Hiroki Hayashi

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Personal Data

Date of Birth	November 11th, 1988
Place of Birth	Aichi, Japan
Gender	Male
Nationality	Japan

Education

2011.3	**B. Eng.**, School of Engineering, Nagoya University, Japan (Prof. Kazuaki Ishihara)
2013.3	**M. Eng.**, Graduate School of Engineering, Nagoya University, Japan (Prof. Kazuaki Ishihara)
2016.3	**PhD. Eng.**, Graduate School of Engineering, Nagoya University, Japan (Prof. Kazuaki Ishihara)
2014.9–12	**Visiting Scholar**, Department of Chemistry, University of Berkeley, California, United States (Prof. John F. Hartwig)

Academic Career

2016.4–2017.3	**Postdoctoral Researcher**, Department of Chemistry, University of Berkeley, California, United States (Prof. John F. Hartwig)
2017.4–2020.1	**Assistant Professor**, Faculty of Arts and Science, Kyushu University (Assoc. Prof. Tatsuya Uchida)
2020.2–2024.3	**Specially Appointed Assistant Professor**, WPI-ICReDD, Hokkaido University (JST-ERATO Maeda Artificial Intelligence for Chemical Reaction Design and Discovery Project)
2024.4–present	**Specially Appointed Associate Professor**, WPI-ICReDD, Hokkaido University (JST-ERATO Maeda Artificial Intelligence for Chemical Reaction Design and Discovery Project)

Fellowships & Grants

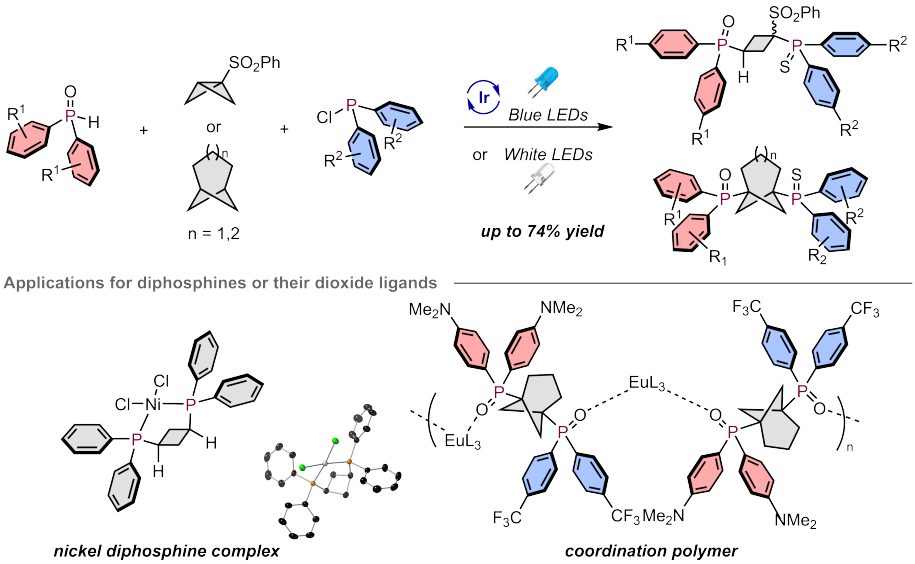
2024.4–2026.3	JSPS Grant-in-Aid for Transformative Research Area (A), Green Catalysis Science (24H01830)
2023.4–2026.3	JSPS Grant-in-Aid for Young Scientists (23K13737)
2021.8–2022.2	2021 The NOASTEC Foundation Subsidy for Young Scientists
2020.4–2022.3	JSPS Grant-in-Aid for Young Scientists (20K15284)
2016.4–2017.3	2016 The Naito Foundation Postdoctoral Fellow for Research Abroad
2015.4–2016.3	Research Fellow of the Japan Society for the Promotion of Sciences (DC2)

Awards

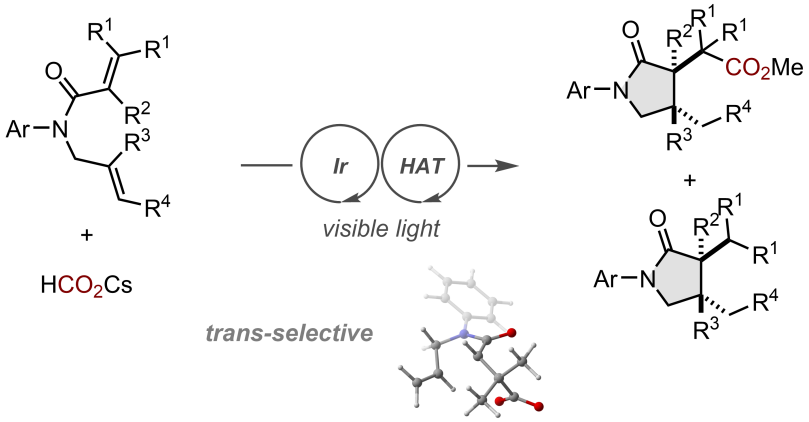
2023	ACP Lectureship Award (Korea)
2023	The Chemical Society of Japan Lecture Award for Young Chemists
2021	The Best Poster Presentation Award at the 7th Hokkaido University Cross-Departmental Symposium, Japan
2020	The Central Glass Award in Synthetic Organic Chemistry, Japan
2016	Presentation Award at the 96th CSJ Annual Meeting, Japan
2015	Otsu Conference Award Fellow, Japan
2015	Reaxys PhD Prize Finalist, UK
2014	Poster Award at the 31st Seminar of Organic Synthetic Chemistry, Japan
2013	Poster Award at the 1st IGER Annual Meeting, Japan
2012	Very Important Presentation Award at the 43rd Annual Meeting of Union of Chemistry-Related Societies in Chubu Area, Japan

