

# Curriculum Vitae

October 4, 2025

## Dr. Mingoo Jin

Associate Professor (PI)

Hokkaido University

WPI-ICReDD, List platform

JST FOREST Researcher

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## Introduction

Mingoo Jin is an Associate Professor at WPI-ICReDD Hokkaido University. He got a Ph.D. under supervising from Professor Hajime Ito from Hokkaido University. His Ph.D. research subject was “Development of Novel Luminescent Crystalline Materials of Gold(I) Complexes with Stimuli-Responsive Properties”. After his graduation, He joined as postdoctoral researcher in Professor Miguel A. Garcia-Garibay Laboratory, University of California Los Angeles, and investigated luminescent functional materials based on amphidynamic crystals. Recently, His research has been focused on developing a new material platform toward crystalline molecular machines and novel hybrid materials between crystals and polymers with functional properties. His research interests are Organometallic Chemistry, Coordination Chemistry, Polymer Chemistry, Computational Chemistry and Luminescent Solid-State Materials.

## Professional Experiences

1. 09/2016 – 12/2016:

Visiting Graduate Researcher: Professor Miguel A. Garcia-Garibay Lab.

Department of Chemistry & Biochemistry, University of California Los Angeles, Los Angeles, USA.

2. 04/2017 – 03/2019:

*Research Fellow for Young Scientists of JSPS (DC2).*

3. 01/2018 – 07/2018:

Visiting Graduate Researcher: Professor Miguel A. Garcia-Garibay Lab.

Department of Chemistry & Biochemistry, University of California Los Angeles, Los Angeles, USA.

4. 11/2018 – 03/2019:

JSPS Postdoctoral Researcher Fellow

Supervisor: Professor Miguel A. Garcia-Garibay

Department of Chemistry & Biochemistry, University of California Los Angeles, Los Angeles, USA.

5. 04/2019 – 01/2022:

Specially Appointed Assistant Professor (Hajime Ito Group)

WPI-ICReDD, Hokkaido University, Sapporo, Japan

6. 02/2022 – recent:

Associate Professor (PI)

WPI-ICReDD, Hokkaido University, Sapporo, Japan

7. 04/2024 – recent:

Associate Professor (PI)

List-Platform, Hokkaido University, Sapporo, Japan

## **Education**

04/2010 – 03/2014:

Bachelor of Engineering

Division of Applied Chemistry, Hokkaido University, Sapporo, Japan

04/2014 – 03/2016:

Master course of Chemical Sciences and Engineering

Organoelement Chemistry Laboratory

(Professor Hajime Ito)

Graduate School of Chemical Sciences and Engineering, Hokkaido University

04/2016 – 09/2018:

Ph.D program of Chemical Sciences and Engineering

Organoelement Chemistry Laboratory

(Professor Hajime Ito)

Graduate School of Chemical Sciences and Engineering, Hokkaido University

## Publications

-Scientific Journals-

(\* indicating corresponding author)

After Faculty of ICR<sub>e</sub>DD in Hokkaido University

[38] Design of Molecular Crystals toward Crystalline Molecular Machines: Rotors, Gears, and Motors

Jiang, P.; **Jin, M.\*** *ACS Nanosci. Au* **2025**, *in press*

[37] Rotational Dynamics in Crystalline Molecular Machines: A Novel Paradigm for Tuning Solid-State Photophysical Properties

Tomita, R.; Jiang, P.; **Jin, M.\*** *Chem. Phys. Rev.* **2025**, *6*, 031304.

[36] Computational Exploration of Polymer Mechanochemistry: Quantitation of Activation Force and Systematic Discovery of Reaction Sites by the Extended Artificial Force-Induced Reaction Method

Jiang, J.\*; Kubota, K.; Harabuchi, Y.; **Jin, M.**; Wang, Z.J.; Nakajima, T.; Ito, H.; Gong, J.P.; Maeda, S.\* *J. Am. Chem. Soc.* **2025**, *147*, 32502–32521.

[35] Homoleptic copper(i)–bisphosphine complexes as photoredox catalysts

Saha, P.; Tomita, R.; Tsuneda, T.; Jiang, P.; Taketsugu, T.; **Jin, M.**; Huang, D.\*

*Dalton Trans.* **2025**, *54*, 11725–11731.

[34] Construction of sterically bent  $\pi$ -conjugated arylene by implanting into bulky NHC Cu(I) coordination polymers in crystalline media

Tomita, R.; **Jin, M.\*** *CrystEngComm.* **2025**, *27*, 5618–5624.

