

【研究者一覧】

准教授 大澤 力	Osawa Tsutomu	物理化学, 触媒化学
助教 リー イイインサンディ	Lee I-yin sandy	レーザー化学
退職または転任された教員: 高安 紀	Takayasu Osamu	触媒化学

【研究概要】

本グループは様々な機能をもつ固体の調製, およびその物性, それを用いた反応に関する研究を行っています。特に, 医薬品などの生産に重要な光学活性物質の合成を効率よく行うための固体触媒の開発, 環境を浄化するための触媒の開発, 近赤外レーザーパルスを用いたカーボンナノチューブの物性に関する研究, 荷電ポリスチレン粒子のフォトニック結晶効果に関する研究などを基礎から応用まで幅広く研究しています。

【研究業績: 論文】

2008

- Calculation of the Mie Scattering Field inside and outside a Coated Spherical Particle.
Suzuki H., and Lee, I-Y. S.
Int. J. Phys. Sci., **3**, 38-41 (2008).
- Laser-Induced Emission from Dye-doped Nanoparticle Aggregates of Poly(DL-lactide-co-glycolide).
Suzuki, H., Lee, I-Y. S., and Maeda N.
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- Energy Transfer and Amplified Spontaneous Emission in Temperature-Controlled Random Scattering Media.
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Osawa, T., Yoshino, K., Takimoto, K., Takayasu, O., and Harada, T.
Catal. Lett., **112**, 167–171 (2006).

- Modification Method Studies for the Preparation of Tartaric acid–NaBr–Modified Nickel Catalyst for the Enantio–differentiating Hydrogenation of Methyl Acetoacetate.

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- The durability of the enantio–differentiating ability of a tartaric acid–NaBr–modified reduced nickel catalyst pre–modified in tetrahydrofuran.

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Osawa, T., Hagino, Y., Harada, T., and Takayasu, O.

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- Localization of Laser-Induced Breakdown in Aggregates of Silver Nanoshells.

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Sci. Tech. Adv. Mater., **7**, 290–295 (2006).

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Lee, I-Y. S., Suzuki, H., Ito K., and Yasuda Y.

J. Phys. Chem., **B108**, 19368–19372 (2004).

【研究者一覧】

教授	野崎 浩一	Nozaki Koichi	光化学、光物理化学、計算機化学、 電気化学
講師	岩村 宗高	Iwamura Munetaka	錯体化学、分子分光學、光化学
退職または転任された教員:			
	金坂 績	Kanesaka Isao	振動分光學

【研究概要】

本グループでは、光のエネルギーを吸収し、電子励起状態となった分子の構造、発光の性質、光酸化還元反応性などを、分光法や計算化学の方法を用いて研究しています。現在は特に、新しい発光素子や光-電気変換素子として注目されている有機-無機複合分子の光機能メカニズムの解明を研究しています。

【研究業績:論文】

2008

- Reversible conversion of electronic structures in a cyclic octacopper complex.
Kawamoto, T., Nishiwaki, M., Nishijima, M., Nozaki, K., Igashira-Kamiyama, A. and Konno, T.
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Kawamoto, T., Nishiwaki, M., Tsunekawa, Y., Nozaki, K. and Konno, T.
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J. Photochem. Photobiol. A: Chemistry **194**, 254-260 (2008).

- Syntheses and Structures of Vanadium(III) and -(IV) Complexes with a Tripodal Quadridentate Ligand Containing Alcoholic and Pyridyl or Imidazolyl Functionality.
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The Open Inorganic Chemistry Journal, **2**, 42–50 (2008).

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- A novel ruthenium–quinonoid complex. Structural, spectroscopic, and electrochemical characterization of ruthenium(II) bis(2,2'-bipyridine) chloranilate.
Ishikawa, R., Kabir, Md. K., Adachi, K., Nozaki, K. and Kawata, S.
Chem. Lett., **36**(9), 1116–1117 (2007).
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Kanesaka, I., Nagami, H., Kobayashi, K. and Ohno, K.
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Kanesaka, I. and Kobayashi, K.
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- Vibrational couplings and line shapes of CN stretchings in aqueous KOCN–KSCN binary systems in two-dimensional layers.
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Kanesaka, I., Matsuzawa, S., Ishioka, T., Kitagawa, Y. and Ohno, K.
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- Infrared intensity in dielectric media by an electrostatic model.
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Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy, **59A**(4), 671–680(2003).

【研究者一覧】

教授	金森 寛	Kanamori Kan	錯体化学,生物無機化学
准教授	鈴木 炎	Suzuki Honoh	溶液化学
退職または転任された教員:			
	石岡 努	Ishioka Tsutomu	高分子物理化学

【研究概要】

本研究グループには、二つの研究テーマがあります。一つ目のテーマは、生体内のバナジウムに注目し、その機能や構造を錯体化学の観点から解明する研究です。もう一つのテーマでは、強度非平衡状態における溶液中の金属イオン・錯体・分子集合体の構造と反応性を、溶液化学とレーザー光化学の実験方法を用いて研究しています。医学・薬学・光学的応用についても検討しています。

