Curriculum Vitae: Wei Zhang, Ph.D.

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EDUCATION

Peking University, College of Chemistry and Molecular Engineering (1996-2000)
B.S. in Chemistry

University of Illinois at Urbana-Champaign, Department of Chemistry (2001-2005)
Ph.D. in Chemistry (Thesis Advisor: Professor Jeffrey S. Moore)

RESEARCH INTERESTS

Design and synthesis of novel organic functional materials and nanocomposites, including shape-persistent macrocycles, molecular cages, porous materials, self-healing polymers, through dynamic covalent chemistry; Investigation of their structure-property relationship and their potential applications in carbon capture, molecular separation, controlled nanoparticle synthesis, catalysis, artificial photosynthesis, energy storage, etc.

EMPLOYMENT AND PROFESSIONAL EXPERIENCE

University of Colorado Boulder (2018 – present)

Professor, Department Chemistry

University of Colorado Boulder (2022 – 2025)

Professor and Chair, Department Chemistry

University of Colorado Boulder (2018 – 2021)
Professor and Associate Chair, Department of Chemistry

ETH Zürich, Switzerland (01/2015 – 06/2015)
Guest Professor, Department of Materials

University of Colorado Boulder (2014 – 2018)
Associate Professor, Department of Chemistry and Biochemistry

University of Colorado Boulder (2008 – 2014)
Assistant Professor, Department of Chemistry and Biochemistry

Massachusetts Institute of Technology (2006 – 2008)
Postdoctoral Associate (Mentor: Professor Timothy M. Swager)

AWARDS AND HONORS

2024 Web of Science Highly Cited Researcher
2024 College Scholar Award, University of Colorado
2023 National Academy of Inventors Senior Member Elected
2022 American Chemical Society Colorado Section Award
2015 Guest Professor at ETH Zürich, Switzerland

2013 Provost's Faculty Achievement Award
2013 Alfred P. Sloan Research Fellow
2013 CAPA Distinguished Junior Faculty Award
2012 ACS PMSE Young Investigator
2012 3M Non-Tenured Faculty Award
2011 National Science Foundation (NSF) CAREER Award
2011 Thieme Chemistry Journal Award
2011 New Inventor of the Year, University of Colorado
2009 CRCW Junior Faculty Development Award, University of Colorado
2004 Synthetic Organic Fellowship in Chemistry, University of Illinois
2004 R. C. Fuson Travel Award, University of Illinois
2003 R. C. Fuson Fellowship, University of Illinois
2002 University Fellowship, University of Illinois
2000 Outstanding Graduate of Peking University

PUBLICATIONS (PEER-REVIEWED, Citations > 34,000, *h*-index 87, Google Scholar)

Independent Career at CU Boulder

190. Xie, Q.; Chen, A.; Gu, S.; Fan, Z.; Jin, S.; Zhang, W.; Pan, C.; Wei, B.; Tang, J.; **Zhang, W**.; Yu, G.* "Nanoconfinement-Driven Aerobic Oxidation through Photoenzyme-Mimetic Catalysis in Vinyl-Linked Covalent Organic Frameworks" *J. Am. Chem. Soc*. submitted.

189. Hu, H.; Li, D.; Wu, Y.; Huang, S.; Zhu, B.; Du, M.; Wu, D.; Guo, B.; Lu, S.; **Zhang, W**.* "Covalent Organic Frameworks with Isolated Electron-rich Zinc Sites toward Selective Electrochemical Nitrite/nitrate Reduction to Hydroxylamine" *Adv. Funct. Mater*. under review.

188. Tang, J.; Tu, P.; Ke, X.; Gu, S.; Pan, C.; Jin, S.; **Zhang, W.**; Yu, G.* "Constructing Covalent Triazine Frameworks via an Acylation-activated Three-component Reactions" *Chem. Sci.* under review.

187. Jin, Y.; Hu, Y.; Wayment, L. J.; Zhao, Y.; **Zhang, W**.* "Rational Design and Synthesis of Hybridized Carbon Allotropes" *Nat. Rev. Chem*. under revision (invited).

186. Xu, Q.; Ou, W.; Fang, X.; Chen, H.; Bishop, B.; Corcoran, L.; Toney, M.; **Zhang, W**.* "Enhanced Rate Performance of Lithium-Ion Batteries Enabled by Ethynylene-linked Conjugated Microporous Polymers" *CCS Chem*. revision submitted.

185. Wu, M.; Men, G.; Zhang, Z.; Lei, D.; Liu, H.; **Zhang, W**.; Liu, X.* "On-demand Switching between Covalent Adaptable Networks and Thermosets" *CCS Chem*. under review.

184. Ge, Y.; Huang, S.; Yuan, Z.; **Zhang, W**.* "Structurally Ordered Porous Frameworks via Hierarchical Assembly" *Acc. Chem. Res*. **2025**, *58*, in press. (cover)

183. Fan, Z.; Tang, J.; **Zhang, W**.; Gu, S.; Huang, R.; Guo, Q.; Xie, Q.; Hu, F.; Zhang, F.; Wang, Z.; Pan, C.; Yu, G.* "Reconfigurable Covalent Organic Framework Gel Electrolytes", *Adv. Mater*. **2025**, *37*, 2501223.

182. Bishop, B.; Webber, W. S.; Atif, S. M.; Ley, A.; Pankratz, K. A.; Kostelecky, R.; Colgan, S. P.; Dinarello, C. A.; **Zhang, W**.*; Li, S.* "Micro- and Nano-plastics Induce Inflammation and Cell Death in Human Cells" *Front. Immunol.***2025**, 16:1528502.

181. Yelishala, S. C.; Zhu, Y.; Martinez, P. M.; Chen, H.; Habibi, M.; Prampolini, G.; Guevas, J. C.; **Zhang, W.***, Vilhena, J. G.*, Cui, L.* "Phonon Interference in Single-molecule Junctions" *Nat. Mater*. **2025**, *24*, 1258-1264.

