

## JEFFREY R. LONG

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### Professional Experience

C. Judson King Distinguished Professor, University of California, Berkeley	2022-
Professor of Chemical and Biomolecular Engineering, University of California, Berkeley	2015-
Faculty Senior Scientist, Materials Sciences Division, Lawrence Berkeley National Laboratory	2009-
Professor of Chemistry, University of California, Berkeley	2008-
Faculty Scientist, Materials Sciences Division, Lawrence Berkeley National Laboratory	2003-2009
Associate Professor and Vice Chair of Chemistry, University of California, Berkeley	2003-2007
Assistant Professor of Chemistry, University of California, Berkeley	1997-2003

### Education

Postdoctoral Scholar with Prof. A. Paul Alivisatos	University of California, Berkeley, 1996-1997
Postdoctoral Scholar with Prof. Richard H. Holm	Harvard University, 1995-1996
Ph.D. in Chemistry with Prof. Richard H. Holm	Harvard University, 1995
B.A. <i>summa cum laude</i> in Chemistry and <i>cum laude</i> in Mathematics	Cornell University, 1991

### Professional Service

Director, Institute for Decarbonization Materials (2023-present); Co-Founder, ChemFinity Technologies (2022); Co-Founder and Director, Mosaic Materials (2014-2022, acquired by Baker Hughes in 2022); Director (2014-2020) and Deputy Director (2009-2014), Center for Gas Separations; Chair, Division of Inorganic Chemistry, American Chemical Society (2012); Founding Associate Editor, *Chemical Science* (2010-2014); Editorial Board, *Chemical Society Reviews* (2007-2009); Advisory Boards: *Bulletin of the Korean Chemical Society* (2020-present), *ACS Materials Letters* (2019-present), *Inorganic Syntheses* (2014-present), *Journal of Solid State Chemistry* (2013-present), *Progress in Inorganic Chemistry* (2012-present), *Chemistry of Materials* (2011-present), *Energy & Environmental Science* (2008-present); Science Advisory Boards: ChemFinity Technologies (2023-present); Brown Science Foundation (2021-present), Center for Materials for Water and Energy Systems (2018-present), MacDiarmid Institute for Advanced Materials and Nanotechnology (2015-2020), Institute of Chemical Research of Catalonia (2015-2018), KAUST Advanced Membrane and Porous Materials Center (2014-2018), ShanghaiTech University (2014-2018), Wildcat Discovery Technologies (2007-2014); Councilor, Division of Inorganic Chemistry, American Chemical Society (2005-2008); Lead PI, Berkeley Hydrogen Storage Program (2004-present).

### Awards

Eni Award: Energy Transition Prize, 2023; Member, National Academy of Sciences, 2023; Department of Energy Achievement Award, Driving U.S. Competitiveness and Innovations Team, 2023; Miller Research Professor, UC Berkeley, 2021-2022; Royal Society of Chemistry Ludwig Mond Award, 2020; Department of Energy Energy Frontier Research Centers Ten at Ten Award, 2019; Member, American Academy of Arts and Sciences, 2019; American Chemical Society F. Albert Cotton Award in Synthetic Inorganic Chemistry, 2019; Department of Energy Hydrogen and Fuel Cells Program R&D Award for Hydrogen Storage, 2016; Bakar Fellow, UC Berkeley, 2016-2021; France-Berkeley Fund Early-Career Research Award, 2014; UC Berkeley Graduate Assembly Faculty Mentor Award, 2014; Honorary Professor, Jilin University, 2013; Visiting Professor, University of Paris Sud, 2013; Miller Research Professor, UC Berkeley, 2011; Visiting Professor, Université Louis Pasteur, Strasbourg, 2008; National Fresenius Award, 2004; National Science Foundation Special Creativity Award, 2003-2005 and 2009-2011; TR100 Award, 2002; Wilson Prize, Harvard University, 2002; Alfred P. Sloan Research Fellow, 2001-2003; Camille Dreyfus Teacher-Scholar Award, 2000; Hellman Family Faculty Award, 1999; Research Corporation Research Innovation Award, 1998; National Science Foundation Postdoctoral Research Fellow, 1996-1997; Office of Naval Research Predoctoral Fellow, 1991-1994; Mandelkern Prize, Cornell University, 1991.