Publications

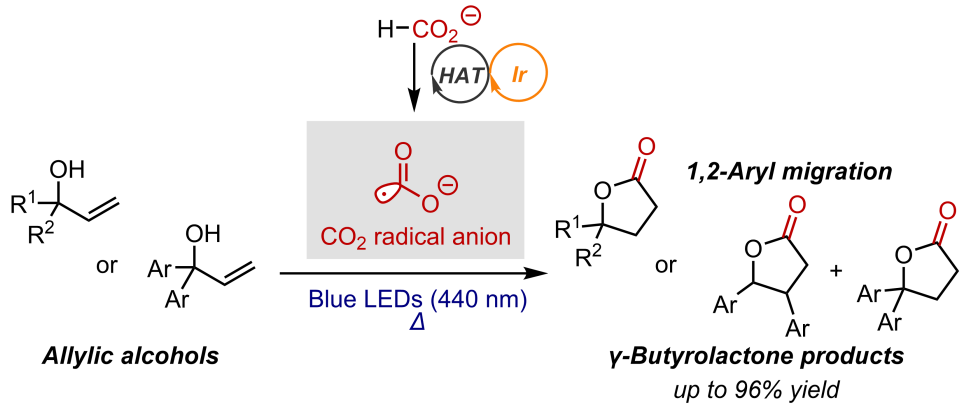
1. "*Strain-Releasing Ring-Opening Diphosphinations for the Synthesis of Diphosphine Ligands with Cyclic Backbones*"
   Chandu G. Krishnan, Hideaki Takano, Hitomi Katsuyama, Wataru Kanna, **Hiroki Hayashi**, Tsuyoshi Mita
   JACS Au **2024**, *4*, *in press*.



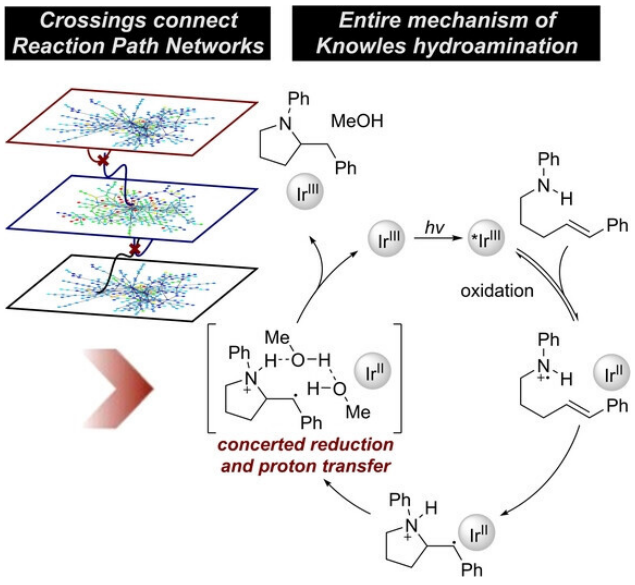
2. "*Trans-Selective Carboxylative Cyclization of 1,6-Dienes Using the CO_2 Radical Anion*"
   Yan Song, **Hiroki Hayashi**, Saeesh R. Mangaonkar, Tsuyoshi Mita
   Chem. Lett. **2024**, *53*, upae149.



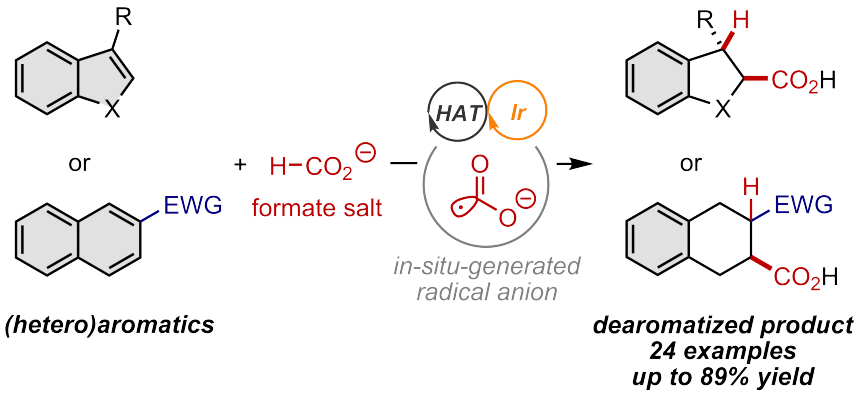
3. "*γ-Butyrolactone Synthesis from Allylic Alcohols Using the CO_2 Radical Anion*"
   Saeesh R. Mangaonkar, **Hiroki Hayashi**, Wataru Kanna, Suvankar Debbarma, Yu Harabuchi, Satoshi Maeda, Tsuyoshi Mita
   Precis. Chem. **2024**, *2*, 88–95.