180. Chen, H.; Wayment, L. J.; Jiang, H.; Lei, Z.; Huang, S.; Ley, A.; Yue, Z.; Yuan, Z.; Jin, Y.; Yu, K.; **Zhang, W**.* "Closed-loop Recyclable Lithium and Sodium Conducting Covalent Adaptable Networks" *Angew. Chem. Int. Ed*. **2025**, *64*, e202425497. (Very Important Paper)

179. Lei, Z.; Wang, Z.; Jiang, H.; Cahn, J. R.; Chen, H.; Huang, S.; Jin, Y.; Wang, X.; Yu, K.; **Zhang, W.*** "Dual-factor Controlled Dynamic Precursors Enable On-demand Thermoset Degradation and Recycling" *Adv. Mater*. **2024**, *36*, 2407854.

178. Kim, Y.; Li, C.; Huang, J.; Yuan, Y.; Tian, Y.; **Zhang, W.*** "Ionic Covalent Organic Framework Solid-State Electrolytes" *Adv. Mater*. **2024**, *36*, 2407761.

177. Hu, Y.; Sengupta, B.; Long, H.; Wayment, L. J.; Ciora, R.; Jin, Y.; Wu, J.; Lei, Z.; Friedman, K.; Chen, H.; Yu, M.*; **Zhang, W.*** "Molecular Recognition with Resolution below 0.2 Å via Thermo-regulatory Oscillations in Covalent Organic Frameworks", *Science* **2024**, *384,* 1441-1447.

176. Wayment, L. J.; Huang, S.; Chen, H.; Lei, Z.; Ley, A.; Lee, S.-H.; **Zhang, W.*** "Ionic Covalent Organic Frameworks Consisting of Tetraborate Nodes and Flexible Linkers" *Angew. Chem. Int. Ed*. **2024**, *63,* e202410816.

175. Huang, S.; Teat, S. J.; Wayment, L. J.; Settineri, N. S.; Chen, H.; Lei, Z.; **Zhang, W.*** "Single-Crystal Cage Framework with High Selectivity and Reversibility in Fullerene Binding" *Angew. Chem. Int. Ed*. **2024**, *63,* e202409432.

174. Ge, Y.; **Zhang, W.*** "Lithium Recovery Using Porous Polymers" *Chem* **2024**, *10*, 1971-1973.

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172. Zhou, H.; Zhang, X.; Zhou, G.; DEMIR, M.; Lei, Z.; **Zhang, W.**; Wang, X.* "Water-mediated Synthesis of Full-biomass Vitrimer with Enhanced Moldability, Recyclability and Biodegradability", *ACS Sustain. Chem. Eng*. **2024**, *12*, 6952-6959.

171. Bishop, B.; Huang, S.; Chen, H.; Yu, H.; Long, H.; Shen, J.; **Zhang, W**.* "Artificial Transmembrane Channel Constructed from Shape-Persistent Covalent Organic Molecular Cages Capable of Ion and Small Molecule Transport" *Chin. Chem. Lett*. **2024**, *35*, 109966.

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169. Lu, S.; Hu, H.; Sun, H.; Yang, F.; Zhu, H.; Du, M.; Jin, Y.; **Zhang, W**.* "Covalent Porous Catalysts for electrochemical reduction of CO_2" *Green Chem*. **2024**, *26*, 5744-5769 (invited review).

168. Wayment, L. J.; Teat, S. J.; Huang, S.; Chen, H.; **Zhang, W**.* "Dynamic Entwined Topology in Helical Covalent Polymer Dictated by Competing Supramolecular Interactions" *Angew. Chem. Int. Ed*. **2024**, *63*, e202403599.

167. Pham, H. T. B.; Choi, J. Y.; Fang, X.; Claman, A.; Huang, S.; Coates, S.; Wayment, L.; **Zhang, W.**; Park, J.* "Macrocyclic ligand-driven ion selectivity and high surface area in a 2D conductive MOF", *Chem*. **2024**, *10*, 199-210.

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165. Hu, F.; Hu, Z.; Liu, Y.; Tam, K. C.; Liang, R.; Xie, Q.; Fan, Z.; Pan, C.-Y.; Tang, J.; Yu, G.; **Zhang, W**.* "Aqueous Sol-gel Synthesis and Shaping of Covalent Organic Frameworks", *J. Am. Chem. Soc*. **2023**, *145*, 27718-27727.

164. Pan, Q.; Lei, Z.; Zhao, Y.; **Zhang, W.*** "Microenvironment Effect of Covalent Organic Frameworks on Chemical Catalysis", *EnergyChem*. **2023**, *5*, 100107.

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160. Li, R.; Ma, Y.; Yang, T.; Yang, X.; Tao, R.; Jin, Y.; **Zhang, W.***; Qiu, L.* "Rehealable and Recyclable AIE-Active Luminescent Vitrimers", *ACS Mater. Lett.* **2023**, *5*, 2348-2354.

159. Hu, Z.; Hu, F.; Deng, L.; Yang, Y.; Xie, Q.; Gao, Z.; Pan, C.; Jin, Y.; Tang, J.; Yu, G.; **Zhang, W**.* "Reprocessible Triketoenamine based Vitrimers with Closed-loop Recyclability" *Angew. Chem. Int. Ed*. **2023**, *62*, e2023060.

158. Wayment, L. J.; Lei, Z.; Jin, Y.; **Zhang, W**.* "Recent Progress in Constructing Structurally Ordered Polymeric Architectures via Dynamic Covalent Chemistry", *CCS Chem*. **2023**, *5*, 2194-2206. (invited Mini Review)

157. Xu, Q.; Wang, X.; Huang, S.; Hu, Y.; Teat, S. J.; Settineri, N. S.; Chen, H.; Wayment, L. J.; Jin, Y.; Sharma, S.; **Zhang, W**.* "Dynamic Covalent Self-sorting in Molecular and Polymeric Architectures Enabled by Spiroborate Bond Exchange" *Angew. Chem. Int. Ed*. **2023**, *62*, e2023042.

156. Chen, H.; Hu, Y.; Luo, C.; Lei, Z.; Huang, S.; Jin, Y.; Yu, K.; **Zhang, W**.* "Spiroborate-linked Ionic Covalent Adaptable Networks with Rapid-reprocessability and Closed-loop Recyclability" *J. Am. Chem. Soc*. **2023**, *145*, 9112-9117.

