principal Investigator

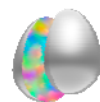
1. *Yasuhiro Morisaki, *Yoshiki Chujo, “Synthesis of Through-Space Conjugated Polymers”, *J. Synth. Org. Chem. Jpn.*, **70**, 480-491 (2012). (招待論文) (査読有)
2. *森崎泰弘, *中條善樹, “機能性スルースペース共役系高分子の開発”, 科学と工業 (2013), 印刷中. (招待論文) (査読有)

Akira SHIGENAGA : Principal Investigator

1. *重永 章, “刺激応答型アミノ酸の開発とケミカルバイオロジー分野への展開”, 薬学雑誌, **132**, 1075-1082 (2012). (査読有)
2. *Akira Otaka, Kohei Sato, Hao Ding, Akira Shigenaga, “One-Pot/sequential Native Chemical Ligation Using *N*-Sulfanylethylanilide Peptide”, *Chem. Record*, **12**, 479-490 (2012). (査読有)
3. *重永 章, “平成 24 年度日本ペプチド学会奨励賞を受賞して”, *Peptide Newsletter Japan*, **87**, 5-7 (2013). (査読無)

Kazunori MATSUURA : Principal Investigator

1. *松浦和則, “新領域研究Gだより エキゾチック自己組織化材料—新潮流を生み出すヘテロ研究者組織—”, 化学と工業, **65**(2), 135 (2012). (査読無)
2. *Kazunori Matsuura, “Construction of Spherical Virus-Inspired Peptide Nanoassemblies”, *Polymer J.*, **44**, 469-474 (2012). (招待論文) (査読有)
3. *松浦和則, “ウイルス構造に学んだペプチドナノ材料の創製”, 化学工業, **63**(6), 409-414 (2012). (査読有)
4. *松浦和則, “常識を打ち破る素人考え”, (特集:若きリーダー達), 高分子, **62**(1), 31-32 (2013). (査読有)
5. *松浦和則, “ウイルスに学んだペプチド自己組織化材料”, 機能材料, 印刷中. (査読有)



2012 <A01 Molecular Control>

【Books】

Takashi KATO : Principal Investigator

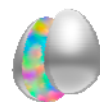
1. “自己組織化と機能材料” (最先端材料システムワンポイント第6巻), 監修/加藤隆史, 高分子学会・共立出版 (2012年7月).
2. 加藤隆史, 坂本 健, “バイオミネラルリゼーションにならう自己組織化ハイブリッド材料の構築”, 未来を拓く元素戦略—持続可能な社会を実現する化学 (CSJ Current Review 11), 日本化学会編, pp.112-117, 化学同人 (2013年1月).

Atsushi YOSHIZAWA : Principal Investigator

1. *吉澤 篤, “低分子液晶”, 化学便覧応用化学編, 第7版, 日本化学会, 丸善出版(株)印刷中. (査読有)
2. *吉澤 篤, “液晶の創薬分野への展開”, 日本学術振興会142委員会, 液晶—過去・現在・未来, 印刷中. (査読無し)
3. Isa Nishiyama and *Atsushi Yoshizawa, “Molecular Design of Blue Phase Materials”, Handbook of Liquid Crystals Vol. 3, 2nd edition, Wiley-VCH Verlag GmbH & Co. KGaA, in press. (査読有)

Tomohisa OGAWA : Principal Investigator

1. Tomohisa Ogawa* and Tsuyoshi Shirai “Experimental Molecular Archeology: Reconstruction of Ancestral Mutants and Evolutionary History of Proteins as a New Approach in Protein Engineering”, In: Protein Engineering-Technology and Application (Ed. by Tomohisa Ogawa) ISBN 980-953-307-520-9, INTECH (2013). (分担執筆)
2. Yasuharu Watanabe, Takako Naganuma, Tomohisa Ogawa, and Koji Muramoto, “Lectins of Marine Origin and their Clinical Applications”, In: Antitumor Potential and Other Emerging Medicinal Properties of Natural Compounds, ISBN: 978-907-64-0214-5, Springer Science (2013). (分担執筆)



Minoru OSADA : Principal Investigator

1. *Minoru Osada and Takayoshi Sasaki, “*Chemical Nanomanipulation of Two-Dimensional Oxide Nanosheets and Its Applications*”, Nanofabrication, p. 153-166, Intech, (January, 2012).
2. *Minoru Osada and Takayoshi Sasaki, “*Self-Assembly of Oxide Nanosheets: Precise Structural Control and Its Applications*”, Nanoparticle Technology Handbook, 2nd Edition, Chapter 47, Elsevier, (April, 2012).

Sota SATO : Principal Investigator

1. S. Sato, T. Murase, and M. Fujita, “*Self-Assembly of Coordination Cages and Spheres*”, Supramolecular Chemistry: From Molecules to Nanomaterials, Vol. 5, p. 2071-2084 (2012), WILEY.
2. S. Sato, M. Fujita “*Metal-organic Caged Assemblies*”, Coordination Chemistry in Protein Cages: Principles, Design, and Applications, Chapter 14, 2013, WILEY.

Atsushi SHIMOJIMA : Principal Investigator

1. *Atsushi Shimojima, “*Mesostructured Materials: Materials Design by Mesochemistry*”, Mesoscale Chemistry, Eds. K. Kuroda, in press, Pan Stanford Publishing, (2012). (分担執筆)

Yasuhiro MORISAKI : Principal Investigator

1. *Yasuhiro Morisaki, *Yoshiki Chujo, “ *π -Stacked Polymers and Molecules: Synthesis, Properties, and Theory*”, Springer, in press. (分担執筆)

Akira SHIGENAGA : Principal Investigator

1. 重永 章, 山本 純, 大高 章, “*刺激応答型アミノ酸の開発と生命科学分野への応用*”, 遺伝子医学 MOOK 21 号 最新ペプチド合成技術とその創薬研究への応用, 編集/木曾良明, pp. 168-172, メディカルドゥ (2012). (分担執筆)

Kazunori MATSUURA : Principal Investigator

1. 松浦和則, “*バイオナノ粒子*”, 油脂・脂質・界面活性剤データブック, 監修/阿部正彦, pp. 602-605, 丸善 (2012). (分担執筆)