

Jiyeon Kim, Ph.D.

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Research Interests

Metal-Organic Materials, Covalent Organic Frameworks, Data-Driven Discovery, Topology Database, Materials Design, Reticular Chemistry, Multivariate System, Quasiperiodicity, Photophysical Property, Electrocatalysis

Professional Appointments

Postdoctoral Researcher Apr 2025 – present
Nanochemistry Department, Max Planck Institute for Solid State Research (MPI-FKF)
Advisor: Prof. Bettina Lotsch

Postdoctoral Researcher Mar 2024 – Mar 2025
Department of Chemistry, Ulsan National Institute of Science and Technology (UNIST)
Advisor: Prof. Wonyoung Choe

Education

Combined M.S. & Ph.D. in Chemistry Feb 2024
Ulsan National Institute of Science and Technology (UNIST)
Advisor: Prof. Wonyoung Choe
YEBONG Best Research Award

B.S. in Chemistry & Energy Engineering (double major) Feb 2017
Ulsan National Institute of Science and Technology (UNIST)
Magna Cum Laude

Funded Research Projects

- | | |
|---|---------------------|
| 2. Research Fund for Post-Doc Collaboration
Digital Discovery of Porous Materials for Smart Isotope Separation
National Research Foundation (NRF) of Korea (\$450K) | Sep 2024 – Mar 2025 |
| 1. Global Ph.D. Fellowship
Genomic Solids: Beyond the Limitation of Conventional Solids
National Research Foundation (NRF) of Korea (\$125K) | Mar 2018 – Feb 2023 |

Awards & Honors

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| 10. Rising Star Award
Asian Crystallographic Association (AsCA) | 2024 |
| 9. Young Researcher Support Program
The Korean Synchrotron Radiation User's Association | 2024 |
| 8. YEBONG Best Research Award
<i>Awarded to the most outstanding doctoral graduate for excellence in research</i>
Ulsan National Institute of Science and Technology (UNIST) | 2024 |

7.	Talent Award of Korea Ministry of Education (MoE) & Korea Student Aid Foundation (KOSAF)	2022
6.	Outstanding Poster Award Korean Chemical Society (KCS)	2022
5.	Award for Excellent Debater Korean Chemical Society (KCS)	2021
4.	Outstanding Presentation Award Society of Global Ph.D. Fellows	2018
3.	Outstanding Poster Award Korean Chemical Society (KCS) Inorg. Chem. Division	2017
2.	National Science and Engineering Scholarship Korea Student Aid Foundation (KOSAF)	2015 – 2017
1.	Academic Performance Scholarship Korea Student Aid Foundation (KOSAF)	2013 – 2015

Publications

10. **J. Kim**, J. Lee, C. Cho, J. Nam, B. Ji, H. Cho, H. T. Shin, D. Sivanesan, S. S. Park, J. Kim, and W. Choe*
Isorecticular Moiré Metal-Organic Frameworks with Quasiperiodicity
Nat. Commun. **2025**, *16*, 7384.
Featured on Springer Nature Research Communities (<https://go.nature.com/45pejoo>), EurekAlert! (<https://www.eurekalert.org/news-releases/1094493>), Phys.Org (<https://phys.org/news/2025-08-customized-moir-patterns-stacked-metal.html>)
9. E. Hwang,[†] U. Jo,[†] **J. Kim**, D.-H. Roh, S. C. Kim, M. Kim, H.-C. Ki, W. Choe,* J. Y. Lee,* T.-H. Kwon*
Anisotropy-Guided Interface Molecular Engineering for Stable Blue Electroluminescence
Chem **2025**, *11*, 1–14. ([†]equally contributed)
8. S. Shin,[†] H. Kim,[†] J. H. Ha,[†] K. Y. Eun, **J. Kim**, Y. Kim, W. Choe, S. J. Kang,* S. K. Min,* C. W. Bielawski,* Y. S. Park*
Achieving Precise Control Over the Molecular Periphery of Dibenzoixenes Through Modular Synthesis
Chem. Eur. J. **2025**, *31*, e202404189. ([†]equally contributed)
7. **J. Kim**,[†] D. Nam,[†] H. J. Cho,[†] E. Cho, D. Sivanesan, C. Cho, J. Lee, J. Kim, and W. Choe*
Up-Down Approach for Expanding the Chemical Space of Metal-Organic Frameworks
Nat. Synth. **2024**, *3*, 1518–1528. ([†]equally contributed)
Featured on EurekAlert! (<https://www.eurekalert.org/news-releases/1056890>), Phys.Org (<https://phys.org/news/2024-09-strategy-advances-discovery-metal-frameworks.html>)
6. D. Nam, **J. Kim**, W. Choe*
Evolution of Zr Nodes in Metal-Organic Frameworks
Trends Chem. **2023**, *5*, 339–352.
Featured on EurekAlert! (<https://www.eurekalert.org/news-releases/984973>), Phys.Org (<https://phys.org/news/2023-04-discovery-crucial-clue-carbon-neutral-porous.html>)
5. S. Jeong, E. Park, **J. Kim**, S. B. Park, S. H. Kim, W. Choe, J. Kim, Y. S. Park*
Increasing Chemical Diversity of B₂N₂ Anthracene Derivatives by Introducing Continuous Multiple Boron-Nitrogen Units
Angew. Chem. Int. Ed. **2023**, *62*, e202314148.