155. Chen, H.; Lei, Z.; Huang, S.; Jiang, H.; Yu, K.; Jin, Y.; **Zhang, W**.* "Poly(imine-amide) Hybrid Covalent Adaptable Networks via *in situ* Oxidation-polymerization", *Chin. J. Polym. Sci.* **2023**, *41*, 1577–1583. (invited contribution to the themed issue to commemorate the 70th Anniversary of the Establishment of Polymer Program at Peking University)

154. Lei, Z.; Chen, H.; Jin, Y**.; Zhang, W**.* "Dynamic Covalent Chemistry Towards Wearable Electronics" *Cell Reports Physical Science*, **2023**, *4*, 101336 (Invited Perspective).

153. Ma, Y.; Li, R.; Luo, S.; Shen, X.; Tao, R.; Jin, Y.; **Zhang, W**.*; Qiu, L.* "Highly Conductive Poly(Imide–Imine) Hybrid Vitrimer-Graphene Aerogel Composites" *Chin. J. Chem*. **2023**, *41*, 2125 - 2131. (invited contribution for the special issue of "Emerging Themes in Polymer Science")

152. Ge, Y.; **Zhang, W**.* "Directed Synthesis of Isomeric 2D Heteropore Covalent Organic Frameworks" *Sci. China Chem*. **2023**, *66*, 926-927.

151. Huang, S.; Choi, J. Y.; Xu, Q. ; Jin, Y. ; Park, J.* ; **Zhang, W**.* "Carbazolylene-Ethynylene Macrocycle based Conductive Covalent Organic Frameworks" *Angew. Chem. Int. Ed.* **2023**, *62*, e2023035.

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148. Hu, Y.; Huang, S.; Wayment, L. J.; Wu, J.; Xu, Q.; Chang, T.; Chen, Y.-P.; Li, X.; Andi, B.; Chen, H.; Jin, Y.; Zhu, H.; Du, M.; Lu, S.; **Zhang, W**.* "Shape-Persistent Phthalocyanine Cages" *Cell Reports Physical Science*, **2023**, *4*, 101285.

147. Shi, G.; Ge, H.; Zhang, L.; Li, Y.; Cui, R.; Wayment, L. J.; Ge, Y.; **Zhang, W**.* "Organic Fluorophores with High Photostability and Strong Emission in Both Solution and Solid State", *J. Lumin*. **2023**, *253*, 119447.

146. Zhang, Z.; Lei, D.; Zhang, C.; Wang, Z.; Jin, Y.; **Zhang, W**.*; Liu, X.*; Sun, J. "Strong and Tough Supramolecular Covalent Adaptable Networks with Room-Temperature Closed-Loop Recyclability", *Adv. Mater*. **2023**, *35*, 2208619.

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144. Lu, Y.; Zhong, H.; Li, J.; Dominic, A. M.; Hu, Y.; Gao, Z.; Jiao, Y.; Wu, M.; Qi, H.; Huang, C.; Wayment, L. J.; Kaiser, U.; Spiecker, E.; Weidinger, I. M.; **Zhang, W**.*; Feng, X.*; Dong, R.* "sp-CarbonIncorporated Conductive Metal-Organic Framework as Photocathode for Photoelectrochemical Hydrogen Generation", *Angew. Chem. Int. Ed.* **2022**, *61*, e202208163.

143. Lei, Z.; Wayment, L.; Cahn, J. R.; Chen, H.; Huang, S.; Jin, Y.; **Zhang, W**.* "Cyanurate-linked Covalent Organic Frameworks Enabled by Dynamic Nucleophilic Aromatic Substitution" *J. Am. Chem. Soc.*, **2022**, *144*, 39, 17737–17742.

142. Gong, Y.; Hu, H.; Huang, S.; Lu, S.; **Zhang, W**.* "Post-synthetic Modification of Conjugated Microporous Polymer for Controlled Growth of Ultrafine Nanoparticles" *ACS Appl. Nano Mater*. **2022**, *5*, 10090–10096.

141. Tao, R.; Zhao, X.; Zhao, T.; Zhao, M.; Kang, K.; Li, Z.; Li, R.; Jin, Y.; Qiu, L.; **Zhang, W**.* "Cage-Confinement Induced Emission Enhancement" *J. Phys. Chem. Lett*. **2022**, *13*, 6604-6611.

140. Lei, Z.; Chen, H.; Luo, C.; Rong, Y.; Hu, Y.; Jin, Y.; Long, R.; Yu, K.; **Zhang, W**.* "Recyclable and Malleable Thermosets Enabled by Activating Dormant Dynamic Linkages" *Nat. Chem*. **2022**, *14*, 1399-1404.

139. Liu, C.; Jin, Y.; Yu, Z.; Gong, L.; Wang, H.; Yu, B.; **Zhang, W**.*; Jiang, J.* "Transformation of Porous Organic Cages and Covalent Organic Frameworks with Efficient Iodine Vapor Capture Performance" *J. Am. Chem. Soc.* **2022**, *144*, 12390-12399.

138. Pham, H.; Choi, J. Y.; Huang, S.; Wang, X.; Claman, A.; Stodolka, M.; Yazdi, S.; Sharma, S.; **Zhang, W.**; Park, J.* "Imparting Functionality and Enhanced Surface Area to a 2D Electrically Conductive MOF via Macrocyclic Linker" *J. Am. Chem. Soc.* **2022**, *144*, 10615–10621.

136. Zhang, X.; Zhao, J.; Liu, K.; Li, G.; Zhao, D.; Zhang, Z.; Wan, J.; Yang, X.; Bai, R.; Wang, Y.; **Zhang, W**.*; Yan, X.* "Weldable and Closed-loop Recyclable Monolithic Dynamic Covalent Polymer Aerogels" *Natl. Sci. Rev*. **2022**, *9*, nwac012.

135. Ge, Y.; Hu, Y.; Duan, G.; Jin, Y.; **Zhang, W**.* "Advances and Challenges in User-friendly Alkyne Metathesis Catalysts" *Trends in Chemistry*, **2022**, *4*, 540-553. (invited contribution)

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132. Yu, L.; Lei, Z.; Sun, X.; Ding, P.; Wesche, A.; Jin, Y.; **Zhang, W**.*; Long, R.* "Rapid Fabrication of Fiber Reinforced Polyimine Composites with Reprocessability, Repairability and Recyclability" *ACS Appl. Polym. Mater.* **2021***, 3,* 5808–5817.