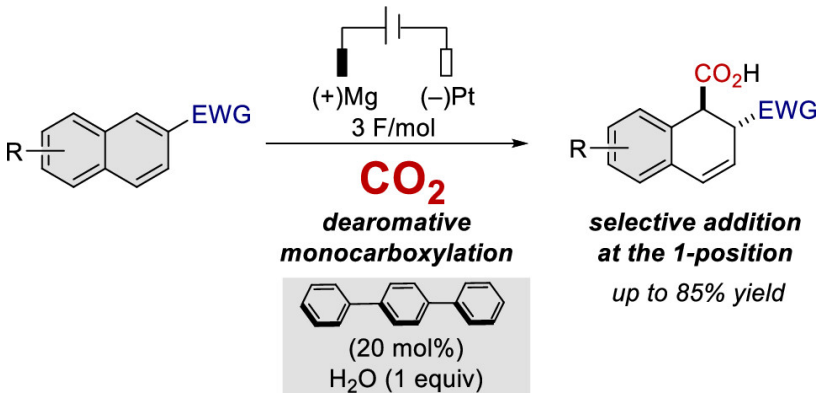
4. "*Oxidation and Reduction Pathways in the Knowles Hydroamination via a Photoredox-Catalyzed Radical Reaction*"
   Yu Harabuchi, **Hiroki Hayashi**, Hideaki Takano, Satoshi Maeda, Tsuyoshi Mita
   Angew. Chem. Int. Ed. **2023**, *62*, e202211936.



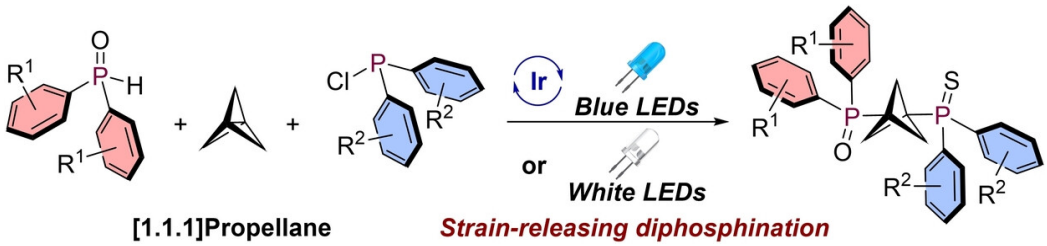
5. "*Photoredox/HAT-Catalyzed Dearomative Nucleophilic Addition of the CO_2 Radical Anion to (Hetero)Aromatics*"
   Saeesh R. Mangaonkar, **Hiroki Hayashi**, Hideaki Takano, Wataru Kanna, Satoshi Maeda, Tsuyoshi Mita
   ACS Catal. **2023**, *13*, 2482–2488.



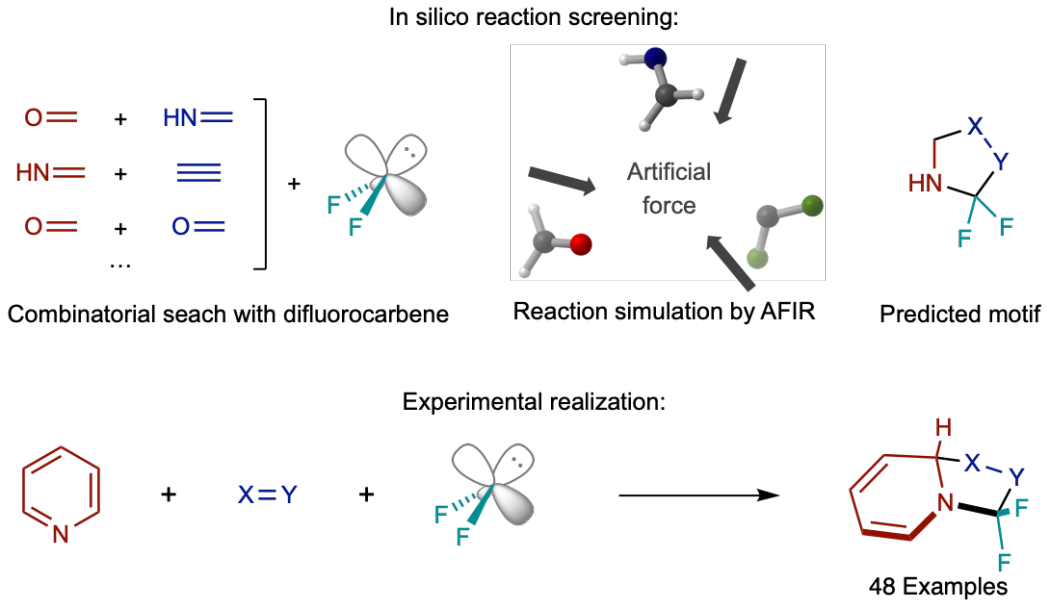
6. "*Revisiting the Electrochemical Carboxylation of Naphthalene with CO_2: Selective Monocarboxylation of 2-Substituted Naphthalenes*"
   Vishal Kumar Rawat, **Hiroki Hayashi**, Hitomi Katsuyama, Saeesh R. Mangaonkar, Tsuyoshi Mita
   Org. Lett. **2023**, *25*, 4231–4235.



