

Daiki SHIMIZU

+81-75-383-2746

dshimizu@sbchem.kyoto-u.ac.jp

Department of Synthetic Chemistry and Biological Chemistry,

Graduate School of Engineering, Kyoto University

A4-325, Kyoto University Katsura, Nishikyo-ku, Kyoto 615-8510, Japan

ORCID/Web of Science ResearcherID

0000-0002-2053-3483/O-2793-2019

Date of Birth

1992-02-21

Born in Aichi, Japan

Education and Employment

2019-03	Ph.D. Graduate School of Science, Kyoto University Ph.D. Dissertation: “Chemistry of Open-shell Porphyrinoids” (Advisor: Prof. Dr. Atsuhiko Osuka)
2016-03	M.S. Graduate School of Science, Kyoto University
2014-03	B.S. Faculty of Science, Kyoto University
2019-04/present	Assistant Professor; Graduate School of Engineering, Kyoto University
2017-08/11	Visiting Scholar; Department of Chemistry, Northwestern University, USA (Advisor: Prof. Dr. Michael R. Wasielewski)
2016-04/2019-03	Fellowship for Young Scientists; Japan Society for the Promotion of Science (JSPS, DC1)

Awards

7. Mitsubishi Chemical Award in Synthetic Organic Chemistry (2024)
6. The 36th Inoue Research Award for Young Scientists (2020)
5. The 10th Singapore International Chemistry Conference (SICC-10), Chemical Reviews Poster Prize (2018)
4. The 29th Symposium on Physical Organic Chemistry, RSC Advances Award (2018)
3. The 49th Summer School of Structural Organic Chemistry, Poster Award (2017)
2. Chemical Society of Japan Student Presentation Award (2017)
1. Otsu Academy Award Fellow (No. 107, 2017)

Original Papers

59. “**The effect of *peri*-fusion position on the single molecular conductivity of AGNRs theoretically evaluated by decay constant of exchange interaction**”
Tomohito Shinozuka, Daiki Shimizu, and Kenji Matsuda*
Manuscript submitted.
58. “**Bowl-Shaped Anthracene-Fused Antiaromatic Ni(II) Norcorrole: Synthesis, Structure, Assembly with C₆₀, and Photothermal Conversion**”
Kaisheng Wang, Aninda Ghosh, Daiki Shimizu, Hideaki Takano, Masatoshi Ishida, Ryohei Kishi, and Hiroshi Shinokubo*
Angewandte Chemie International Edition **2024**, *63*, e202419289.