4. **J. Kim**, W. Choe*
Topology-Guided Roadmap for Reticular Chemistry of Metal-Organic Polyhedra
Chem **2022**, 8, 617–631.
Featured on EurekAlert! (<https://www.eurekalert.org/news-releases/946024>), Phys.Org (<https://phys.org/news/2022-03-roadmap-functional-porous-materials.html>)
3. D. Nam,[†] **J. Kim**,[†] E. Hwang, J. Nam, H. Jeong, T.-H. Kwon,* W. Choe*
Multivariate Porous Platform Based on Metal-Organic Polyhedra with Controllable Functionality Assembly
Matter **2021**, 4, 2460–2473. ([†]equally contributed)
Featured on EurekAlert! (https://www.eurekalert.org/pub_releases/2021-05/unio-sbf052421.php)
2. E. Jin, **J. Kim**, J. Nam, D. C. Yang, H. Jeong, S. Kim, E. Kang, H. J. Cho, W. Choe*
Adsorptive Removal of Industrial Dye by Nanoporous Zr porphyrinic Metal-Organic Framework Microcubes
ACS Appl. Nano Mater. **2021**, 4, 10068–10076. (Selected as a Cover)
1. **J. Kim**, D. Nam, H. Kitagawa, D.-W. Lim,* W. Choe*
Discovery of Zr-Based Metal-Organic Polygon: Unveiling New Design Opportunities in Reticular Chemistry
Nano Res. **2021**, 14, 392–397.
Invited contribution to the Special Issue of "Future Directions of Reticular Chemistry"

Patents

5. W. Choe, **J. Kim**, C. Cho.
Three-Dimensional Mesocrystal Manufactured from Two-Dimensional Materials and the Manufacturing Method
Korean Patent Application No. 10-2024-0136544, **2024**.
4. W. Choe, **J. Kim**, D. Nam, E. Cho, H. J. Cho, C. Cho.
Design Method of Metal-Organic Framework and Metal-Organic Framework
Korean Patent Application No. 10-2024-0125610, **2024**.
3. W. Choe, D. Nam, **J. Kim**.
Mixing Strategies for Multivariate Metal-Organic Polyhedra
Korean Patent (Registered) No. 10-2487855, **2023**.
2. W. Choe, **J. Kim**.
Metal-Organic Structures Having Ditopic Metal Nodes and Manufacturing Method Thereof
Korean Patent (Registered) No. 10-2433346, **2022**.
1. W. Choe, E. Jin, **J. Kim**, J. Nam.
Adsorptive Removal of Organic Dyes on Zr Porphyrinic Metal-Organic Framework
Korean Patent Application No. 10-2020-0128809, **2020**.

Conference Presentations

Oral Presentations

24. 18th Conference of the Asian Crystallographic Association (AsCA), Up-Down Approach for Expanding the Chemical Space of Metal-Organic Frameworks (Kuala Lumpur, Malaysia / Dec 2024) Invited Oral Presentation, **Rising Star Award**
23. 17th Conference of the Asian Crystallographic Association (AsCA), Zr-Based Metal-Organic Polyhedra as Advanced Functional Porous Platform (Jeju, South Korea / Oct 2022)
22. 8th International Conference on Metal-Organic Frameworks & Open Framework Compounds, Zr-Based

Metal-Organic Polyhedra as Advanced Functional Porous Platform (Dresden, Germany / Sep 2022)

21. 8th Society of Global Ph.D. Fellows Annual Conference, Zr-Based Metal-Organic Polyhedra as Multivariate Porous Platforms (Seoul, South Korea / Jan 2022)
20. 7th Society of Global Ph.D. Fellows Annual Conference, Discovery of Zr-Based Metal-Organic Polygon: Unveiling New Design Opportunities in Reticular Chemistry (Online, Nov 2020)
19. 125th General Meeting of the Korean Chemical Society, Discovery of Zr-Based Metal-Organic Polygon: Unveiling New Design Opportunities in Reticular Chemistry (Suwon, South Korea / Jul 2020)
18. 6th Society of Global Ph.D. Fellows Annual Conference, Tuning Spatial Position of Multivariate Zr-Based Metal-Organic Polyhedra (Seoul, South Korea / Nov 2019)
17. American Alliance of Museums, Annual Meeting & Museum Expo, Polyview: A Convergence Project Integrating Science–Culture–Art through Polyhedra (New Orleans, USA / May 2019)
16. 5th Society of Global Ph.D. Fellows Annual Conference, Coloring Metal-Organic Polyhedra (Incheon, South Korea / Nov 2018) **Outstanding Presentation Award**