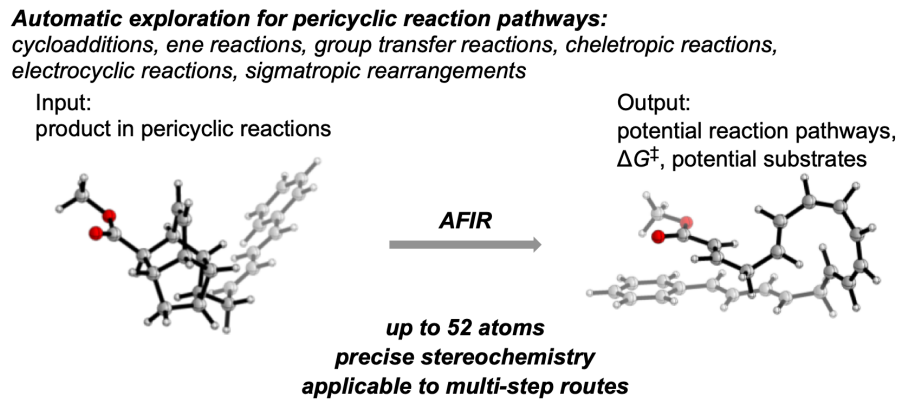
7. "*Synthesis of Bicyclo[1.1.1]pentane (BCP)-Based Straight-Shaped Diphosphine Ligands*"
Hideaki Takano, Hitomi Katsuyama, **Hiroki Hayashi**, Miyu Harukawa, Makoto Tsurui, Sunao Shoji, Yasuchika Hasegawa, Satoshi Maeda, Tsuyoshi Mita
Angew. Chem. Int. Ed. **2023**, *62*, e202303435.



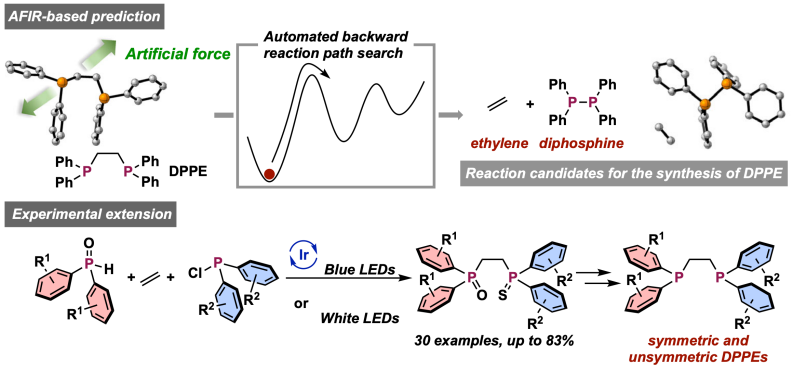
8. "*In Silico Reaction Screening with Difluorocarbene for N-difluoroalkylative Dearomatization of Pyridines*"
Hiroki Hayashi, Hitomi Katsuyama, Hideaki Takano, Yu Harabuchi, Satoshi Maeda, Tsuyoshi Mita
Nat. Synth. **2022**, *1*, 804–812.



9. "*Prediction of High-Yielding Single-Step or Cascade Pericyclic Reactions for the Synthesis of Complex Synthetic Targets*"
   Tsuyoshi Mita, Hideaki Takano, **Hiroki Hayashi**, Wataru Kanna, Yu Harabuchi, Kendall, Houk. Satoshi Maeda
   J. Am. Chem. Soc. **2022**, *144*, 22985–23000.



10. "*A Theory-driven Synthesis of Symmetric and Unsymmetric 1,2-Bis(diphenylphosphino) ethane Analogues via Radical Difunctionalization of Ethylene*"
    Hideaki Takano, Hitomi Katsuyama, **Hiroki Hayashi**, Wataru Kanna, Yu Harabuchi, Satoshi Maeda, Tsuyoshi Mita
    Nat. Commun. **2022**, *13*, 7034.