[33] Achieving Chiral Crystallization through Tailored Silyl-Substituted Dipolar Molecular Designs

Natsumi, H.; Yonezawa, T.; Ito, H.\*; **Jin, M.\*** *Cryst. Growth. Des.* **2025**, *25*, 4725–4731.

[32] Optical Waveguiding Charge-Transfer Cocrystals: Examining the Impact of Molecular Rotations on Their Photoluminescence

Navarro-Huerta, A.; Matsuo, T.; Mikherdov, A.S.; Blahut, J.; Bartůňková, E.; Jiang, P.;

Dračínský, M.; Teat, S.; [Jin, M.\\*](#); Hayashi, S.\*; Rodríguez-Molina, B.\*

*J. Am. Chem. Soc.* **2025**, *147*, 8343–8349.

[31] Defluorinative C–O Coupling between Trifluoromethylarenes and Alcohols via Copper Photoredox Catalysis

Saha, P.; [Jin, M.](#); Huang, D. C.-Y.\* *Angew. Chem. Int. Ed.* **2025**, *64*, e202419591

[30] Solid-State Aromatic Nucleophilic Fluorination: A Rapid, Practical, and Environmentally Friendly Route to N-Heteroaryl Fluorides

Kubota, K.\*; Makino, T.; Kondo, K.; [Jin, M.](#); Ito, H.\* *Green Chem.* **2025**, *27*, 1771–1776.

[29] Learning Inducing Points and Uncertainty on Molecular Data by Scalable Variational Gaussian Processes

Tsitsvero, M.\*; [Jin, M.](#); Lyalin, A. *SIAM/ASA J. UNCERTAINTY QUANTIFICATION* **2025**, *13*, 10.1137/23M1549584.

[28] Encasing Triaryltriazine with a Bulky Chiral Cap: Luminescent Chiral Crystalline Molecular Rotors with Modulation of Solid-State Chiroptical Properties Mediated by Molecular Rotation

Kim, N.; Jiang, P.; Tomita, R.; Sato-Tomita, A.; Mikherdov, A.S.; Kim, B.S.; [Jin, M.\\*](#) *J. Am. Chem. Soc.* **2024**, *146*, 31062–31073.

[27] Solid-state Dynamics of Binuclear N-Heterocyclic Carbene Au(I) Rotor with para-Phenylene Rotator

Jiang, P.; Mikherdov, A. S.; Ito, H.\*; [Jin, M.\\*](#) *Chem. Lett.* **2024**, *53*, upae139.

[26] Crystallization-Induced Chirality Transfer in Conformationally Flexible Azahelicene Au(I) Complexes with Circularly Polarized Luminescence Activation

Jiang, P.; Mikherdov, A.S.; Ito, H.\*; [Jin, M.\\*](#) *J. Am. Chem. Soc.* **2024**, *146*, 12463–12472.

[25] Pitched  $\pi$ -Stacking Crystal Structure and Two-Dimensional Electronic Structure of Acenaphtho[1,2-k]fluoranthene Analogues with Various Substituents

Yuki, T.; Yokokura, S.\*; [Jin, M.](#); Waizumi, H.; Nagahama, T.; Shimada, T.: *Crystal Growth & Design* **2024**, *24*, 1849–1856.

[24] A Steric-Repulsion-Driven Clutch Stack of Triaryltriazines: Correlated Molecular

Rotations and a Thermo-Responsive Gear-shift in the Crystalline Solid

[Jin, M.\\*](#); Kitsu, R.; Hammyo, N.; Sato-Tomita, A.; Mizuno, M.; Mikherdov, A.; Tsitsvero, M.; Lyalin, A.; Taketsugu, T.; Ito, H.\* *J. Am. Chem. Soc.* **2023**, *145*, 27512–27520.

[23] Single Crystal Growth of Cyclopenta-Fused Polycyclic Aromatic Hydrocarbon by the Naphthalene Flux Method: 2D Ambipolar Charge Transport Properties and NIR Absorption

Tanoguchi, H.; Yuki, T.; Yokokura, S.\*; Yanase, T.; [Jin, M.](#); Ito, H.; Nagahama, T.; Shimada, T.\* *ACS Appl. Electron. Mater.* **2023**, *5*, 6266–6274.

[22] Giant Crystalline Molecular Rotors that Operate in the Solid State

Ando, R.; Sato-Tomita, A.; Ito, H.\*; [Jin, M.\\*](#) *Angew. Chem. Int. Ed.* **2023**, *135*, e202309694.

