

略歴

2022年4月1日 現在

氏名: ^{にし}西 ^{はら}原 ^{ひろし}寛

e-mail : nisihara@rs.tus.ac.jp

学歴

1973年3月 私立ラサール高等学校 卒業
1977年3月 東京大学理学部化学科 卒業
1979年3月 東京大学大学院理学系研究科化学専門課程修士課程 修了
1982年3月 東京大学 大学院理学系研究科化学専門課程博士課程 修了
学位取得 理学博士 (東京大学)

職歴

1982年4月～1990年3月 慶應義塾大学 理工学部 化学科 助手
1987年9月～1989年3月 米国ノースカロライナ大学チャペルヒル校客員研究員を兼任
1990年4月～1992年3月 慶應義塾大学 理工学部 化学科専任講師
1992年4月～1996年8月 同 助教授
1993年10月～1996年9月 新技術事業団さきがけ研究21「光と物質」領域研究員を兼任
1996年9月～2020年3月 東京大学 大学院理学系研究科 化学専攻 教授
2020年4月～ 東京理科大学 研究推進機構 総合研究院 嘱託教授
2022年4月～ 東京理科大学 研究推進機構 総合研究院長

職歴以外の研究又は教育歴事項

2005年4月～2009年5月 University of Bordeaux I (France) 客員教授
2009年4月～2009年5月 University of Strasbourg (France) 客員教授
2010年4月～2012年3月 分子科学研究所客員教授
2010年4月～2012年3月 名古屋大学物質科学国際研究センター客員教授
2010年4月～2013年3月 日本学術振興会学術システム研究センター専門研究員
2010年4月～ 東京工業大学 科学技術創成研究院 特定教授

その他学会活動等に関する主な事項

日本化学会理事 (2004年2月～2006年2月)、電気化学会庶務理事 (2004年2月～2006年2月)、高分子学会高分子錯体研究会運営委員長 (2004年4月～2006年3月)、錯体化学会副会長 (2007年9月～2008年9月)、化学と教育誌 (日本化学会) 編集委員長 (2009年2月～2011年2月)、電気化学会副会長 (2010年3月～2012年3月)、日本化学連合理事、企画委員長 (2010年4月～2012年3月)、International Society of Electrochemistry (ISE), Vice President (2011年1月～2013年12月)、日本化学会関東支部長 (2012年3月～2013年2月)、Electrochemical Society (ECS) Chairman of Japan Section (2014年1月～2016年12月)、日本化学会副会長・教育普及部門長 (2013年5月～2015年5月)、電気化学会次期会長 (業務執行理事) (2015年3月～2016年3月)、電気化学会会長 (2016年3月～2017年3月)、錯体化学会会長 (2016年9月～2020年9月)、日本化学会監事 (2017年5月～2019年5月)

論文誌編集 (現在) Journal of Materials Chemistry C, Advisory board; Inorganic Chemistry Frontiers, Editorial board; Dalton Transactions, Advisory board; Journal of Electroanalytical Chemistry, Advisory board; Journal of Inorganic and Organometallic Polymers and Materials, Editorial board; Chemical Records, Advisory board.

(過去) Electrochemistry, Editorial board; Bulletin of the Chemical Society of Japan, Editorial board, Senior Editor; Chemistry Letters, Editorial board. 理科年表監修者 (物理/化学部)、etc.