Poster Presentations

15. Nature Conference – Materials for AI, AI for Materials, Data-Driven Search Algorithm for Discovery of Framework Materials (Daejeon, South Korea / Feb 2025)
14. Joint Symposium of the Korean Chemical Society Yeongnam Region, Up-Down Approach for Expanding the Chemical Space of Metal-Organic Frameworks (Ulsan, South Korea / Aug 2024)
13. 9th International Conference on Metal-Organic Frameworks & Open Framework Compounds, Expanding Chemical Space of Metal-Organic Frameworks via Up-Down Approach (Singapore, Jul 2024)
12. KCS Inorganic Chemistry Division Summer Symposium, Expanding Chemical Space of Metal-Organic Frameworks via Up-Down Approach (Busan, South Korea / Jun 2023)
11. KCS Inorganic Chemistry Division Summer Symposium, Topology-Guided Roadmap for Reticular Chemistry of Metal-Organic Polyhedra (Busan, South Korea / Jun 2022)
10. 129th General Meeting of the Korean Chemical Society, Topology-Guided Roadmap for Reticular Chemistry of Metal-Organic Polyhedra (Jeju, South Korea / Apr 2022) **Outstanding Poster Award**
9. 127th General Meeting of the Korean Chemical Society, Topological Packing of Metal-Organic Polyhedra: Bridging Discrete Cages and Extended Frameworks (Online, Apr 2021) **Award for Excellent Debater**
8. Korea Crystallographic Association, Zr-Based Metal-Organic Polyhedra as Multivariate Porous Platforms (Ulsan, South Korea / Nov 2019)
7. 124th General Meeting of the Korean Chemical Society, Isorecticular Zr-Based Metal-Organic Polyhedra as Multivariate Porous Platforms (Changwon, South Korea / Oct 2019)
6. KCS Inorganic Chemistry Division Summer Symposium, Zr-Based Metal-Organic Polyhedra as Multivariate Porous Platforms (Busan, South Korea / Jun 2019)
5. 6th International Conference on Metal-Organic Frameworks & Open Framework Compounds, Rational Design of Discrete Metal-Organic Materials Based on Zr Clusters (Auckland, New Zealand / Dec 2018)
4. KCS Inorganic Chemistry Division Summer Symposium, The Rise of Zr-Based Metal-Organic Polyhedra (Busan, South Korea / Jun 2018)

3. 3rd Japan-Korea Joint Symposium on Hydrogen in Materials, Extrinsically Porous Zr-Based Metal-Organic Triangle (Fukuoka, Japan / Nov 2017)
2. 120th General Meeting of the Korean Chemical Society, Extrinsically Porous Zr-Based Metal-Organic Triangle (Gwangju, South Korea / Oct 2017)
1. KCS Inorganic Chemistry Division Summer Symposium, Extrinsically Porous Zr-Based Metal-Organic Triangle (Gyeongju, South Korea / Jul 2017) **Outstanding Poster Award**

Professional Service

Early Career Board Member, International Union of Crystallography (IUCr) Journals	Aug 2025 – <i>present</i>
Co-Reviewer (Early Career Researcher), Nature Communications	2024

Professional Activities

Group leader, Laboratory for Sustainable Future (Choe group)	2020 – 2021
Committee member, Society of Global Ph.D. Fellows	2019 – 2020
Student Researcher, POLYVIEW team, Ministry of Science and ICT	2017 – 2020
Research internship, Synthesis of Metal-Organic Polyhedra (Prof. Wonyoung Choe)	2016 – 2017
Research internship, Synthesis of Iridium Complexes as Bio-Sensor (Prof. Tae-Hyuk Kwon)	2015 – 2016

Science Communication Articles

3. W. Choe, **J. Kim**, C. Cho
Reticular Engineering of Quasiperiodic Moiré Patterns in Metal-Organic Frameworks
Springer Nature Research Communities, **2025**.
2. **J. Kim**, W. Choe*
The Current and Future of New Porous Solids
Korean Chemical Society (KCS) Magazine, **2021**, 61, 28–35.
1. **J. Kim**, W. Choe*
Introduction about Laboratory for Sustainable Future (Choe group)
Korean Chemical Society (KCS) Magazine, **2020**, 60, 48–53.

Interviews

2. “PEOPLE” **2023**, 46 (Spring), 10–11.
Ulsan National Institute of Science and Technology (UNIST) Magazine
1. “Meet our UNISTAR” **2023**, 3, 8–9.
College of Natural Sciences (CNS) Newsletter, UNIST