11. "*Electrochemical Dearomative Dicarboxylation of Heterocycles with Highly Negative Reduction Potentials*"
Yong You, Wataru Kanna, Hideaki Takano, **Hiroki Hayashi**, Satoshi Maeda, Tsuyoshi Mita
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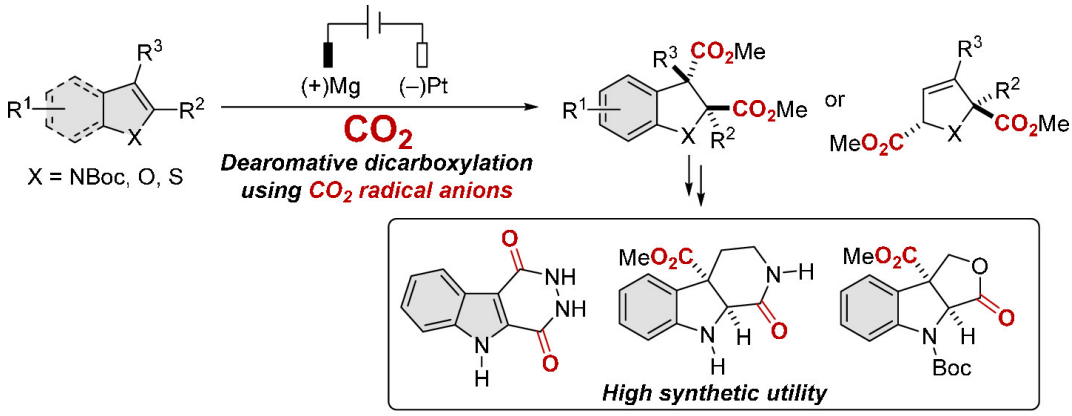
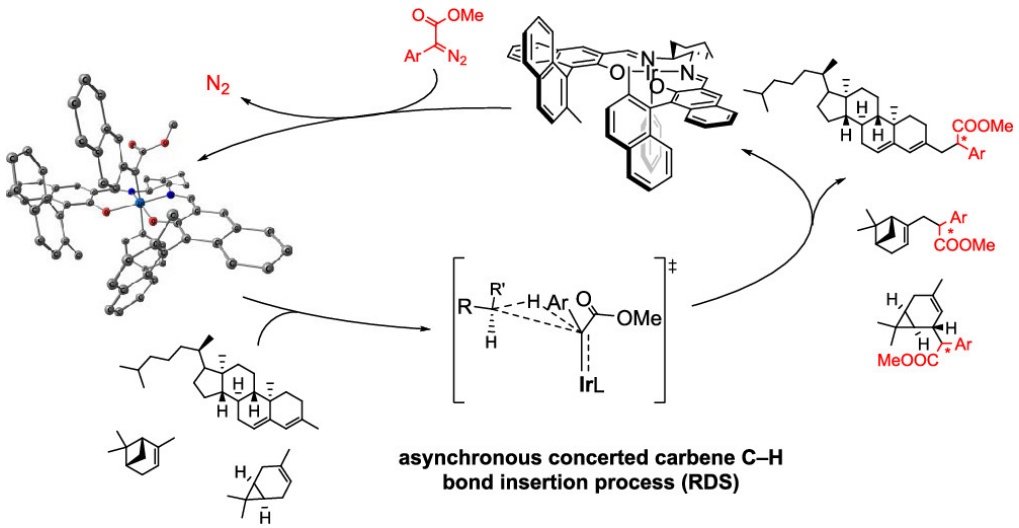


12. "*Iridium(III)-Catalyzed Asymmetric Site-Selective Carbene C–H Insertion during Late-Stage Transformation*"
Yuki Yamakawa, Takashi Ikuta, **Hiroki Hayashi**, Keigo Hashimoto, Ryoma Fujii, Kyohei Kawashima, Seiji Mori, Tatsuya Uchida, Tsutomu Katsuki
J. Org. Chem. **2022**, *87*, 6769–6780.



13. "*Synthesis of Difluoroglycine Derivatives from Amines, Difluorocarbene, and CO_2: Computational Design, Scope, and Applications*"
Hiroki Hayashi, Hideaki Takano, Hitomi Katsuyama, Yu Harabuchi, Satoshi Maeda, Tsuyoshi Mita
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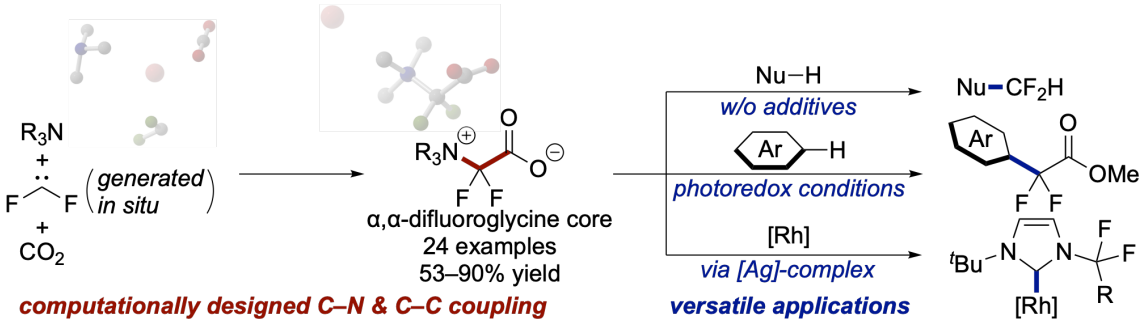
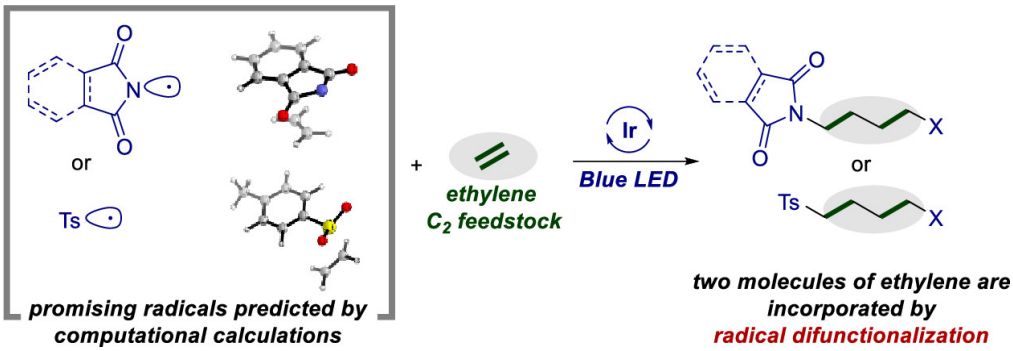
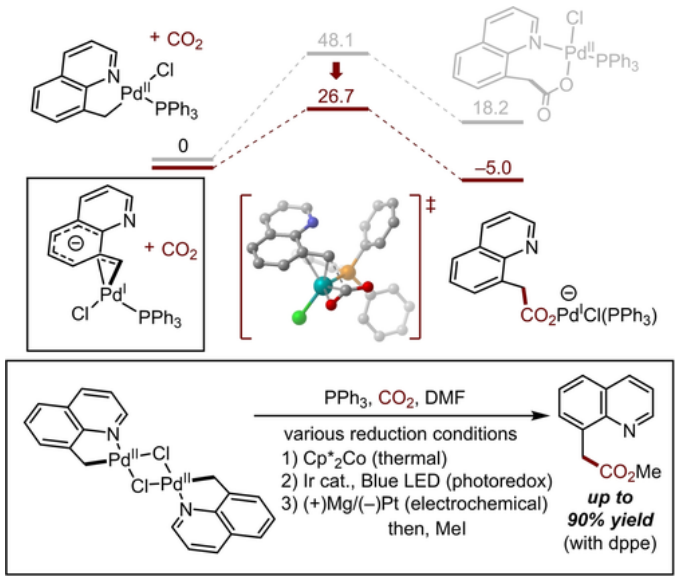