そのほかの主な社会活動

日本学術会議連携会員 (2012年10月～2020年9月)
日本学術会議第25期会員 (2020年10月～現在)
文部科学省スーパーサイエンスハイスクール(SSH)企画評価委員 (2013年4月～現在)、文部科学省中央教育審議会教育課程部会理科ワーキンググループ委員 (2015年～2016年)、文部科学省高等学校理科・化学協力者 (2017年4月～2018年3月)
国際化学オリンピック日本委員会理事・組織委員会副委員長・科学委員会委員長 (2018年～現在)、日本理化学協会顧問 (2017年～現在)
JST さきがけ研究「分子技術と機能創出」領域アドバイザー (2012年～2017年)、JST CREST「革新的反応」領域アドバイザー (2018年～現在)、JST ERATO 選考パネルメンバー (2019年)、JST さきがけ研究「[自在配列]原子・分子の自在配列と特性・機能」研究総括 (2020年～現在)
東レ科学振興会 東レ理科教育賞審査委員・審査委員長 (2010年4月～現在)、藤原科学財団選考委員会主査委員 (2016, 2017年度)、山田科学振興財団選考委員 (2014年～2020年)・学術参与 (2020年～現在)、東京応化科学技術振興財団選考委員・審査委員長 (2012～現在)・理事 (2020年～現在)、伊藤科学振興会研究助成選考委員 (2018年)・評議員 (2021年～現在)、徳山科学技術振興財団選考委員・選考委員長 (2014年～2020年)・理事 (2021年～現在)、東燃国際奨学財団理事 (2019年～現在)、日本学生科学賞中央審査委員 (総合委員) (2020年～現在)、特定非営利活動法人「科学技術振興のための教育改革支援」(SSISS) 監事 (2004-2021)・理事長 (2021～現在)、ORLIB 株式会社 取締役会長

賞 罰 等

日本化学会 若い世代の特別講演会証 (1992年)
日本化学会 学術賞 (2003年)「新しい π 共役錯体系の創製と多重物性・機能に関する研究」
ボルドー大学 (University of Bordeaux) 名誉博士号受賞 (2011年)
Hong Kong Baptist University Distinguished Lectureship (2012年)
文部科学大臣表彰科学技術賞 (2014年)「電子及び光機能分子拡張系の配位合成と化学素子に関する研究」
Fellow of the Royal Society of Chemistry (FRFC) (2014年)
錯体化学会賞 (2015年)「配位プログラミングによる電子・光機能分子システムの創製」
日本化学会賞 (2016年)「配位プログラミングを用いる電子・光機能分子システムの創製」
日本化学会 化学教育賞 (2020年)「探究力を育む中等・高等化学教育の仕組みづくりや活動への貢献」
東京大学名誉教授 (2020年)

現在の研究専門分野

錯体化学、電気化学、光化学、ナノサイエンス

研究履歴 (時期・テーマ)

1976-1982 有機金属錯体の合成と反応
1982-1996 腐食抑制剤の開発と作用機構
電子機能分子材料の合成と物性
1996-現在 配位プログラミング—分子超構造体の科学と化学素子の創製
1) 錯体化学を基盤として新機能物質の創製(π 共役遷移金属クラスター・高分子錯体、クロミック金属錯体、金属錯体触媒、金属ナノ粒子、二次元物質「配位ナノシート」)
2) 電極表面の分子ナノアーキテクチャーの創製(次元制御界面の構築と電子移動反応機構・熱力学・速度論、バイオ共役フォトシステム)

最近の研究プロジェクト (2010以降)

- 科研費新学術領域研究「配位プログラミング — 分子超構造体の科学と化学素子の創製」(領域代表) 2009-2013
- 科研費新学術領域研究(計画研究)「刺激応答分子の創製とその精密配列による化学素子の開発」(研究代表者) 2009-2013