57. **“Propeller-Shaped Blatter-Based Triradicals: Distortion-Free Triangular Spin System and Spin-State-Dependent Photophysical Properties”**
Takeru Aoki, Hikaru Sotome, [Daiki Shimizu](#),* Hiroshi Miyasaka, and Kenji Matsuda*
Angewandte Chemie International Edition **2024**, *63*, e202418655.
56. **“Cation Radicals, Boremium Cations, and Dication from Oxidation of B-Tolyl B^{III} Subporphyrins”**
Zixuan Xie, Xiaoheng Ji, Xu Zeng, [Daiki Shimizu](#), Takayuki Tanaka, Yutao Rao, Mingbo Zhou, Ling Xu, Atsuhiko Osuka,* and Jianxin Song*
Manuscript submitted.
55. **“Oxidation of Weakly Interacting Diradicals: an Approach for Strong and Tunable NIR-absorbing Dyes based on Small Chromophores”**
Takeru Yamada, [Daiki Shimizu](#),* and Kenji Matsuda*
Journal of Physical Chemistry Letters **2024**, *15*, 9175–9182.
54. **“Fused Aromatic and Antiaromatic Smaragdyrin Dimers”**
Yang Liu, Takayuki Tanaka, [Daiki Shimizu](#), Yutao Rao, Ling Xu, Bangshao Yin, Mingbo Zhou, Jianxin Song,* and Atsuhiko Osuka
Angewandte Chemie International Edition, **2024**, *63*, e202408478.
53. **“Synthesis of Ni^{II} porphyrin—Ni^{II} 5,15-diazaporphyrin hybrid tapes”**
Lina Wang, Zian Liao, Peng Lin, Yingying Jia, Le Liu, Ling Xu, Mingbo Zhou, Bangshao Yin, Yutao Rao, Akito Nakai, Takayuki Tanaka, [Daiki Shimizu](#), Atsuhiko Osuka, and Jianxin Song*
Chemical Science **2024**, *15*, 10207–10213.
52. **“[22]Pentaphyrins(2.0.1.1.0) Displaying N-Fusion, Pyrrole-Rearrangement, and Dimerization Reactions Upon Oxidation and Metalation”**
Jinchao Chen, Le Liu, Dr. Yutao Rao,* Dr. Ling Xu, Prof. Dr. Mingbo Zhou, Bangshao Yin, Soji Shimizu, [Daiki Shimizu](#), Atsuhiko Osuka,* and Jianxin Song*
Angewandte Chemie International Edition, **2024**, *63*, e202407340.
51. **“*peri*-Benzo-Diindenotetracenyl: Helically π -Extended Allyl Radical with Robust Stability”**
Hodaka Hamamoto, [Daiki Shimizu](#),* and Kenji Matsuda*
Chemistry — A European Journal **2024**, *30*, e202401353.
50. **“Optically distinguishable electronic spin isomers of a stable organic diradical”**
[Daiki Shimizu](#),* Hikaru Sotome, Hiroshi Miyasaka, and Kenji Matsuda*
ACS Central Science **2024**, *10*, 890–898.(Open Access)
49. **“Evaluation of the effect of radical substituents on the open-shell character of polycyclic aromatic hydrocarbon”**
Tomohito Shinozuka, [Daiki Shimizu](#),* and Kenji Matsuda*
New Journal of Chemistry, **2024**, *48*, 8683–8689.
48. **“Synthesis and properties of doubly diphenylene-fused benzopyrrolo[1,4]diazocine with a [7-8-7] successive ring-fused structure”**
Masato Hisada, [Daiki Shimizu](#),* and Kenji Matsuda*
Chemistry Letters, **2024**, *53*, upae021.
47. **“A Triply-Linked Porphyrin–Norcorrole Hybrid with Singlet Diradical Character”**
Kaisheng Wang, Satoru Ito, Shuang Ren, [Daiki Shimizu](#), Norihito Fukui, Ryohei Kishi, Qiang Liu,* Atsuhiko Osuka, Jianxin Song,* and Hiroshi Shinokubo*
Angewandte Chemie International Edition, **2024**, *63*, e202401233.
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46. **“Verdazyl–Nitroxide Diradical with $S = 1$ Ground State: Observation of Long-Range Ordering and Haldane Gap in a Highly Isotropic $S = 1$ Antiferromagnetic Heisenberg Chain”**
Hodaka Hamamoto, [Daiki Shimizu](#),* and Kenji Matsuda*
Journal of Physical Chemistry C, **2023**, *127*, 21822–21828.
 45. **“Effect of Internal Oxygen Substituents on the Properties of Bowl-Shaped Aromatic Hydrocarbons”**
Yoshihiro Takeo, [Daiki Shimizu](#), Norihito Fukui,* and Hiroshi Shinokubo*
Organic Chemistry Frontiers, **2023**, *10*, 5895–5901.
 44. **“Near-Infrared-Responsive Hydrocarbons Designed by π -Extension of Indeno[1,2,3,4-*ppra*]perylene at the 1,2,12-Positions”**
Masaki Kato, Kinseok Kim, Juwon Oh, [Daiki Shimizu](#), Nohirito Fukui,* and Hiroshi Shinokubo*