131. Liu, L.; Hu, Y.; Huang, S.; Jin, Y.; Cui, J.; Gong, W.; **Zhang, W**.* "Pillar[5]arene-Based Covalent Organic Framework with Pre-Encoded Selective Host-Guest Recognition" *Chem. Sci.* **2021**, *12*, 13316-13320.

130. Hu, Y.; Dunlap, N.; Long, H.; Chen, H.; Wayment, L.; Ortiz, M.; Jin, Y.; Nijamudheen, A.; Mendoza-Cortes, J. L.; Lee, S.-H.; **Zhang, W**.* "Helical Covalent Polymers with Unidirectional Ion Channels as Single Lithium-Ion Conducting Electrolytes" *CCS Chem*. **2021**, *3*, 2762-2770. (Cover)

129. Sun, N.; Qi, D.; Jin, Y.; Wang, H.; Wang, C.; Qu, C.; Liu, J.; Jin, Y.; **Zhang, W**.*; Jiang, J.* "Porous Pyrene Organic Cage with Unusual Absorption Bathochromic Shift Enables Visible Light Photocatalysis" *CCS Chem.* **2021**, *3*, 2917-2925.

128. Tao, R.; Kang, K.; Li, X.; Li, R.; Huang, R.; Jin, Y.; Qiu, L.; **Zhang, W**.* "Controlled Synthesis of Palladium Nanoparticles with Size-dependent Catalytic Activities Enabled by Organic Molecular Cages" *Inorg. Chem.* **2021**, *60*, 12517-12525.

127. Yang, X.; Huang, S.; Ortiz, M.; Wang, X.; Cao, Y.; Kareem, O.; Jin, Y.; Huang, F.; Wang, X.; **Zhang, W**.* "Truxene-Based Covalent Organic Polyhedrons Constructed through Alkyne Metathesis" *Org. Chem. Front.* **2021**, *8*, 4723-4729 (invited contribution to the themed collection on Macrocycle-based Supramolecular Elements).

126. Wang, H.; Jin, Y.; Sun, N.; **Zhang, W**.*; Jiang, J.* "Post-Synthetic Modification of Porous Organic Cages" *Chem. Soc. Rev.* **2021,** *50,* 8874-8886. (invited review)

125. Huang, S.; Lei, Z.; Jin, Y.; **Zhang, W**.* "By-design Molecular Architectures via Alkyne Metathesis" *Chem. Sci.* **2021,** *12,* 9591-9606.

124. Shen, X.; Ma, Y.; Luo, S.; Tao, R.; An, D.; Wei, X.; Jin, Y.; Qiu, L.; **Zhang, W**.* "Malleable and Recyclable Imide-imine Hybrid Thermosets: Influence of Imide Structure on Material Property" *Mater. Adv.* **2021,** *2,* 4333-4338.

123. He, X.; Shi, X.; Chung, C.; Lei, Z.; **Zhang, W**.; Yu, K.* "A Sustainable Manufacturing Method of Thermoset Composites based on Covalent Adaptable Network Polymers" *Composites Part B* **2021,** *221,* 109004.

122. Meng, Z.; Zhang, Y.; Dong, M.; Zhang, Y.; Cui, F.; Loh, T.-P.; Jin, Y.; **Zhang, W**.; Yang, H.; Du, Y.* "Readily Useable Bulk Phenoxazine-based Covalent Organic Framework Cathode Materials with Superior Kinetics and High Redox Potentials" *J. Mater. Chem. A* **2021**, *9*, 10661-10665.

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120. Hu, Y.; Teat, S. J.; Gong, W.; Zhou, Z.; Jin, Y.; Chen, H.; Wu, J.; Cui, Y.; Jiang, T.; Cheng, X.; **Zhang, W**.* "Single-Crystal Mechanically Entwined Helical Covalent Polymer" *Nat. Chem*. **2021**, *13*, 660-665.

119. Lei, Z.; Lucas, F. W. S.; Moya, E. C.; Huang, S.; Rong, Y.; Wesche, A.; Li, P.; Bodkin, L.; Jin, Y.; Holewinski, A.*; **Zhang, W**.* "Highly Stable Dioxin-linked Metallophthalocyanine Covalent Organic Frameworks" *Chin. Chem. Lett.* **2021,** *32,* 3799-3802.

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116. Shi, C.; Zou, Z.; Lei, Z.; Zhu, P.; Nie, G.; **Zhang, W**.*; Xiao, J.* "Stretchable, Rehealable, Recyclable and Reconfigurable Integrated Strain Sensor for Joint Motion and Respiration Monitoring" *Research* **2021**, 9846036.

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112. Shi, C.; Zou, Z.; Lei, Z.; Zhu, P.; **Zhang, W**.*; Xiao, J.* "Heterogeneous integration of rigid, soft, and liquid materials for self-healable, recyclable, and reconfigurable wearable electronics" *Sci. Adv.* **2020,** *6*, eabd0202.

111. Huang, S.; Hu, Y.; Tan, L.-L.; Wan, S.; Yazdi, S.; Jin, Y.; **Zhang, W**.* "Highly C2/C1-Selective Covalent Organic Frameworks Substituted with Azo Groups" *ACS Appl. Mater. Interfaces* **2020**, *12,* 51517-51522.

110. Liu, Y.; Wu, C.; Sun, Q.; Hu, F.; Pan, Q.; Sun, J.; Jin, Y.; Li, Z.; **Zhang, W**.*; Zhao, Y.* "Spirobifluorene-Based Three-Dimensional Covalent Organic Frameworks with Rigid Topological Channels as Efficient Heterogeneous Catalyst" *CCS Chem.* **2020**, *2*, 2418-2427.

109. Zhang, L.; Jin, Y.; Tao, G.; Gong, Y.; Hu, Y.; He, L.; **Zhang, W**.* "Desymmetrized Vertex Design toward a Molecular Cage with Unusual Topology" *Angew. Chem. Int. Ed.* **2020**, *59*, 20846-20851.