### Honorary Lectureships

John Stauffer Lecturer in Chemistry, Stanford University, 2024; George H. Cady Lecturer, University of

Washington, 2024; Karcher-Barton Lecturer, University of Oklahoma, 2024; Baker Lecturer, Cornell University, 2023; 3M Lecturer, University of British Columbia, 2022; Cheetham Lecturer, University of California, Santa Barbara, 2022; Malcom H. Chisholm Lecturer, The Ohio State University, 2021; Aggarwal Lecturer, Cornell University, 2019; Habermann Distinguished Lecturer, Marquette University, 2017; ScotCHEM Lecturer, 2016; Early-Career Research Award, 2014; UC Berkeley Graduate Assembly Faculty Mentor Award, 2014; 2014 *Inorganic Chemistry* Lectureship; 3M Research Lecturer in Materials Science, University of British Columbia, 2014; Clifford B. Purves Lecturer, McGill University, 2013; Ray Q. Brewster Lecturer, University of Kansas, 2013; Distinguished Summer Lecturer in Inorganic Chemistry, Northwestern University, 2013; John van Geuns Lecturer, University of Amsterdam, 2013; Xingda Lecturer, Peking University, 2013; Chancellor's Distinguished Visitor, University of Missouri-Columbia, 2013; First KRICT Lecture of World's Outstanding Chemist, 2012; Frontiers of Chemical Research Lecturer, Texas A&M University, 2011; ADVANCE Distinguished Lecturer, Kansas State University, 2009; Olivier Kahn Memorial Lecturer, University of Bordeaux, 2007; Carl Fresenius Award Lecturer, Purdue University, 2005.

### Research Interests

Inorganic and Solid State Chemistry: synthesis of inorganic clusters and solids; electronic and magnetic properties of inorganic materials; single-molecule magnets; metal-organic frameworks; hydrogen and natural gas storage; gas and liquid phase separations, including carbon dioxide capture; metal ion separations; energy storage; homogeneous and heterogeneous catalysis; actinide chemistry.

### Patents

- (1) US Patent No. 5,717,121: "Preparation of Transition Metal Halide Clusters and Their Use as Contrast Agents" Droege, M.; Downey, S.; Franolic, J.; Holm, R.; Long, J. R., filed June 7, 1995, issued February 10, 1998.
- (2) US Patent No. 5,804,161: "Preparation of Hexanuclear Rhenium and Rhodium Cluster Complexes as Contrast Agents" Long, J.; Holm, R.; Sanderson, W.; Yu, S.-B.; Zheng, Z.; filed August 25, 1996, issued September 7, 1998.
- (3) US Patent No. 8,575,345: "Molecular Cobalt Pentapyridine Catalysts for Generating Hydrogen from Water" Long, J. R.; Chang, C. J.; Sun, Y., filed May 18, 2012, issued November 5, 2013.
- (4) US Patent No. 8,961,776: "Molecular Metal-Oxo Catalysts for Generating Hydrogen from Water" Karunadasa, H. I.; Chang, C. J.; Long, J. R., filed September 10, 2010, issued February 24, 2015.
- (5) US Patent No. 9,300,010: "A Solid Lithium Electrolyte via Addition of Lithium Salts to Metal-Organic Frameworks" Wiers, B. M.; Balsara, N. P.; Long, J. R., filed August 8, 2013, issued March 29, 2016.
- (6) US Patent No. 9,315,909: "Molecular Molybdenum Persulfide and Related Catalysts for Generating Hydrogen from Water" Long, J. R.; Chang, C. J.; Karunadasa, H. I.; Majda, M., filed February 23, 2012, issued April 19, 2016.
- (7) US Patent No. 9,499,916: "Molecular Molybdenum Persulfide and Related Catalysts for Generating Hydrogen from Water" Long, J. R.; Chang, C. J.; Karunadasa, H. I.; Majda, M., filed September 21, 2015, issued November 22, 2016.
- (8) US Patent No. 9,525,190: "Solid Lithium Electrolyte via Addition of Lithium Salts to Metal-Organic Frameworks" Wiers, B. M.; Balsara, N. P.; Long, J. R., filed March 28, 2016, issued December 20, 2016.
- (9) US Patent No. 9,540,294: "Metal-Organic Framework for the Separation of Alkane Isomers" Long, J. R.; Herm, Z. R.; Wiers, B. M.; Krishna, R., filed May 4, 2015, issued January 10, 2017.
- (10) US Patent No. 9,675,923: "Gas Separations with Redox-Active Metal-Organic Frameworks" Long, J. R.; Bloch, E. D.; Murray, L. J., filed August 24, 2012, issued June 13, 2017.
- (11) US Patent No. 9,861,953: "Alkylamine Functionalized Metal-Organic Frameworks for Composite Gas Separations" Long, J. R.; McDonald, T. M.; D'Alessandro, D. M., filed December 8, 2016, issued January 9, 2018.
- (12) US Patent No. 9,960,447: "Polymer Network Single Ion Conductors" Long, J. R.; Van Humbeck, J.