[21] Solid-state mechanochemical cross-coupling of insoluble substrates into insoluble products by removable solubilizing silyl groups: Uniform synthesis of nonsubstituted linear oligothiophenes

Kubota, K.\*; Kondo, K.; Seo, T.; [Jin, M.](#); Ito, H.\* *RSC Adv.* **2023**, *13*, 28652–28657.

[20] Construction of helical structure with parallel alignment of molecular dipoles in crystals by utilizing halogen-3 synthon and bulky silyl spacer

Hammyo, N.; [Jin, M.\\*](#); Ito, H.\* *Crystal Growth & Design.* **2023**, *23*, 4514–4521.

[19] Exploring Au(I) Involving Halogen Bonding with N-Heterocyclic Carbene Au(I) Aryl Complexes in Crystalline Media

Mikherdov, A. S.; [Jin, M.\\*](#); Ito, H.\* *Chem. Sci.* **2023**, *14*, 4485–4494.

[18] In Situ and Real-Time Visualization of Mechanochemical Damage in Double-Network Hydrogels by Prefluorescent Probe via Oxygen-Relayed Radical Trapping

Zheng, Y.; Jiang, J.; [Jin, M.\\*](#); Miura, D.; Lu, F. X.; Kubota, K.; Nakajima, T.; Maeda, S.\*; Ito, H.\*; Gong, J. P.\* *J. Am. Chem. Soc.* **2023**, *145*, 7376–7389.

[17] Multidynamic Crystalline Molecular Rotors Comprising an N-Heterocyclic Carbene Binuclear Au(I) Complex Bearing Multiple Rotators

[Jin, M.\\*](#); Matsuura, S.; Yamamoto, H.; Mizuno, M.; Ito, H.\* *Eur. J. Org. Chem.* **2023**, *26*,

e202201468.

[16] Solid-state luminescence of Au(I) complexes with external stimuli-responsive properties.

**Jin, M.\***; Ito, H.\* *Journal of Photochemistry and Photobiology C: Photochemistry Reviews* **2022**, *51*, 100478.

[15] Distinct Fold-Mode Formation of Crystalline Cu(I) Helical Coordination Polymers with Alternation of the Solid-State Emission Using Shape of the Counter Anions

**Jin, M.\***; Ando, R.; Ito, H.\* *Inorg. Chem.* **2022**, *61*, 3–9.

[14] Encapsulating N-Heterocyclic Carbene Binuclear Transition-Metal Complexes as a New Platform for Molecular Rotation in Crystalline Solid-State.

**Jin, M.\***; Ando, R.; Jellen, M. J.; Garcia-Garibay, M. A.; Ito, H.\* *J. Am. Chem. Soc.* **2021**, *143*, 1144–1153.

[13] Introduction of a Luminophore into Generic Polymers via Mechanoradical Coupling with a Prefluorescent Reagent.

Kubota, K.\*; Toyoshima, N.; Miura, D.; Jiang, J.; Maeda, S.; **Jin, M.\***; Ito, H.\* *Angew. Chem. Int. Ed.* **2021**, *60*, 16003–16008.

[12] Charge-Transfer Crystal with Segregated Packing Structure Constructed with Hexaarylbenzene and Tetracyanoquinodimethane.

Ando, R.; **Jin, M.\***; Ito, H.\* *CrystEngComm.* **2021**, *23*, 5564–5568.

[11] Single Crystal Growth of  $\pi$ -Conjugated Large Molecules without Solubilizing Alkyl Chains via Naphthalene Flux Method.

Yanase, T.\*; Tanoguchi, H.; Sakai, N.; **Jin, M.**; Yamane, I.; Kato, M.; Ito, H.; Nagahama, T.; Shimada, T. *Cryst. Growth. Des.* **2021**, *21*, 4683–4689.

#### During Postdoctoral researcher (UCLA)

[10] Enhanced Gearing Fidelity Achieved Through Macrocyclization of a Solvated Molecular Spur Gear.

Jellen, M.#; Liepuoniute, I.#; **Jin, M.**; Jones, C.; Yang, S.; Jiang, X.; Nelson, H.\*; Houk, K.\*; Garcia-Garibay, M.\* *J. Am. Chem. Soc.* **2021**, *143*, 7740–7747.  
(#: equally contributed authors)

[9] Anisotropic Thermal Expansion as the Source of Macroscopic and Molecular Scale Motion in Phosphorescent Amphidynamic Crystals.