108. Yang, X.; Hu, Y.; Dunlap, N. Wang, X.; Huang, S.; Su, Z.; Sharma, S.; Jin, Y.; Huang, F.; Wang, X.; Lee, S.-H.; **Zhang, W**.* "Truxenone-based Covalent Organic Framework as All-Solid-State Li-ion Battery Cathode with High Capacity" *Angew. Chem. Int. Ed.* **2020**, *59*, 20385-20389.

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1. Fleming, M.; Fisher, P. V.; Gunawardena, G. U.; Jin, Y.; Zhang, C.; **Zhang, W.**; Arif, A. M.; West, F. G. "Solvent Trapping of Photochemically Generated Pyran-4-one-Derived Oxyallyls: A Convenient Cyclopentannulation Method" *Synthesis* **2001**, 1268-1274.

BOOKS EDITED

1. **Zhang, W**. (Editor); Jin, Y. *Dynamic Covalent Chemistry: Principles, Reactions, and Applications*. Weinheim:Wiley-VCH, **2017**. Print: ISBN: 978-1-119-07563-9.

BOOK CHAPTER

3. Zhu, Y.; Jin, Y.; **Zhang, W**.* "Emerging Covalent Organic Framework and Linear Polymer (COF–LP) Composites: Synthetic Approaches and Applications" Smart Materials No. 39, *Hybrid Metal–Organic Framework and Covalent Organic Framework Polymers*, Edited by Bo Wang. Royal Society of Chemistry **2022**. (invited contribution)

2. Yu, C.; Jin, Y.; **Zhang, W**.* "Two-dimensional Polymer Synthesis by Dynamic Chemistry at the Air–water Interface", *Encyclopedia of Interfacial Chemistry*, Elsevier Inc. **2017**, http://dx.doi.org/10.1016/B978-0-12-409547-2.13121-X (invited contribution).

1. Yu, C.; Jin, Y.; **Zhang, W.*** "Shape-persistent Macrocycles through Dynamic Covalent Reactions", *Dynamic Covalent Chemistry: Principles, Reactions, and Applications*, Weinheim:Wiley-VCH, **2017**. Print. ISBN: 978-1-119-07563-9.

PATENTS/PATENT APPLICATIONS

Independent Career at CU Boulder

17. **Zhang, W.**; Hu, Y. "Molecular Recognition with Resolution via Thermo-regulatory Oscillations in Covalent Organic Frameworks", U.S. Patent Application (09/28/2023)

16. **Zhang, W**.; Lei, Z. "Recyclable and Malleable Thermosets Enabled by Activating Dormant Dynamic Linkages", U.S. Patent Application (06/23/2022)

15. **Zhang, W**.; Hu, Y. "Graphyne Synthesis Using Alkyne Metathesis", U.S. Patent Application (02/11/2022).

14. Long, R.; **Zhang, W**. "Rapid Fabrication of Malleable Fiber Reinforced Composites" U.S. Patent Application (08/14/2019)

13. Xiao, J.; **Zhang, W**.; Zou, Z.; Zhu, C. "Rehealable, Fully Recyclable and Malleable Electronic Skin Enabled by Dynamic Covalent Thermoset Nanocomposite" U.S. Patent Application (11/27/2017).

12. Srubar, W.; **Zhang, W**. "Methods of Isolating Melt-Processible-Polycarbonate from Plastic Waste, Methods of Preparing Polycarbonate-Containing Hybrid Polymers, and Compositions Comprising Same" U.S. Patent Application (10/19/2016).

11. **Zhang, W.**; Wang, Q. "A C_{70}-Selective Tetrameric Cage with an Unexpected C2 Symmetry through One-Step Alkyne Metathesis" U.S. Patent Application (08/21/2015).

10. **Zhang, W.**; Taynton, P. "Novel Covalently Cross-Linked Malleable Polymers and Methods of Use" *PCT Int. Appl*. **2015**, WO 2015138804.

9. **Zhang, W**.; Qin, Y.; Hu, K.; Yang, H. "Novel Methods of Preparing Polydiacetylenes Using Metathesis Polymerization" U.S. Patent Application (07/08/2014).

8. **Zhang, W.**; McCaffrey, R.; Park, W.; Emoto, K.; Jin, Y. "Methods of Preparing Novel Self-Assembling Nanocomposite Structures" *U.S. Pat. Appl. Publ*. **2014**, US 20140212575.

7. **Zhang, W.**; Jyothish, K.; Wang, Q. "Highly Active Multidentate Catalysts for Efficient Alkyne Metathesis to Prepare Disubstituted Alkynes" *U.S. Pat. Appl. Publ*. **2013**, US 2013261295.
6. **Zhang, W.**; Zhang, C.; Wang, Q. "Preparation of Porphyrin Cages for Fullerene Separation" *PCT Int. Appl*. **2013**, WO 20133063368.
5. **Zhang, W.**; Ren, S. "Nanohybrid Compositions Comprising Carbon Nanotubes and Covalent Organic Polyhedron-Fullerene Complexes" U.S. Patent Application (04/08/2012).
4. **Zhang, W.**; Noble, R. D.; Jin, Y.; Voss, B. A. "Organic Porous Materials Comprising Shape-Persistent Three-Dimensional Molecular Cage Building Blocks" *PCT Int. Appl*. **2011**, WO 2011116359.
3. Yu, M.; **Zhang, W.**; Falconer, J. L.; Noble, R. D. "Anode with Layered Structures for High-Efficiency Dye-Sensitized Solar Cells and Its Fabrication" *U.S. Pat. Appl. Publ*. **2011**, US 20110284063.

Postdoctoral Career at MIT

2. Swager, T. M.; **Zhang, W.** "Functionalization of Nanoscale Articles including Nanotubes and Fullerenes" *U.S. Pat. Appl. Publ*. **2008**, 19pp.

Graduate Career at UIUC

1. Zang, L.; Moore, J. S.; Naddo, T.; **Zhang, W.** "Fluorescent Organic Nanofibrils as Sensory Materials for Explosives Detection" *U.S. Pat. Appl. Publ.* **2009**, 48pp.