【研究業績:論文】

2008

- Calculation of the Mie Scattering Field inside and outside a Coated Spherical Particle.
H. Suzuki and I-Y. S. Lee
Int. J. Phys. Sci., **3**, 38-41 (2008).
- Laser-Induced Emission from Dye-doped Nanoparticle Aggregates of Poly(DL-lactide-co-glycolide).
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J. Photochem. Photobiol. A, **195**, 254-260 (2008).
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Appl. Phys. Lett., **92**, 103122 (2008).
- Synthesis and Structures of Vanadium(III) and -(IV) Complexes with a Tripodal Quadridentate Ligand Containing Alcoholic and Pyridyl or Imidazolyl Functionality.
Kanamori, K., Fujimoto, K., Yoneda, E., Yokoyama, T., Suzuki, H., Nozaki, K., Miyashita Y., and

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Islam, M. K., Tsuboya, C., Miyashita, Y., Okamoto, K., and Kanamori, K..
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- Synthesis, X-Ray Structures, and Solution Properties of Vanadium(III) and -(IV) Complexes with *N*-(2-Hydroxyphenyl)-*N*-(2-pyridylmethyl)amine.
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- *N,N*-Dimethylacetamide Complex of Aluminium(III) Perchlorate.
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Acta Crystallogr., Sect. E, **E62**, m576–m578 (2006).
- Localization of Laser-Induced Breakdown in Aggregates of Silver Nanoshells.
H. Suzuki, T. Koike, I. Suzuki, T. Kawabata and I-Y. S. Lee
Sci. Tech. Adv. Mater., **7**, 290–295 (2006).
- Preparations, Structures, and Properties of Sulfato-Bridged Dinuclear and Tetranuclear Vanadium(III) Complexes with a Dinucleating Ligand,
2-Oxo-*N,N'*-bis(2-pyridylmethyl)-1,3-propanediamine-*N,N'*-diacetate.
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【研究者一覧】

教授 柘植 清志 Tsuge Kiyoshi 錯体化学、構造化学

【研究概要】

本研究グループでは、新しい構造・性質を持つ遷移金属錯体を作り出す研究を行っています。遷移金属錯体は、中心金属と配位子の選択により、多種多様な構造・性質を持つ化合物が合成可能です。現在は、特に発光性の錯体や、刺激に応答して性質を変化させる錯体の合成を行っています。

【研究業績:論文】

2008

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- Amine Nitrosation via NO Reduction of the Polyamine Cu(II) Complex $Cu(DAC)^{2+}$.
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- Structures and Properties of Carbonyl-Coordinated Ruthenium(II) and Osmium(II) Porphyrin Dimers Bridged by Aza Ligands.
Bando C., Furukawa A., Tsuge K., Takaishi K., Yoichi S., and Imamura T.
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Kon H., Tsuge K., Imamura T., Sasaki Y., Ishizaka S., and Kitamura N.
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- X-ray Structure and Electrochemical Properties of a tpen-bridged Hetero-Binuclear Complex *fac*-, *fac*-[Re^{VII}O₃(tpen)Re^I(CO)₃](PF₆)₂ Where tpen is *N,N,N',N'*-Tetrakis(2-pyridylmethyl)-ethylenediamine.
Tabeya T., Abe M., Mitani A., Tsuge K., and Sasaki Y.
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- Luminescence Ranging from Red to Blue: A Series of Copper(I) Halide Complexes Having Rhombic [Cu₂(t-X)₂] (X = Br and I) Units with N-Heteroaromatic Ligands.
Araki H., Tsuge K., Sasaki Y., Ishizaka S., and Kitamura N.
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2004

- Intramolecular Reductive Nitrosylation: Reaction of Nitric Oxide and a Copper(II) Complex of a Cyclam Derivative with Pendant Luminescent Chromophores.
Tsuge K., DeRosa F., Lim M. D., and Ford P. C.
J. Am. Chem. Soc., **126**, 6564–6565 (2004).

【研究者一覧】

教授	樋口 弘行	Higuchi Hiroyuki	構造有機化学、物理有機化学、合成有機化学
准教授	林 直人	Hayashi Naoto	有機化学
助教	吉野 惇郎	Yoshino Junro	有機化学
退職または転任された教員:			
	東軒 克夫	Tohken Katsuo	有機反応機構

【研究概要】

構造有機化学、物理有機化学、合成有機化学

省エネ化・小型化・高速化、そして自然環境に負荷をもたらさないなど、クリーンかつグリーンケミストリーの認識に立ちながら、特異な構造を有する分子を設計して合成し、それらの分子構造と光電子物性との関係を明らかにしている。特に、21 世紀型社会生活の支援材料として要求される分子サイズの「機能性光電子素子」の開発を目指し、その設計及び構築のための構造要素を探索している。中でも、光電子刺激に対して高速、高感度で応答するポルフィリン環やチオフェン環、また電子の授受能に優れる機能性部位となるフェノール環やキノン環類等を、機能効率を制御するさまざまな Spacer 成分で連結してシステム化した各種誘導体について、分子構造を精査し、それらの情報に基づいて、分子中の特定部位に特定量のエネルギーや電子を能動輸送するナノサイズレベルの分子素子に関する基礎及び応用研究を行なっている。

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【研究者一覧】

准教授	宮澤 眞宏	Miyazawa Masahiro	有機合成化学、天然物化学
講師	横山 初	Yokoyama ajime	天然物化学、合成有機化学
退職または転任された教員:			
	平井 美朗	Hirai Yoshiro	合成有機化学
	山口 晴司	Yamaguchi Seiji	合成有機化学、天然物化学、複素環化学

【研究概要】

我々の研究グループでは、動物や植物(微生物を含む)が産出する生理活性天然物の合成を主な研究テーマとしています。研究を通して新しい有機反応の開発や新薬開発のきっかけとなる新しい化合物の合成も目指しています。

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