- 科研費挑戦的萌芽研究「架橋配位子を用いるナノ粒子三次元配列体の構築と機能」（研究代表者）2010–2011
- 科研費基盤研究（A）「フォトシステムII–分子ワイヤハイブリッド型光エネルギー変換系の創製」（研究代表者）2011–2014
- 科研費挑戦的萌芽研究「メタラジチオレン π ナノシートの創製」（研究代表者）2013–2015
- 科研費基盤研究（S）「機能性ナノ構造体の界面配位合成と化学素子の創製」（研究代表者）2014–2018
- 科研費新学術領域研究（公募研究）「金属錯体 π ナノシートの界面創製と物性」（研究代表者）2014–2015
- 科研費挑戦的萌芽研究「気相・気液界面反応を用いる高品質錯体 π ナノシートの合成」（研究代表者）2015–2017
- 科研費新学術領域研究（公募研究）「強電子相関係配位ナノシートの創製」（研究代表者）2016–2017
- JST START プロジェクト支援型第1サイクル 2017「Si 負極と有機正極からなる軽量高エネルギー二次電池の開発」2017–2019
- JST CREST「二次元機能性原子・分子薄膜の創製と利用に資する基盤技術の創出」領域「有機・無機複合二次元物質、配位ナノシートの創製と電子・光・化学複合機能の創出」2015–2021
- 科研費特別推進研究「二次元共役ポリマー、配位ナノシートの創製とヘテロ構造化による高次機能発現」（研究代表者）2019–2023
- （その他）
- 研究拠点形成事業 A.先端拠点形成型「二次元共役ポリマー「配位ナノシート」の化学と物理」（コーディネーター、2020年度に交代）2019–2023

報文

444. An Organic Quantum Spin Liquid with Triangular Lattice: Spinon Fermi Surface and Scaling Behavior. T. Kusamoto, C. Ohde, S. Sugiura, S. Yamashita, R. Matsuoka, T. Terashima, Y. Nakazawa, H. Nishihara, S. Uji, *Bull. Chem. Soc. Jpn.*, **2022**, in press. DOI: 10.1246/BCSJ.20210411
443. Heterometallic Benzenehexathioloate Coordination Nanosheets: Periodic Structure Improves Crystallinity and Electrical Conductivity. R. Toyoda, N. Fukui, D. H. L. Tjhe, E. Selezneva, H. Maeda, C. Bourgès, C. M. Tan, K. Takada, Y. Sun, I. Jacobs, K. Kamiya, H. Masunaga, T. Mori, S. Sasaki, H. Siringhaus, H. Nishihara, *Adv. Mater.* **2022**, *34*, e2106204.
442. Amplification of luminescence of stable radicals by coordination to NHC-gold(I) complex. Y. Hattori, R. Kitajima, R. Matsuoka, T. Kusamoto, H. Nishihara, K. Uchida, *Chem. Commun.* **2022**, *58*, 2560-2563.
441. Luminescent Behavior Elucidation of a Disilane-Bridged D-A-D Triad Composed of Phenothiazine and Thienopyrazine. T. Nakae, M. Nishio, T. Usuki, M. Ikeya, C. Nishimoto, S. Ito, H. Nishihara, M. Hattori, S. Hayashi, T. Yamada, Teppei, Y. Yamanoi, *Angew. Chem. Int. Ed.* **2021**, *60*, 22871-22878.
440. Dirac-point Shift of Graphene-FET in the Presence of Ionic Molecules or Surfactants, M. Miyachi, W. Zhu, T. Nakae, Y. Yamanoi, T. Ikuta, K. Maehashi, Kenzo, H. Nishihara, *Chem. Lett.* **2021**, *50*, 1639-1642.