**Jin, M.**; Yamamoto, S.; Seki, T.; Ito, H.\*; Garcia-Garibay, M.A.\* *Angew. Chem. Int. Ed.*, **2019**, *58*, 18003–18010.

*During Ph.D study (Hokkaido University)*

[8] Mechanical-Stimulation-Triggered and Solvent-Vapor-Induced Reverse Single-Crystal-to-Single-Crystal Phase Transitions with Alterations of the Luminescence Color.

**Jin, M.**; Sumitani, T.; Sato, H.; Seki, T.\*; Ito, H.\* *J. Am. Chem. Soc.* **2018**, *140*, 2875–2879.

[7] Phosphorescence Control Mediated by Molecular Rotation and Auophilic Interactions in Amphidynamic Crystals of 1,4-Bis[tri-(*p*-fluorophenyl)phosphane-gold(I)-ethynyl]benzene.

**Jin, M.**; Chung, T. J.; Seki, T.; Ito, H.\*; Garcia-Garibay, M. A.\* *J. Am. Chem. Soc.* **2017**, *139*, 18115–18121.

[6] Mechano-Responsive Luminescence via Crystal-to-Crystal Phase Transitions between Chiral and Non-Chiral Space Groups.

**Jin, M.**; Seki, T.\*; Ito, H.\* *J. Am. Chem. Soc.* **2017**, *139*, 7452–7455.

[5] Luminescent mechanochromism of a chiral complex: Distinct crystal structure and color changes of racemic and homochiral gold(I) isocyanide complexes with a binaphthyl moiety.

**Jin, M.**; Seki, T.\*; Ito, H.\* *Chem. Commun.* **2016**, *52*, 8083–8086.

[4] Copper(I)-Catalyzed Enantioselective Nucleophilic Borylation of Ketones: Synthesis of Enantioenriched Chiral Tertiary alpha-Hydroxyboronates.

Kubota, K.; Osaki, S.; **Jin, M.**; Ito, H.\* *Angew. Chem. Int. Ed.* **2017**, *56*, 6646–6650.

[3] Introduction of a Biphenyl Moiety for a Solvent Responsive Aryl Gold(I) Isocyanide Complex with Mechanical Reactivation

Seki, T.\*; **Jin, M.**; Ito, H.\* *Inorg. Chem.* **2016**, *55*, 12309–12320.

[2] Computational Insight into the Enantioselective Nucleophilic Borylation of a Polarized C=O Double Bond Catalyzed by Di-phosphine-Borylcopper(I) Complexes

Kubota, K.; **Jin, M.**; Ito, H.\* *Organometallics* **2016**, *35*, 1376–1383.

[1] Synthesis of water-soluble polyisocyanates with the oligo(ethylene glycol) side-chain as new thermoresponsive polymers

Sakai, N.; **Jin, M.**; Sato, S.; Satoh, T.; Kakuchi, T.\* *Polym. Chem.* **2014**, *5*, 1057–1062.

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[1] Novel Luminescent Crystalline Materials of Gold(I) Complexes with Stimuli-Responsive Properties.

**Jin, M.** *Springer Nature* **2020**. (2019 Springer Theses Awards)

(eBook) DOI: <https://doi.org/10.1007/978-981-15-4063-9>

**Selected Invited Lectures at Conferences / Symposium / University**

- (1) The International Chemical Congress of Pacific Basin Societies 2025 (Pacifichem)、2025年12月19日、Hawaii, USA, 「Development of crystalline molecular gears and novel functions」
- (2) KCS Annual Meeting in Fall 2025、2025年10月23日、Changwon, South Korea 「Development of Crystalline Molecular Machines via Transition Metal Complexes and the Photo-Functions」
- (3) 26<sup>th</sup> International Conference on the Chemistry of the Organic Solid State (ICCOSS)、2025年7月15日、Cancun, Mexico, 「Development of Crystalline Chiral Molecular Rotors: Impact of Molecular Rotation to Solid-state Chiroptical Properties」
- (4) ACS National Meeting in Fall 2024、2024年8月20日、Denver, USA 「Design of Molecular Gears Operating in Crystalline Solid」
- (5) 2024 Telluride Science Workshop “Molecular Rotors, Motors & Switch” 2024年8月13日、Telluride, USA, 「Design of Crystalline Molecular Gears」
- (6) The 20th Japan-Korea Joint Symposium on Organometallic and Coordination Chemistry, 2024年10月30日, Sendai, Japan 「Design of Crystalline Molecular Gears and the Novel Optical Functions」
- (7) 26th Congress and General Assembly of the International Union of Crystallography (IUCr 2023)、2023年8月27日、Melbourne, Australia 「Design of molecular correlated motions in crystals by utilizing intermolecular cross-stacked packing manner of triaryltriazine derivatives」
- (8) TU Dortmund University、2025年7月10日、Dortmund, Germany 「Development of crystalline molecular rotors & gears toward fine-modulation of solid-state photophysical properties」
- (9) South China University of Technology、2025年7月23日、Guangzhou, China 「Crystalline Molecular Rotors & Gears: From the molecular design to application for solid-state photophysical functions」