INVITED PRESENTATIONS GIVEN (INDEPENDENT CAREER AT CU BOULDER)

(a) Invited Lectures at Professional Meetings

167. "Dynamic Polymer Networks with Closed-loop Recyclability Enabled by Dynamic Covalent Chemistry", 2025 Dynamic Polymer Networks (DPN) Conference, Reykjavik, Iceland, Aug 2025.
166. "Unlocking Innovative Crystalline Polymer Architectures with Dynamic Covalent Chemistry", Keynote, 12th Singapore International Chemistry Conference, Singapore, Dec 2024.
165. "Bottom-up Design and Synthesis of Porous Polymers via Dynamic Covalent Chemistry for Environmental and Energy Applications", Porous Polymers Symposium, 2024 Fall American Chemical Society (ACS) Meeting, Denver, CO, USA, Aug 2024.
164. "Molecular and Polymeric Architectures Enabled by Dynamic Spiroborate Chemistry for Energy and Environmental Applications", ENFL Mid-Career Award: Symposium in honor of Jingbo Louise Liu, 2024 Fall American Chemical Society (ACS) Meeting, Denver, CO, USA, Aug 2024.
163. "Breaking and Reforming: The Key to Next-Generation Adaptive and Recyclable Materials via Dynamic Covalent Chemistry", Symposium on Elevating Polymer Science in the State of Colorado, 2024 Fall American Chemical Society (ACS) Meeting, Denver, CO, USA, Aug 2024.
162. "Unlocking Innovative Crystalline Polymer Architectures with Dynamic Borate Chemistry", 2024 POLYMAT, International Workshop on Macromolecular Materials, San Sebastian, Spain, Jun 2024.
161. "Aromatic Carbon-rich Molecular and Polymeric Architectures Constructed via Dynamic Covalent Chemistry", International Conference on Porphyrins & Phthalocyanines (ICPP-13), Niagara Falls, NY, USA, Jun 2024.
160. "Functional Dynamic Polymer Networks and Composites Enabled by Dynamic Covalent Chemistry", Symposium on Adaptive Materials from Dynamic Polymer Networks and Composites, 2024 Spring American Chemical Society (ACS) Meeting, New Orleans, LA, USA, Mar 2024.

159. "Molecular and Polymeric Porous Materials Enabled by Dynamic Covalent Chemistry", the 4th International Symposium on Porous Organic Polymers (POPs2024), KAUST, Saudi Arabia，February 2024.

158. "Breaking and Reforming: The Key to Next-Generation Reconfigurable and Recyclable Materials", Symposium on Multifunctional Materials and Structures, Gordon Research Conference, Ventura, CA, USA, January 2024.

157. "Molecular and Polymeric Architectures Enabled by Dynamic Spiroborate Chemistry", Symposium on Biomimetic Organic and Hybrid Frameworks for Imaging, Encapsulation, and Delivery, 2023 Materials Research Society (MRS) Fall Meeting, Boston, MA, USA, November 2023.

156. "By-design Functional Polymeric Materials Enabled by Dynamic Covalent Chemistry", Polymer Chemistry and Materials Symposium, 2023 ACS Rocky Mountain Regional Meeting, Laramie, WY, USA, September 2023.

155. "Malleable Thermosets with Closed-loop Recyclability via Dynamic Covalent Chemistry", Symposium on Chemical Recycling and Upcycling of Polymers, 2023 Fall American Chemical Society (ACS) Meeting, San Francisco, CA, USA, August 2023.

154. "Structurally Ordered Polymeric Architectures Enabled by Dynamic Covalent Chemistry", 2022 Texas Pore Engineering Conference (TXPEC), College Station, TX, USA, December 2022.

153. "Structurally Ordered Polymeric Architectures via Dynamic Covalent Synthesis", MOF2022, Dresden, Germany, September 2022 (virtual).

152. "Rational Design and Synthesis of Fully Recyclable Thermosets via Dynamic Covalent Chemistry", Symposium on Design of Polymers toward Upcycling, 2022 Fall American Chemical Society (ACS) Meeting, Chicago, IL, USA, August 2022.

151. "Carbon-rich Conjugated Polymeric Architectures Enabled by Dynamic Covalent Chemistry", Symposium on Next-generation Synthesis & Structure for Pi-conjugated Polymers, 2022 Fall American Chemical Society (ACS) Meeting, Chicago, IL, USA, August 2022.

150. "Structurally Ordered Polymeric Materials via Dynamic Covalent Synthesis", ArtMoMa International Summer School, Oxford, UK, July 2022 (virtual).

149. "Structurally Ordered Polymer-based Solid-State Electrolytes and Cathode Materials for Lithium-ion Battery", Symposium on Porous Materials for Clean Energy, Fuel Storage and Conversion, 2022 Spring American Chemical Society (ACS) Meeting, San Diego, CA, USA, March 2022.

148. "Fully Recyclable Thermosets and Their Functional Composites", Themed Symposium on Towards A Circular Materials Economy: Design for Renewable, Degradable and Recyclable Polymers, 2021 Pacifichem, December 2021 (virtual).

147. "Covalent Organic Framework-based Solid-State Electrolytes and Cathode Materials for Lithium-ion Battery", Themed Symposium on Energy-related Materials in the Age of Globalization, 2021 Pacifichem, December 2021 (virtual).

146. "Controlled Growth of Ultrafine Nanoparticles Mediated by Organic Scaffolds and Their Applications in Catalysis", 8th International Conference on Nanoscience and Technology, Beijing, China, Aug 2019.

145. "Covalent Organic Frameworks for Controlled Nanoparticle Synthesis and Ion Transportation", International Workshop on Organic Frameworks, Tianjin, China, May 2019.

144."Structurally Ordered Polymer Networks through Dynamic Covalent Chemistry", Symposium on Dynamic Bonds for Structurally Precise Polymeric Materials, 256th American Chemical Society (ACS) Meeting, Boston, MA, USA, August 2018.

143. "Novel Malleable Covalent Network Polymers and Their Applications for Rehealable and Fully Recyclable Functional Composite Materials", Symposium on Vitrimers & Other Covalent Adaptable Networks, 256th American Chemical Society (ACS) Meeting, Boston, MA, USA, August 2018.