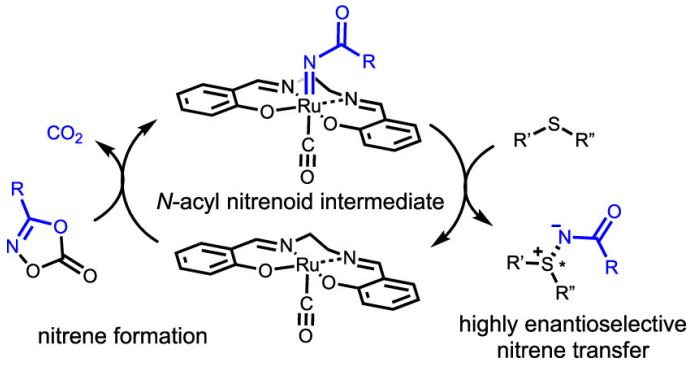
14. "*Radical Difunctionalization of Gaseous Ethylene Guided by Quantum Chemical Calculations: Selective Incorporation of Two Molecules of Ethylene*"
Hideaki Takano, Yong You, **Hiroki Hayashi**, Yu Harabuchi, Satoshi Maeda, Tsuyoshi Mita
ACS Omega. **2021**, *6*, 33846–33854.



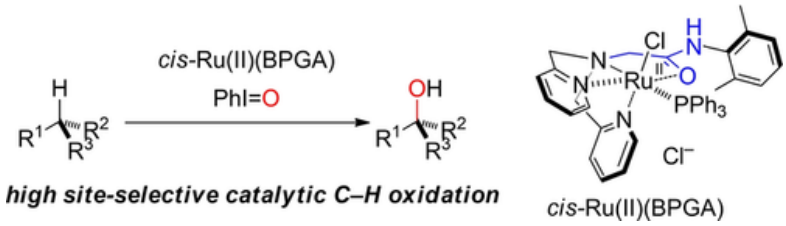
15. "*Carboxylation of a Palladacycle Formed via C(sp3)–H Activation: Theory-Driven Reaction Design*"
Wataru Kanna, Yu Harabuchi, Hideaki Takano, **Hiroki Hayashi**, Satoshi Maeda, Tsuyoshi Mita
Chem. Asian J. **2021**, *16*, 4072–4080.



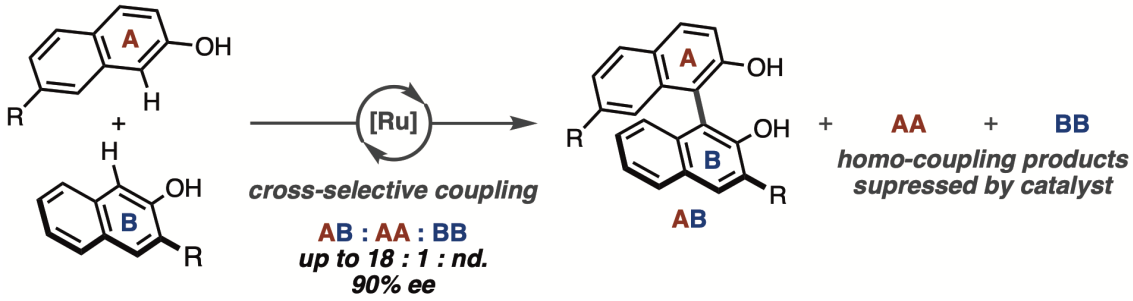
16. "*Ruthenium-Catalyzed Asymmetric N-Acyl Nitrene Transfer Reaction: Imidation of Sulfide*"
Masaki Yoshitake, **Hiroki Hayashi**, Tatsuya Uchida
Org. Lett. **2020**, *22*, 4021–4025.