- (10) Seoul National University、2025年1月2日、Seoul, South Korea  
「Development of crystalline molecular rotors & gears toward fine-modulation of solid-state photophysical properties」
- (11) Yonsei University、2025年1月3日、Seoul, South Korea  
「Development of crystalline molecular rotors & gears toward fine-modulation of solid-state photophysical properties」
- (12) NASA JPL、2024年8月22日、Pasadena, USA  
「Design of Molecular Rotations in Crystalline Media with Solid-state Functions」
- (13) POSTECH、2023年6月2日、Pohang, South Korea  
「Design of Molecular Rotations in Crystalline Media with Solid-state Functions」

## **Scholarships / Academic and Research Awards**

1. Government Scholarship for Science and Engineering (Japan and South Korea) 09/2009 – 03/2014
2. Government Scholarship: Hokkaido University Ambitious Leader's Program (Japan)
3. Best Poster Presentation Award, Hokkaido University-University of California, Berkeley Joint Symposium on Chemical Sciences and Engineering, 2016
4. Best Oral Presentation Award, National Taiwan University-Hokkaido University Joint Materials Science Workshop, 2015
5. Best Poster Presentation Award, 5<sup>th</sup> Chemistry Festa of Chemical Society of Japan (CSJ), 2015
6. Best Oral Presentation Award, CSJ Annual Meeting 2017 (presented in English)
7. Best Oral Presentation Award, Annual Meeting on Photochemistry 2017 (presented in English)
8. Student Lectureship Award, Annual Meeting on Japan Society of Coordination Chemistry 2017 (presented in English)
9. Research Fellowships for Young Scientists, Japan Society for the Promotion of Science (JSPS research fellow DC2), 2017.4–2018.9.
10. Postdoctoral Research Fellow, Japan Society for the Promotion of Science (JSPS), 2018.10–2019.3
11. 2018 Otsu Meeting Award Fellow, MSD Otsu Conference, 2018. 10

12. 2019 Springer Theses Award, Springer Nature, 2019. 12
13. Inoue Research Award for Young Scientists, Inoue Foundation for Science, 2019. 12
14. ACS Au Journal 2025 Rising Star Award in Nanoscience, ACS, 2025. 4

## Grants / Funding

1. The Japan Society for the Promotion of Science (JSPS) via KAKENHI grants; 基版研究B (25K00073) 2025.4 – 2028.3
2. JST FOREST; 創発的研究支援事業 (JPMJFR232C) 2024.10 – 2031. 03
3. The Japan Society for the Promotion of Science (JSPS) via KAKENHI grants; 若手研究 (21K14637) 2021.4 – 2023.3
4. The Japan Society for the Promotion of Science (JSPS) via KAKENHI grants; 研究活動スタート支援 (19K23618) 2019.8 – 2021.3

## References

- |  |   |
|--|---|
| 1. Professor Miguel A. Garcia-Garibay<br>email: <a href="mailto:mgg@chem.ucla.edu">mgg@chem.ucla.edu</a> | University of California Los Angeles<br>Tel: +1 310 825 3159    |
| 2. Professor Hajime Ito<br>email: <a href="mailto:hajito@eng.hokudai.ac.jp">hajito@eng.hokudai.ac.jp</a> | Hokkaido University<br>Tel: +81 10 706 6561                     |
| 3. Professor Benjamin List<br>email: <a href="mailto:list@kofo.mpg.de">list@kofo.mpg.de</a>              | Max Planck Institute for Coal Research<br>Tel: +49 208 306 2411 |
| 4. Professor Hosea Nelson<br>email: <a href="mailto:hosea@caltech.edu">hosea@caltech.edu</a>             | Caltech<br>Tel: +1 510 375 7866                                 |
| 5. Professor Jian Ping Gong<br>email: <a href="mailto:gong@sci.hokudai.ac.jp">gong@sci.hokudai.ac.jp</a> | Hokkaido University<br>Tel: +81-11-706-9011                     |