142. "Organic Functional Materials through Alkyne Metathesis", 14th Sina-US CAPA Conference, Wuhan, China, June 2018.

141. "Molecular Architectures and Functional Polymers through Alkyne Metathesis", 2018 International Conference on Organic and Polymer Synthesis (ICOPS2018), Guangzhou, China, April 2018.

140. "Novel Malleable and Repairable Thermoset Materials with Full Recyclability and Their Applications in Functional Composites Development", The 15th Pacific Polymer Conference (PPC-15), Xiamen, China, December 2017.

139. "Bottom-up Design and Synthesis of Functional Nanostructured Porous Polymers", The 1st International Symposium on Porous Organic Polymers, Zhangjiajie, China, September 2017.

138. "Dynamic Covalent Synthesis and Property Study of Shape-Persistent Nanocages", The 7th International Conference on Nanoscale and Technology, Beijing, China, August 2017.

137. "Development of Multidentate Alkyne Metathesis Catalysts and Their Applications in Dynamic Covalent Synthesis", The 22nd International Symposium on Olefin Metathesis and Related Chemistry (ISOM XXII), Zürich, Switzerland, July 2017.

136. "Controlled Growth of Nanoparticles Mediated by Organic Functional Materials and Their Applications", The 12th Sino-US Nano Symposium, Beijing, China, May 2017.

135. "Bottom-up Design, Synthesis and Study of Hierarchical Nanostructured Porous Materials", Sino-Deutsch Symposium GZ1322 on Porous Organic Polymers for Sustainable Applications, Beijing, China, September 2016.

134. "Novel Malleable Covalent Networks and Their Applications in Repairable Carbon Fiber Reinforced Composites with Full Recyclability", 3rd International Conference on Aircraft Interior Composites & Lightweight Materials, Seattle, WA, USA, August 2016.

133. "Repairable Carbon Fiber Reinforced Composites with Full Recyclability Enabled by Novel Malleable Covalent Networks", 5th Global Automotive Lightweight Materials Conference, Detroit, MI, USA, August 2016.

132. "From Covalent Organic Frameworks to 2D Covalent Monolayer: a Journey with Dynamic Covalent Chemistry", 2nd International Symposium on Synthetic Two-Dimensional Polymers (S2DP-2), Nara, Japan, June 2016.

131. "Bottom-up Design, Synthesis and Study of Hierarchical Nanostructured Porous Materials", 2015 Pacifichem, Honolulu, HI, USA, December 2015.

130. "Modular Design of Porous Organic Polymers from Preporous Building Blocks", Symposium on Porous Materials for Energy and Sustainability from Discovery to Application, 250th American Chemical Society (ACS) Meeting, Boston, MA, USA, August 2015.

129. "Design and Synthesis of Organic Molecular Cages with High Fullerene Binding Selectivity", 16th International Symposium on Novel Aromatic Compounds (ISNA-16), Madrid, Spain, July 2015.

128. "Porous Organic Polymers for Electrocatalysis and Photoresponsive Gas Adsorption", Symposium on Nanostructured Porous Polymers: Synthesis, Properties, and Applications, 249th American Chemical Society (ACS) Meeting, Denver, CO, USA, Mar 2015.

127. "Shape-Persistent Covalent Organic Macrocycles and Polyhedrons Through Dynamic Covalent Chemistry", 9th International Symposium on Macrocyclic and Supramolecular Chemistry (ISMSC-9), Shanghai, China, June 2014.

126. "Development of Novel Organic Molecular Cages and Their Biological Activity Study", 10th Sina-US CAPA Conference, Jinan, China, June 2014.

125. "3-D Covalent Organic Polyhedrons (COPs) and Porous Polymer Frameworks (PPFs) through Dynamic Covalent Chemistry", Polymer Science Research and Teaching: A Tribute to Professor Jeffrey S. Moore, 246th American Chemical Society (ACS) Meeting, Indianapolis, IN, USA, Sept 2013.

124. "Alkyne Metathesis: Catalyst Design and Synthetic Applications" 20th International Symposium on Olefin Metathesis and Related Chemistry (ISOM-20), Nara, Japan, July 2013.

123. "Development and Applications of Dynamic Covalent Chemistry: From 2-D and 3-D Molecular Architectures to Functional Materials", 9th Sino-US Chemistry Professors Conference, Chengdu, China, July 2013.

122. "Development 2-D and 3-D Functional Molecular Architectures Through Dynamic Covalent Chemistry", ACS Award for Creative Invention: Symposium in Honor of Timothy M. Swager, 245th American Chemical Society (ACS) National Meeting, New Orleans, LA, USA, Apr 2013.

121. "Development and Applications of Dynamic Covalent Chemistry: From 2-D and 3-D Molecular Architectures to Functional Materials", Organic Young Academic Investigator Symposium, 244th American Chemical Society (ACS) National Meeting, Philadelphia, PA, USA, August 2012.

120. "Novel Porous Framework Materials Consisting of 3-D Shape-Persistent Organic Molecular Cages", PMSE Young Investigator Symposium, ACS Meeting, Philadelphia, PA, USA, August 2012.

119. "Design and Applications of Novel Porous Materials based on Covalent Organic Polyhedrons (COPs)", special symposium on "Design and Applications of Organic and Metal-Organic Porous Materials", 244th American Chemical Society Meeting, Philadelphia, PA, USA, August 2012.

118. "Highly CO_2-Selective Organic Molecular Cages for Carbon Capture", special symposium on "Greenhouse Gas Emissions: Control, Conversion and Utilization for Fuels and Energy Production", 242nd American Chemical Society (ACS) National Meeting, Denver, CO, USA, August 2011.

117. "Shape-Persistent Organic Molecular Cages for Carbon Capture", Pacifichem2010, Honolulu, HI, USA, December 2010.