- F.; Ameloot, R., filed December 8, 2014, issued May 1, 2018.
- (13) US Patent No. 9,987,583: “Polymers Functionalized with Bronsted Acid Groups” Van Humbeck, J. F.; Long, J. R.; McDonald, T. M.; Barin, G., filed November 21, 2014, issued June 5, 2018.
  - (14) US Patent No. 10,035,127: “Metal–Organic Frameworks with a High Density of Highly Charged Exposed Metal Cation Sites” Long, J. R.; Kapelewski, M. T.; Geier, S. J., priority date November 4, 2014, issued July 31, 2018.
  - (15) US Patent No. 10,058,855: “Redox-Active Metal–Organic Frameworks for the Catalytic Oxidation of Hydrocarbons” Long, J. R.; Xiao, D. J., filed May 13, 2016, issued August 28, 2018.
  - (16) US Patent No. 10,118,877: “Metal–Organic Frameworks for Aromatic Hydrocarbon Separations” Long, J. R.; Bloch, E. D.; Kapelewski, M. T.; Gonzalez, M. C. I., filed December 2, 2015, issued November 6, 2018.
  - (17) US Patent No. 10,137,430: “Alkylamine Functionalized Metal–Organic Frameworks for Composite Gas Separations” Long, J. R.; McDonald, T. M.; D’Alessandro, D. M., filed November 21, 2017, issued November 27, 2018.
  - (18) US Patent No. 10,702,850: “Adsorbents with Stepped Isotherms for Gas Storage Applications” Long, J. R.; Mason, J. A.; Taylor, M. K.; Oktawiec, J., filed October 7, 2016, issued July 7, 2020.
  - (19) US Patent No. 10,722,863: “Cooperative Chemical Adsorption of Acid Gases in Functionalized Metal–Organic Frameworks” Long, J. R.; McDonald, T. M., filed October 18, 2016, issued July 28, 2020.
  - (20) US Patent No. 11,014,067 B2: “Polyamine-Appended Metal–Organic Frameworks for Carbon Dioxide Separations” Weston, S. C.; Falkowski, J. M.; Long, J. R.; Kim, E. J.; Martell, J. D.; Milner, P. J.; Siegelman, R. L., filed October 30, 2018, issued May 25, 2021.
  - (21) US Patent No. 11,065,264: “Metal–Olsalazine Coordination Solids for Drug Delivery” Long, J. R.; Levine, D. J.; Gonzalez, M. I., filed June 7, 2016, issued July 20, 2021.