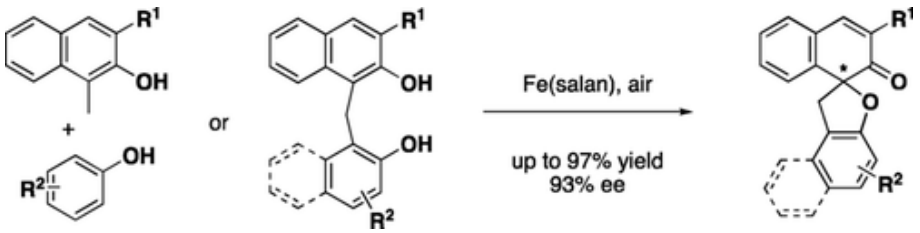
17. "*Non-Heme-Type Ruthenium Catalyzed Chemo- and Site-Selective C–H Oxidation*"
Daiki Doiuchi, Tatsuya Nakamura, **Hiroki Hayashi**, Tatsuya Uchida
Chem. Asian J. **2020**, *15*, 762–765.



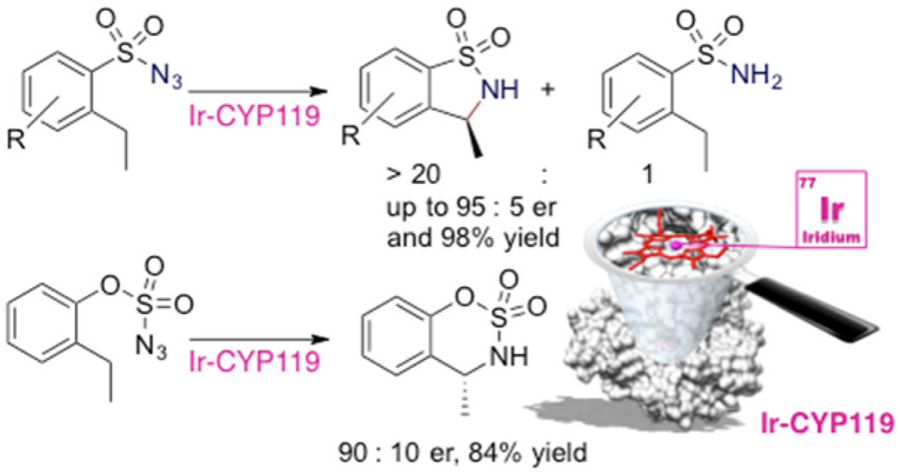
18. "*Ruthenium-Catalyzed Cross-Selective Asymmetric Oxidative Cross-Coupling of Arenols*"
Hiroki Hayashi, Takamasa Ueno, Chungsik Kim, Tatsuya Uchida
Org. Lett. **2020**, *22*, 1469–1474.



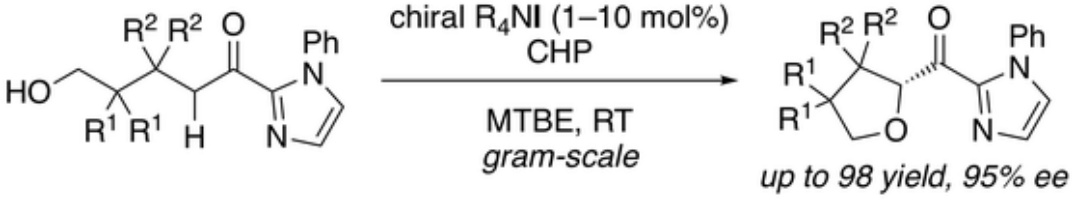
19. "*Iron-Catalyzed Asymmetric Inter- and Intramolecular Aerobic Oxidative Dearomatizing Spirocyclization of 2-Naphthols*"
Takuya Oguma, Daiki Doiuchi, Chisaki Fujitomo, Chungsik Kim, **Hiroki Hayashi**, Tatsuya Uchida, Tsutomu Katsuki
Asian J. Org. Chem. **2019**, *9*, 404–415.