(b) Representative Invited Lectures at Universities/Institutes (Total 116)

- University of Nevada, Reno, NV, Apr 2025
- University of Michigan, Ann Arbor, MI, Nov 2024
- University of Maryland, College Park, MD, Oct 2024
- Wayne State University, Detroit, MI, Sep 2024
- University of California at San Diego, San Diego, CA, Apr 2024.
- University of Wyoming, Laramie, WY, Apr 2024.
- Hong Kong University of Science and Technology (HKUST), Hong Kong, China, Mar 2024.
- Boston College, Boston, MA, Nov 2023.
- University of Washington, Seattle, WA, Feb 2023.
- University of Denver, Denver, CO, Jan 2023.

- Colorado School of Mines, Golden, CO, Oct 2022.
- University of Colorado Denver, Denver, CO, Sep 2022.
- University of South Florida, Tampa, FL, Nov 2021.
- University of Kentucky, Lexington, KY, Feb 2021 (virtual).
- Hong Kong University of Science and Technology (HKUST), Hong Kong, China, May 2019.
- Lawrence Berkeley National Laboratory, Berkeley, CA, May 2019.
- Stanford University, Stanford, CA, Apr 2019.
- Ohio State University, Columbus, OH, Feb 2019.
- University of Oregon, Eugene, OR, Feb 2018.
- Technische Universität Dresden, Dresden, Germany, July 2017.
- National Wind Technology Center (NWTC), National Renewable Energy Laboratory (NREL), Boulder, CO, June 2017.
- University of Houston, Houston, TX, Feb 2017.
- Colorado School of Mines, Golden, CO, Nov 2016.
- Colorado State University, Fort Collins, CO, Oct 2016.
- Japan Advanced Institute of Science and Technology, Nomi, Japan, June 2016.
- Peking University, Beijing, China, Nov 2015.
- Institute for Molecular Science, National Institutes of Natural Sciences, Okazaki, Japan, July 2015.
- Shanghai Institute of Organic Chemistry (SIOC), Shanghai, China, July 2015.
- École polytechnique fédérale de Lausanne (EPFL), Lausanne, Switzerland, May 2015.
- ETH Zürich, Zürich, Swtizerland, March 2015.
- Emory University, Atlanta, GA, USA, February 2015.
- University of Texas, Dallas, TX, USA, February 2015.
- Tsinghua University, Beijing, China, Dec 2014.
- Texas A&M University, College Station, TX, USA, Oct 2013.
- Kyoto University, Kyoto, Japan, July 2013.
- University of Utah, Salt Lake City, UT, USA, Apr 2013.
- University of Texas, Austin, TX, USA, Mar 2013.
- Cornell University, Ithaca, NY, USA, Feb 2013.
- Columbia University, New York, NY, USA, Jan 2013.ri
- University of Chicago, Chicago, IL, USA, Jan 2013.
- Northwestern University, Evanston, IL, USA, Jan 2013.
- University of Michigan, Ann Arbor, MI, USA, Nov 2012.

- Univ. of New Mexico, Albuquerque, NM, USA, Nov 2012.
- University of California at Irvine, Irvine, CA, USA, Oct 2012.
- University of California at Berkeley, Berkeley, CA, USA, Oct 2012.
- University of Illinois at Urbana-Champaign (UIUC), Urbana, IL, USA, Sept 2012.
- University of Maryland, College Park, MD, USA, Sept 2012.
- Johns Hopkins University, Baltimore, MD, USA, Sept 2012.
- Carbon Capture Workshop, Boulder, CO, USA, Oct 2011.
- Fort Lewis College, Durango, CO, USA, Sept 2011.
- University of South Dakota, SD, USA, Nov 2010.

(c) Invited Lecture at National Laboratories

- Oak Ridge National Laboratory, Oak Ridge, TN, USA, June 2013.

(d) Invited Lectures at Companies

- 3M Company, St. Paul, MN, USA, Oct 2012 and May 2014.

PROFESSIONAL SERVICE

- Local host for the 41st National Organic Chemistry Symposium (NOS), Boulder, 2009.
- Symposium session chair on 241st, 242nd, 244th and 246th ACS National Meetings.
- Faculty representative on the special workshop designed for postdocs seeking a faculty position in academia, ACS Division of Graduate Education, August, 2011.
- Organizer for the special symposium on "Design and Applications of Organic and Metal-Organic Porous Materials", 244th ACS National Meeting, Philadelphia, PA, August 2012.
- Organizer for the special symposium on "Frontiers of Organic Porous Materials: Structures, Properties, and Applications" held at Pacifichem2015, Honolulu, HI, USA, December 2015.
- Served on the A&S Core Curriculum Revision Committee (CRC), formulating a proposal for revising the A&S core curriculum, 2015-2016.
- Served on the Department Executive Committee, 2016-2018.
- Organizer for the 3rd International Symposium on Porous Organic Polymers (POPs2022) held at Boulder, CO, USA, August 2022.
- Editor (invited) for the book on "Dynamic Covalent Chemistry: Principles, Reactions, and Applications" published in September of 2017 by John Wiley & Sons, Inc.
- Guest Editor (invited) for the May 2018 issue of Current Opinion in Chemical Engineering.
- Guest Editor (invited) for the special issue of Small Methods (newly launched sister journal of Small) on "Nanostructured Materials for Catalysis" published in the fall of 2018.
- Served on the CU Boulder Natural Sciences Council, 2022-present.
- Guest Editor (invited) for the special issue of *Chemistry–A European Journal* on "Covalent Organic Frameworks: Green Synthesis and Cutting-Edge Applications" published in 2023.
- Editorial Board member for *Macromolecules*, *CCS Chemistry*.

- Served as reviewer for NSF, DOE, ERC, USDA, ASEE, ACS PRF, and Hong Kong RGC grant proposals, NSF panelist, reviewer for international scientific journals, such as *Science, Nature, Science Advances, Nature Chemistry*, *Nature Nanotechnology*, *Nature Communications, Nature Reviews Chemistry, Chemical Reviews, Chemical Society Reviews*, *Accounts of Chemical Research*, *Journal of American Chemical Society*, *Angewandte Chemie*, *Advanced Materials, Chem*, *Chemical Science, ACS Nano, Chemistry of Materials*, *Macromolecules*, *ACS Catalysis,* etc.

PROFESSIONAL AFFILIATIONS

American Chemical Society, Materials Research Society