439. Expansion of Photostable Luminescent Radicals by Meta-Substitution, Y. Hattori, S. Tsubaki, R. Matsuoka, T. Kusamoto, H. Nishihara, K. Uchida, *Chem. Asian J.* **2021**, *16*, 2538-2544.
438. Ultralong π -Conjugated Bis(terpyridine)metal Polymer Wires Covalently Bound to a Carbon Electrode: Fast Redox Conduction and Redox Diode Characteristics. K.-H. Wu, R. Sakamoto, H. Maeda, E. J. H. Phua, H. Nishihara, *Molecules* **2021**, *26*, 4267.
437. Two-Dimensional Bis(dithiolene)iron(II) Self-Powered UV Photodetectors with Ultrahigh Air Stability. Y.-C. Wang, C.-H. Chiang, C.-M. Chang, H. Maeda, N. Fukui, T. Wang, C.-Y. Wen, K.-C. Lu, S.-K. Huang, W.-B. Jian, C.-W. Chen, K. Tsukagoshi, H. Nishihara, *Adv. Sci.* **2021**, 2100564.
436. Bio-organic-inorganic Hybrid Soft Materials: Photoelectric Conversion Systems Based on Photosystem I and II with Molecular Wires. Y. Yamanoi, T. Nakae, H. Nishihara, *Chem. Lett.* **2021**, *50*, 1263-1270.
435. Electrochemically Synthesized Bis(diimino)metal Coordination Nanosheets as Ultrastable Electrocatalysts for Hydrogen Evolution Reaction. K.-H. Wu, J. Cao, T. Pal, H. Yang, H. Nishihara, *ACS Appl. Energ. Mater.* **2021**, *4*, 5403-5407.
434. Two-Dimensional π -Conjugated Frameworks as a Model System to Unveil a Multielectron-Transfer-Based Energy Storage Mechanism. K. Sakaushi, H. Nishihara, *Acc. Chem. Res.* **2021**, *54*, 3003-3015.
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432. An Open-shell, Luminescent, Two-Dimensional Coordination Polymer with a Honeycomb Lattice and Triangular Organic Radical, S. Kimura, M. Uejima, W. Ota, T. Sato, S. Kusaka, R. Matsuda, *H. Nishihara, T. Kusamoto, *J. Am. Chem. Soc.*, **2021**, *143*, 4329-4338.
431. A ground-state-dominated magnetic field effect on the luminescence of stable organic radicals. S. Kimura, S. Kimura, K. Kato, Y. Teki, H. Nishihara, T. Kusamoto, *Chem. Sci.*, **2021**, *12*, 2025-2029.

