

Curriculum Vitae

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Dr. Mingoo Jin

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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 novel platform toward crystalline molecular gears 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) & Joint Professor to Hajime Ito Group
WPI-ICReDD, 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)

[25] 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.

[24] 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.

[23] 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.

[22] 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.

[21] 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.

[20] 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.

[19] 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.

[18] 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.

[17] 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.

[16] 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.

[15] 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.

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

Ando, R.; [Jin, M.*](#); Ito, H.* *CrystEngComm.* **2021**, *23*, 5564–5568.

[13] Single Crystal Growth of π -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.

[12] 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)

[11] 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.

[10] 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.

[9] 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.

[8] 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.

[7] 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.

[6] 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.

[5] 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.

[4] 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.

[3] 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.

-Reviews & Perspective-

[2] 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.

-Books-

[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>

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, 5th 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

Grants / Funding

1. The Japan Society for the Promotion of Science (JSPS) via KAKENHI grants; 若手研究 (21K14637) 2021.4 – 2023.3
2. 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
3. The Japan Society for the Promotion of Science (JSPS) via KAKENHI grants; 特別研究員奨励費 (17J01104) 2017.4 – 2019.3

References

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