Chemistry — A European Journal, **2023**, *29*, e202300249.
 43. **“Facile Formation of Stable Neutral Radicals and Cations from [22]Smaragdyrin BF_2 Complexes”**
Weikang Deng, Yang Liu, [Daiki Shimizu](#), Takayuki Tanaka, Akito Nakai, Yutao Rao, Ling Xu, Mingbo Zhou, Atsuhiko Osuka,* and Jianxin Song*
Chemistry — A European Journal, **2023**, *29*, e202203484.
 42. **“ π -Expansion of 2,3,6,7-Tetraazanaphthalene with Two Embedded Heptagons: Highly Twisted Structure and Lone-Pair/ π^* Interaction in the Crystal”**
Masato Hisada, [Daiki Shimizu](#),* and Kenji Matsuda*
Organic Letters, **2022**, *24*, 3707–3711.
 41. **“Heptagon-Embedded π -Expanded Thieno- and *N*-Methylpyrrolo-Pyridazines with Substantial Out-of-Plane Dipole Moment”**
Masato Hisada, [Daiki Shimizu](#),* and Kenji Matsuda*
Journal of Organic Chemistry, **2022**, *87*, 9034–9043.
(Preprint on ChemRxiv: 10.26434/chemrxiv-2022-npr2)
 40. **“Large Enhancement of Single Molecular Conductance of Molecular Wire through a Radical substituent”**
Ryuto Yasui, [Daiki Shimizu](#), and Kenji Matsuda*
Chemistry — A European Journal, **2022**, *28*, e202104242.
 39. **“Doubly linked chiral phenanthrene oligomers for homogeneously π -extended helicenes with large effective conjugation length”**
Yusuke Nakakuki, Takashi Hirose,* Hikaru Sotome, Min Gao, [Daiki Shimizu](#), Ruiji Li, Junya Hasegawa, Hiroshi Miyasaka, and Kenji Matsuda*
Nature Communications, **2022**, *13*, 1475.
 38. **“Formation of Stable Ni(III) N-Confused Porphyrins Aided by 3-Ethoxy Group”**
Huowang He, Zongren Ye, [Daiki Shimizu](#), Idrees Sumra, Yihuan Zhang, Zhengyu Liang, Yingyu Zeng, Ling Xu, Atsuhiko Osuka,* Zhuofeng Ke,* and Hua-Wei Jiang*
Chemistry — A European Journal, **2022**, *28*, e202103272.
 37. **“Evaluation of electron transport capability of armchair graphene nanoribbons (AGNRs) by calculating exchange interaction between terminally attached radicals”**
Tomohito Shinozuka, Shohei Nishizawa, [Daiki Shimizu](#), and Kenji Matsuda*
Chemical Physics Letters, **2021**, *780*, 138923.
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36. **“Donor-A cceptor Type [5]H elicene Derivative with Strong Circularly Polarized Luminescence”**
Hiromu Kubo, Takashi Hirose,* [Daiki Shimizu](#), and Kenji Matsuda*
Chemistry Letters, **2021**, *50*, 804–807.
 35. **“Circularly Polarized Luminescence Designed from Molecular Orbit-als: A Figure-of-Eight Shaped [5]Helicene Dimer with D_2 symmetry”**
Hiromu Kubo, [Daiki Shimizu](#), Takashi Hirose,* and Kenji Matsuda*
Organic Letter, **2020**, *22*, 9276–9281.
 34. **“Circularly Polarized Luminescence Designed from Molecular Orbit-als: A Figure-of-Eight Shaped [5]Helicene Dimer with D_2 symmetry”**
Youn Jue Bae, [Daiki Shimizu](#), Jonathan D. Schultz, Gyeongwon Kang, Jiawang Zhou, George C. Schatz, Atsuhiko Osuka, and Michael R. Wasielewski*
Journal of Physical Chemistry A, **2020**, *124*, 8478–8487.
 33. **“STM apparent height measurements of molecular wires with different physical length attached on 2-D phase separated templates for evaluation of single molecular conductance”**
Tomoya Iizuka, [Daiki Shimizu](#), and Kenji Matsuda*
RSC Advances, **2020**, *10*, 22054–22057.
 32. **“Stable *meso-meso* Linked 2NH-Corrole Radical Dimers as a Key Intermediate to Corrole Tape”**
Shota Ooi, B. Adinarayana, [Daiki Shimizu](#), Takayuki Tanaka,* and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2020**, *59*, 9423–9427.
 31. **“Figure-eight Octaphyrin Bis-Ge(IV) Complexes: Synthesis, Structures, Aromaticity, and Chiroptical Properties”**
Mondo Izawa, Taisuke Suito, Shin-ichiro Ishida, [Daiki Shimizu](#), Takayuki Tanaka,* Tadashi Mori, and Atsuhiko Osuka*
Chemistry — An Asian Journal, **2020**, *15*, 1440–1448.