430. Determination of Chemical Structure of Bis(dithiolato)iron Nanosheet. C. M. Tan, M. Horikawa, N. Fukui, H. Maeda, S. Sasaki, K. Tsukagoshi, H. Nishihara, *Chem. Lett.*, **2021**, *50*, 576-579.
429. Excimer emission and magnetoluminescence of radical-based zinc(II) complexes doped in host crystals. S. Kimura, S. Kimura, H. Nishihara, T. Kusamoto, *Chem. Commun.* **2020**, *56*, 11195-11198.
428. Redox-active, luminescent coordination nanosheet capsules containing magnetite. R. Arai, M. Li, R. Toyoda, H. Maeda, H. Nishihara, *Sci. Rep.* **2020**, *10*, 13818.
427. Cyclization from Higher Excited States of Diarylethenes Having a Substituted Azulene Ring. Y. Hattori, T. Maejima, Y. Sawae, J. Kitai, M. Morimoto, R. Toyoda, H. Nishihara, S. Yokojima, S. Nakamura, K. Uchida, *Chem. Eur. J.* **2020**, *26*, 11441-11450.
426. Selective formation and SHG intensity of non-centrosymmetric and centrosymmetric 1,1,2,2-tetramethyl-1-(4-(N,N-dimethylamino)phenyl)-2-(2'-cyanophenyl)disilane crystals under external stimuli. M. Nishio, M. Shimada, K. Omoto, T. Nakae, H. Maeda, M. Miyachi, Y. Yamanoi, E. Nishibori, N. Nakayama, H. Goto, T. Matsushita, T. Kondo, M. Hattori, K. Jimura, S. Hayashi, H. Nishihara, *J. Phys. Chem. C* **2020**, *124*, 17450-17458.
425. Thermosaliency in Macrocyclic-Based Soft Crystals via Anisotropic Deformation of Disilanyl Architecture. K. Omoto, T. Nakae, M. Nishio, Y. Yamanoi, Yoshinori, H. Kasai, E. Nishibori, T. Mashimo, T. Seki, H. Ito, K. Nakamura, N. Kobayashi, N. Nakayama, H. Goto, H. Nishihara, *J. Am. Chem. Soc.* **2020**, *142*, 12651-12657.
424. Tailoring the Electrochemical Properties of Two-Dimensional Bis(diimino)metal Coordination Frameworks by Introducing Co/Ni Heterometallic Structures, K. Wada, H. Maeda, T. Tsuji, K. Sakaushi, S. Sasaki, H. Nishihara, *Inorg. Chem.* **2020**, *59*, 10604-10610.
423. Photoelectric Conversion System Composed of Gene-Recombined Photosystem I and Platinum Nanoparticle Nanosheet. W. Zhu, R. Salles, M. Miyachi, Y. Yamanoi, T. Tomo, H. Takahashi, H. Nishihara, *Langmuir* **2020**, *36*, 6429-6435.
422. Reversible Energy Storage in Layered Copper-Based Coordination Polymers: Unveiling the Influence of the Ligand's Functional Group on Their Electrochemical Properties. M. Amores, K. Wada, K. Sakaushi, H. Nishihara, *J. Phys. Chem. C* **2020**, *124*, 17, 9215-9224
421. Effect of the Tris(trimethylsilyl)silyl Group on the Fluorescence and Triplet Yields of Oligothiophenes. S. Hirata, M. Nishio, H. Uchida, T. Usuki, T. Nakae, M. Miyachi, Y. Yamanoi, H. Nishihara, *J. Phys. Chem. C* **2020**, *124*, 3277-3286.
420. Solution-processed organometallic quasi-two-dimensional nanosheets as hole buffer layer for organic light-emitting devices, S. Liu, Y.-C. Wang, C.-M. Chang, T. Yasuda, N. Fukui, H. Maeda, P. Long, K. Nakazato, W.-B. Jian, W. Xie, K. Tsukagoshi, H. Nishihara, *Nanoscale* **2020**, *12*, 6983-6990.
419. 'Click' conjugated porous polymer nanofilm with a large domain size created by a liquid/liquid interfacial protocol, J. Komeda, R. Shiotsuki, A. Rapakousiou, R. Sakamoto, R. Toyoda, K. Iwase, M. Tsuji, K. Kamiya, H. Nishihara, *Chem. Commun.* **2020**, *56*, 3677-3680.
418. High-energy, Long-cycle-life Secondary Battery with Electrochemically Pre-doped Silicon Anode, Y. Wang, M. Satoh, M. Arao, M. Matsumoto, H. Imai, H. Nishihara, *Sci. Rep.* **2020**, *10*, 3208.
417. Tri- and Tetranuclear Metal-String Complexes with Metallophilic d¹⁰-d¹⁰ Interactions. M. Olaru, J. F. Koegel, R. Aoki, R. Sakamoto, H. Nishihara, E. Lork, S. Mebs, M. Vogt, J. Beckmann, *Chem. Eur. J.* **2020**, *26*, 275-284.