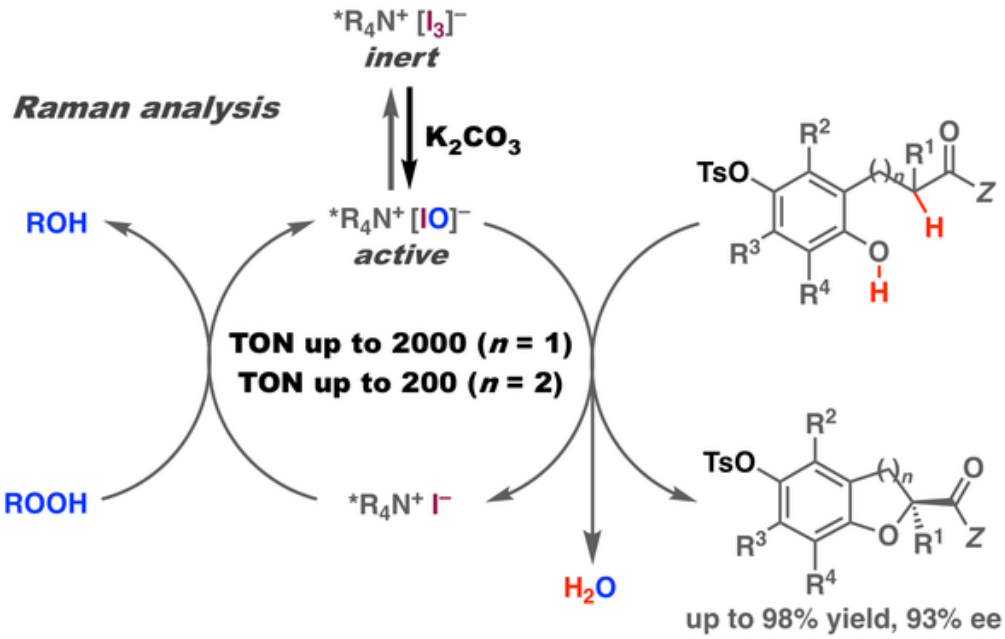
20. "*Chemoselective, Enzymatic C–H Bond Amination Catalyzed by a Cytochrome P450 Containing an Ir(Me)-PIX Cofactor*"
Paweł Dydio, Hanna M. Key, **Hiroki Hayashi**, Douglas S. Clark, John F. Hartwig
J. Am. Chem. Soc. **2017**, *139*, 1750–1753.



21. "*Chiral Ammonium Hypoiodite Salt-Catalyzed Enantioselective Oxidative Cycloetherification to 2-Acyl Tetrahydrofurans*"
Muhammet Uyanik, **Hiroki Hayashi**, Hirokazu Iwata, Kazuaki Ishihara
Chem. Lett. **2016**, *45*, 353–355.

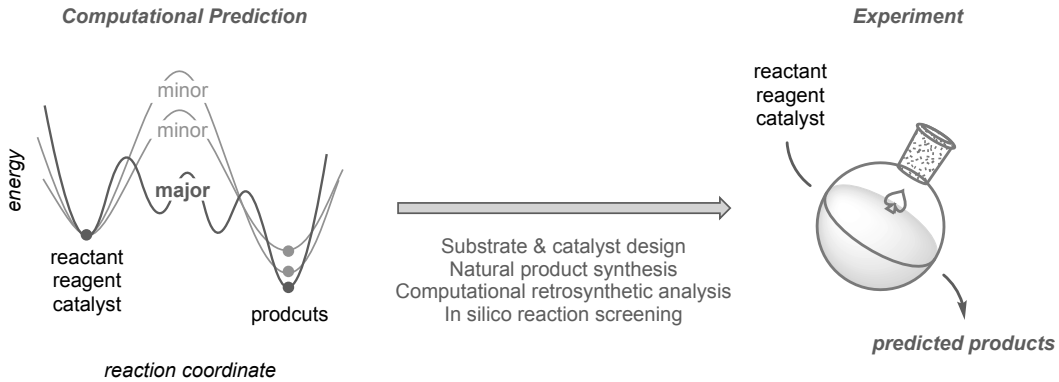


22. "*High-Turnover Hypoiodite Catalysis for Asymmetric Synthesis of Tocopherols*"
Muhammet Uyanik, **Hiroki Hayashi**, Kazuaki Ishihara
Science **2014**, *345*, 291–294.

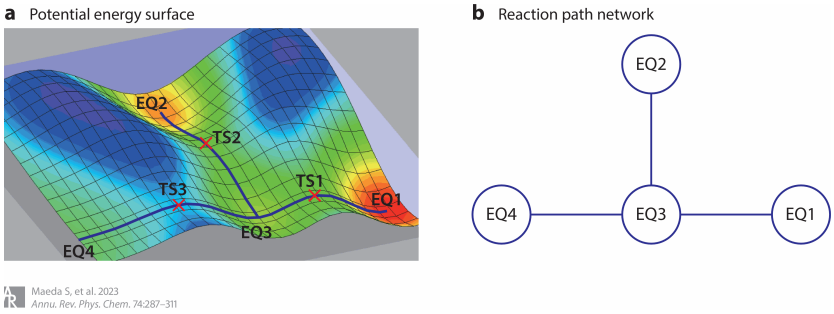


Review:

23. "*Quantum Chemical Calculations for Reaction Prediction in the Development of Synthetic Methodologies*"
Hiroki Hayashi, Satoshi Maeda, Tsuyoshi Mita
Chem. Sci. **2023**, *14*, 11601–11616.



24. "*Toward Ab Initio Reaction Discovery Using the Artificial Force Induced Reaction Method*"
Satoshi Maeda, Yu Harabuchi, **Hiroki Hayashi**, Tsuyoshi Mita
Ann. Rev. Phys. Chem. **2022**, *74*, 287–311.



25. "*Nitrene Transfer Reactions for Asymmetric C–H Amination: Recent Development*"
Hiroki Hayashi, Tatsuya Uchida
Eur. J. Org. Chem. **2020**, *8*, 909–916.