 30. **“*meso*-(2-Pyridyl)-boron(III)-subporphyrin: Perimeter Iridium(III) Coordination”**
Giulia Lavarda, [Daiki Shimizu](#), Tomás Torres,* and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2020**, *59*, 3127–3130.
 29. **“Cyclophane-type Chlorin Dimers from Dynamic Covalent Chemistry of 2,18-Porphyrinyl Dicyanomethyl Diradicals”**
B. Adinarayana, Kenichi Kato, [Daiki Shimizu](#), Ko Furukawa, Takayuki Tanaka, and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2020**, 4320–4323.
 28. **“Phenylene-bridged Porphyrin *meso*-Oxy Radical Dimers”**
Takayuki Yamamoto, Kenichi Kato, [Daiki Shimizu](#), Takayuki Tanaka, and Atsuhiko Osuka*
Chemistry — An Asian Journal, **2019**, *14*, 4031–4034.
 27. **“Quadrupolar Cyclopenta[hi]aceanthrylene-based Electron Donor-Acceptor-Donor Conjugates: Charge Transfer versus Charge Separation”**
Christoph Schierl, Wiebke Alex, Luis M. Mateo, Beatriz Ballesteros, [Daiki Shimizu](#), Atsuhiko Osuka,* Tomas Torres,* Dirk M. Guldi,* and Giovanni Bottari*
Angewandte Chemie International Edition, **2019**, *58*, 14644–14652.
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26. **“Stable radical versus reversible σ -bond formation of (porphyrinyl)dicyanomethyl radicals”**
B. Adinarayana, [Daiki Shimizu](#), Ko Furukawa, and Atsuhiko Osuka*
Chemical Science, **2019**, *10*, 6007–6012.
 25. **“Coordination-Induced Spin-State Switching of an Aminyl-Radical-Bridged Nickel(II) Porphyrin Dimer between Doublet and Sextet States”**
[Daiki Shimizu](#), Yuki Ide, Takahisa Ikeue, and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2019**, *58*, 5023–5027.
 24. **“Selective Formation of Helical Tetrapyrroin-fused Porphyrins by Oxidation of β -to- β Linked *meso*-Aminoporphyrin Dimers”**
Keisuke Fujimoto, [Daiki Shimizu](#), Tadashi Mori, Yuanyuan Li, Mingbo Zhou, Jianxin Song, and Atsuhiko Osuka*
Chemistry — A European Journal, **2019**, *25*, 1711–1715.
 23. **“Stable (B^{III}-Subporphyrin-5-yl)dicyanomethyl Radicals”**
B. Adinarayana, [Daiki Shimizu](#), and Atsuhiko Osuka*
Chemistry — A European Journal, **2019**, *25*, 1706–1710.
 22. **“Porphyrin-Stabilized Nitrenium Dication”**
Keisuke Fujimoto, [Daiki Shimizu](#), and Atsuhiko Osuka*
Chemistry — A European Journal, **2019**, *25*, 521–525.
 21. **“Bis-copper(II) Complex of Triply-linked Corrole Dimer and Its Dication”**
Shota Ooi, Takayuki Tanaka,* Takahisa Ikeue, Kazuhisa Yamasumi, Kento Ueta, [Daiki Shimizu](#), Masatoshi Ishida, Hiroyuki Furuta, and Atsuhiko Osuka*
Chemistry — An Asian Journal, **2019**, *14*, 1771–1776.
 20. **“Stable Face-to-Face Singlet Diradicaloids: Triply Linked Corrole Dimer Gallium(III) Complexes with Two μ -Hydroxo-Bridges”**
Shota Ooi, [Daiki Shimizu](#), Ko Furukawa, Takayuki Tanaka,* and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2018**, *57*, 14916–14920.
 19. **“*meso*-Functionalizations of B^{III} Subporphyrin with B^{III} *meso*-Lithiosubporphyrin”**
Yousuke Bekki, [Daiki Shimizu](#), Keisuke Fujimoto, and Atsuhiko Osuka*
Chemistry — A European Journal, **2018**, *24*, 12708–12715.
 18. **“Stable Diporphyrinyl-Aminyl Radical and Nitrenium Ion”**
[Daiki Shimizu](#), Keisuke Fujimoto, and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2018**, *57*, 9434–9438.
 17. **“Diarylamine-fused Subporphyrins: Proof of Twisted Intramolecular Charge Transfer (TICT) Mechanism”**
Koki Kise, Yongseok Hong, Norihito Fukui, [Daiki Shimizu](#), Dongho Kim,* and Atsuhiko Osuka*
Chemistry — A European Journal, **2018**, *24*, 8306–8310.
 16. **“B^{III} 5-Arylsbporphyrins and B^{III} subporphine”**
Koki Kise, Kota Yoshida, Ryota Kotani, [Daiki Shimizu](#), and Atsuhiko Osuka*
Chemistry — A European Journal, **2018**, *24*, 19136–19140.
 15. **“Synthesis of bis-Silicon Complexes of [38]-, [37]-, and [36] Octaphyrins: Aromaticity Switch and Stable Radical Cation”**