416. Construction of Bis(2,6-bis(1-methylbenzimidazol-2-yl)pyridine)iron(II) Coordination Polymer for Incorporation of Magnetic Function. H. Maeda, A. Bajpayee, T. Kusamoto, H. Nishihara, *J. Inorg. Organomet. Polym. Mater.* **2020**, *30*, 147–152.
415. Effects of halogen atom replacement on the structure and magnetic properties of a molecular crystal with supramolecular two-dimensional network mediated via sulfur's σ -holes. C. Ohde, Chie, T. Kusamoto, H. Nishihara, *J. Magn. Magn. Mater.* **2020**, *497*, 165986.
414. Photosensing System Using Photosystem I and Gold Nanoparticle on Graphene Field-Effect Transistor. D. Nishiori, W. Zhu, R. Salles, M. Miyachi, Y. Yamanoi, T. Ikuta, K. Maehashi, T. Tomo, H. Nishihara, *ACS Appl. Mater. Interfaces* **2019**, *11*, 42773-42779.
413. Electrochemical Interfacing of Prussian Blue Nanocrystals with an ITO Electrode Modified with a Thin Film Containing a Ru Complex. H. Sato, M. Ide, R. Saito, T. Togashi, K. Kanaizuka, M. Kurihara, H. Nishihara, H. Ozawa, M. Haga, *J. Mater. Chem. C* **2019**, *7*, 12491-12501.
412. Enhancement of the Photofunction of Phosphorescent Pt(II) Cyclometalated Complexes Driven by Substituents: Solid-State Luminescence and Circularly Polarized Luminescence. T. Usuki, H. Uchida, K. Omoto, Y. Yamanoi, A. Yamada, M. Iwamura, K. Nozaki, H. Nishihara, *J. Org. Chem.* **2019**, *84*, 10749-10756.
411. Electrochromic triphenylamine-based cobalt(II) complex nanosheets. Y. Liu, R. Sakamoto, C.-H. Ho, H. Nishihara, W.-Y. R. Wong, *J. Mater. Chem. C* **2019**, *7*, 9159-9166.
410. Interfacial Transmetalation Synthesis of Platinadithiolene Nanosheet as a Potential 2D Topological Insulator. T. Pal, S. Doi, H. Maeda, K. Wada, C. M. Tan, N. Fukui, R. Sakamoto, S. Tsuneyuki, S. Sasaki, H. Nishihara, *Chem. Sci.* **2019**, *10*, 5218-5225.
409. Effects of substituents on the blue luminescence of disilane-linked donor-acceptor-donor triads. T. Usuki, K. Omoto, M. Shimada, Y. Yamanoi, H. Kasai, E. Nishibori, H. Nishihara, *Molecules* **2019**, *24*, 521/1-521/11.
408. Dioxacyclophanes as a Scaffold for Silicon-based Circularly Polarized Luminescent Materials. Y. Yamanoi, T. Usuki, K. Omoto, M. Shimada, H. Koike, M. Iwamura, K. Nozaki, D. Saito, M. Kato, H. Nishihara, *Tetrahedron Lett.* **2019**, *60*, 1108-1112.
407. One-dimensional magnetic chain composed of Cu^{II} and polychlorinated dipyridylphenylmethyl radical: temperature-dependent Jahn-Teller distortion correlated to π -conjugation and magnetic properties. S. Kimura, H. Uchida, T. Kusamoto, H. Nishihara, *Dalton Trans.* **2019**, *48*, 7090-7093.
406. Luminescent Radical-Excimer: Excited-State Dynamics of Luminescent Radicals in Doped Host Crystals. K. Kato, S. Kimura, T. Kusamoto, H. Nishihara, Y. Teki, *Angew. Chem. Int. Ed.* **2019**, *58*, 2606-2611.
405. Auophilicity and Photoluminescence of (6-Diphenylpicogenoacenaphth-5-yl)gold Compounds. T. G. Do, E. Hupf, E. Lork, J. F. Koegel, F. Mohr, A. Brown, R. Toyoda, R. Sakamoto, H. Nishihara, S. Mebs, *Eur. J. Inorg. Chem.* **2019**, 647-659.
404. A single-stranded coordination copolymer affords heterostructure observation and photoluminescence intensification. R. Toyoda, R. Sakamoto, N. Fukui, R. Matsuoka, M. Tsuchiya, H. Nishihara, *Sci. Adv.* **2019**, *5*, eaau0637.
403. The Accelerating World of Graphdiynes. R. Sakamoto, H. Fukui, H. Maeda, R. Matsuoka, R. Toyoda, H. Nishihara, *Adv. Mater.* **2019**, *31*, 1970297.

402. Zero-, one- and two-dimensional bis(dithiolato)metal complexes with unique physical and chemical properties. T. Kusamoto, H. Nishihara, *Coord; Chem. Rev.* **2019**, *380*, 419-439.
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特許

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