Shin-ichiro Ishida, Jinseok Kim, [Daiki Shimizu](#), Dongho Kim,* and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2018**, *57*, 5876–5880.
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14. **“A Benzene-1,3,5-Triaminyl Radical Fused with Zn(II)-Porphyrins: Remarkable Stability and High Spin Quartet Ground State”**
Daiki Shimizu and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2018**, *57*, 3733–3736.
 13. **“Stable Subporphyrin *meso*-Aminyl Radicals without Resonance Stabilization by Neighboring Heteroatom”**
Daiki Shimizu, Ko Furukawa,* and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2017**, *56*, 7435–7439.
 12. **“Thienylquinonoidal Porphyrins and Hexaphyrins with Singlet Diradical Ground States”**
Koji Naoda, Daiki Shimizu, Jun Oh Kim, Ko Furukawa,* Dongho Kim,* and Atsuhiko Osuka*
Chemistry – A European Journal, **2017**, *23*, 8969–8979.
 11. **“Stable Ni^{II} Porphyrin *meso*-Oxy Radical with a Quartet Ground State”**
Cosima Stähler, Daiki Shimizu, Kota Yoshida, Ko Furukawa,* Rainer Herges,* and Atsuhiko Osuka*
Chemistry – A European Journal, **2017**, *23*, 7217–7220.
 10. **“*meso*-Nitro- and *meso*-Aminosubporphyrinatoboron(III)s and *meso*-to-*meso*-Azosubporphyrinatoboron(III)s”**
Daiki Shimizu, Seung-Kyu Lee, Dongho Kim,* and Atsuhiko Osuka*
Chemistry – An Asian Journal, **2016**, *11*, 2946–2952.
 9. **“Highly planar diarylamine-fused porphyrins and their remarkably stable radical cations”**
Norihito Fukui, Wonhee Cha, Daiki Shimizu, Juwon Oh, Ko Furukawa,* Hideki Yorimitsu,*
Dongho Kim,* and Atsuhiko Osuka*
Chemical Science, **2017**, *8*, 189–199.
 8. **“Effect of bulky *meso*-substituents on photoinduced twisted intramolecular charge transfer processes in *meso*-diaryl amino subporphyrins”**
Seung-Kyu Lee, Jun Oh Kim, Daiki Shimizu, Atsuhiko Osuka,* and Dongho Kim*
Journal of Porphyrins and Phthalocyanines, **2016**, *20*, 663–669.
 7. **“*meso*-to-*meso* Sulfide- and Disulfide-Bridged Subporphyrin Dimers”**
Graeme Copley, Daiki Shimizu, Juwon Oh, Jooyoung Sung, Ko Furukawa, Dongho Kim,*
and Atsuhiko Osuka*
European Journal of Organic Chemistry, **2016**, 1977–1981.
 6. **“Regioselective phenylene-fusion reactions of Ni(II)-porphyrins controlled by an electron-withdrawing *meso*-substituent”**
Norihito Fukui, Seung-Kyu Lee, Kenichi Kato, Daiki Shimizu, Takayuki Tanaka, Sangsu Lee, Hideki Yorimitsu,* Dongho Kim,* and Atsuhiko Osuka*
Chemical Science, **2016**, *7*, 4059–4066.
 5. **“Intramolecular electron transfer reactions in *meso*-(4-nitrophenyl)-substituted subporphyrins”**
Graeme Copley, Juwon Oh, Kota Yoshida, Daiki Shimizu, Dongho Kim,* and Atsuhiko Osuka*
Chemical Communications, **2016**, *52*, 1424–1427.
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4. **“Triarylporphyrin meso-Oxy Radicals: Remarkable Chemical Stabilities and Oxidation to Oxophlorin π -Cations”**
Daiki Shimizu, Juwon Oh, Ko Furukawa,* Dongho Kim,* and Atsuhiko Osuka*
Journal of the American Chemical Society, **2015**, *137*, 15584–15594.
3. **“meso-Hydroxysubporphyrins: a Cyclic Trimeric Assembly and a Stable meso-Oxy Radical”**
Daiki Shimizu, Juwon Oh, Ko Furukawa,* Dongho Kim,* and Atsuhiko Osuka*
Angewandte Chemie International Edition, **2015**, *54*, 6613–6617.
2. **“Nucleophilic Aromatic Substitution Reactions of meso-Bromosubporphyrin: Synthesis of a Thiopyrane-Fused Subporphyrin”**
Daiki Shimizu, Hirotaka Mori, Masaaki Kitano, Won-Young Cha, Juwon Oh, Takayuki Tanaka, Dongho Kim,* and Atsuhiko Osuka*
Chemistry – A European Journal, **2014**, *20*, 16194–16202.
1. **“Synthesis of meso-heteroatom-substituted subporphyrins”**
Masaaki Kitano, Daiki Shimizu, Takayuki Tanaka, Hideki Yorimitsu, and Atsuhiko Osuka*
Journal of Porphyrins and Phthalocyanines, **2014**, *18*, 659–665.

Accounts and Reviews

1. **“Porphyrinoids as a platform of stable radicals”**
Daiki Shimizu and Atsuhiko Osuka*
Chemical Science, **2018**, *9*, 1408–1423.

Invited Presentations

8. **“Optically Distinguishable Electronic Spin-isomers of a Stable Organic Diradical”**
Daiki Shimizu
NanoSynergetics monthly web seminar
2024-06-13, online.
7. 「有機ジラジカルが示す多様な光学特性」
Daiki Shimizu
2023年 光化学若手の会
2023-06-09/11, Kyoto University, Hyogo, Japan.
6. 「ジラジカルを「電子スピン異性体」と捉えることはできるか」
Daiki Shimizu
第7回 有機若手ワークショップ
2022-11-29, Kyoto University, Kyoto, Japan.
5. **“Spin-state dependent optical behavior of a Blatter radical dimer with through-space interaction”**
Daiki Shimizu
9th International Kyoto Symposium on Organic Chemistry (IKSOC)
2022-11-09, Kyoto University, Kyoto, Japan.

4. 「スピン依存的な光励起挙動を示す開殻電子系の創出」
Daiki Shimizu
構造有機 Mirai セミナー
2022-06-24, Jozankei View Hotel, Hokkaido, Japan.
 3. 「電荷やスピンを制御した新しい π 電子系の創製を目指して」
Daiki Shimizu
GTR Chemistry Workshop 2021
2021-11-29, Nagoya University, Nagoya, Japan (online).
 2. 「電荷や不対電子の導入に基づく新規な共役系の創製」
Daiki Shimizu
第 15 回 物性科学領域横断研究会
2021-11-26, online.
 1. **"Porphyrinoids as a platform of stable radicals"**
Daiki Shimizu
Polymer • Hybrid Materials Research Center (PHyM) Young Investigator Forum
2018-11-19, Tohoku University, Sendai, Japan.
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Research Grants

Current Research

9. 「ジラジカルの交換相互作用設計に基づく赤外領域での光学バンドギャップの精密制御」
有機合成化学研究所 令和6年度研究助成費
500,000 JPY
2025-04-01/2026-03-31
8. 「ボトムアップ型分子設計に基づく赤外エレクトロクロミズム材料の設計と自在制御」
有機合成化学協会 三菱ケミカル 研究企画賞 奨学寄附金
500,000 JPY
2024-04-01/2026-03-31
6. 「「電子スピン異性体」の創製と開拓」
JSPS KAKENHI Grant-in-Aid for Scientific Research(B) No. 23H01948
14,900,000 JPY
2023-04-01/2026-03-31

Completed Research

7. 「安定ジラジカル分子を用いた光化学の未開拓領域の探索」
公益財団法人池谷科学技術振興財団 2023年度単年度研究助成 No. 0351047-A
1,500,000 JPY
2023-04-01/2024-03-31
 5. 「非ケクレ型メソイオン共役系化学の開拓」
JSPS KAKENHI Grant-in-Aid for Young Scientists No. 20K15259
4,160,000 JPY
2020-04-01/2023-03-31
 4. 「非ケクレ型メソイオン共役系を有するジアザペンタレンの創製と機能探索」
京都技術科学センター 研究開発助成
1,000,000 JPY
2020-04-01/2021-03-31
 3. 「スピンプラストラーションによる $[4n]\pi$ 共役系のスピン状態制御」
JSPS KAKENHI Grant-in-Aid for Young Scientists(Start-up) No. 19K23629
2,860,000 JPY
2019-08-30/2021-03-31
 2. 「スピンプラストラーションによる $[4n]\pi$ 共役系のスピン状態制御」
京都大学 若手研究者スタートアップ研究費
500,000 JPY
2019-04-01/2019-09-30
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