### **Patent Applications**

- (1) Published PCT Application No. WO/2012/122233: “Metal–Organic Framework Adsorbents for Composite Gas Separations” Long, J. R.; Herm, Z. R.; Swisher, J. A.; Smit, B.; Krishna, R.; Bloch, E. D.; Murray, L. J., published September 13, 2012 (International Application No.: PCT/US2012/028006).
- (2) US Patent Application No. 14/703631: “Metal–Organic Frameworks for the Separation of Alkane Isomers” Long, J. R.; Herm, Z. R.; Wiers, B. M.; Krishna, R., filed October 29, 2015.
- (3) Published PCT Application No. WO/2015/164543: “Cooperative Chemical Adsorption of Acid Gases in Functionalized Metal–Organic Frameworks” McDonald, T. M.; Long, J. R., published October 29, 2015 (International Application No.: PCT/US2015/027165).
- (4) PCT Application No. PCT/US2016/037036: “Polymer Network Single-Ion Conductors with Flexible Linker” Long, J. R.; Van Humbeck, J. V.; Axelson, J. C., filed June 10, 2016.
- (5) PCT Application No. PCT/US2016/054530: “Gas Purification with Diamine-Appended Metal–Organic Frameworks” Long, J. R.; McDonald, T. M.; Siegelman, R. L.; Thompson, J. A. filed September 29, 2016.
- (6) US Patent Application No. 15/593117: “Thioether Functionalized Porous Polymers for Copper Capture with Colorimetric Assay” Chang, C. J.; Long, J. R.; Lee, S. Barin, G., filed May 11, 2017.
- (7) Published PCT Application No. WO/2017/087422: “Reducing Plasticization Effects in Polymer Membranes Using Metal–Organic Frameworks” Bachman, J. E.; Long, J. R.; Smith, Z. P., published May 26, 2017 (International Application No.: PCT/US2016/062103).
- (8) US Patent Application No. 16/045,616: “Overcoming Two Carbon Dioxide Adsorption Steps in Diamine-Appended Metal–Organic Frameworks” Long, J. R.; Weston, S. C.; Milner, P. J.; Martell, J. D.; Siegelman, R. L., filed July 25, 2018.
- (9) US Patent Application No. 16/049,911: “Batteries with Polymer Electrolyte Composites Based on Tetrahedral Arylborate Nodes” Hellstrom, S.; Abram, D.; Aubrey, M.; Long, J. R.; Harry, K.;

- Christensen, J. F.; Eitouni, H.; Axelson, J., filed July 31, 2018.
- (10) US Patent Application No. 16/054,800: “Metal–Organic Frameworks Appended with Cyclic Diamines for Carbon Dioxide Capture” Long, J. R.; Weston, S. C.; Milner, P. J.; Siegelman, R. L., filed August 3, 2018.
  - (11) PCT Application No. PCT/US2017/025541: “Selective, Adsorbate-Induced Spin State Changes in Transition Metal-Based Metal–Organic Frameworks” Long, J. R.; Keitz, B. K.; Reed, D., filed September 27, 2018.
  - (12) US Patent Application No. 16/582,860 and International Patent Application PCT/US2019/052977: “Metal–Organic Framework Phase and Crystallite Shape Control” Weston, S. C.; Long, J. R.; Falkowski, J. M.; Colwell, K.; Torres-Gavosto, R., filed September 25, 2019.
  - (13) PCT Application No. PCT/US20/26046: “Iron Detection and Remediation with a Functionalized Porous Polymer” Lee, S.; Uliana, A.; Long, J. R.; Chang, C. J., filed March 31, 2020.
  - (14) US Patent Application No. 16/767,488: “A Vanadium Metal–Organic Framework for Selective Adsorption” Long, J. R.; Jaramillo, D. E.; Reed, D. A., filed May 27, 2020.
  - (15) PCT Application No. PCT/US2021/050724: “Adsorbent Based Membranes and Uses Thereof” Long, J. R.; Uliana, A.; Urban, J. J.; Bui, N., filed September 16, 2021.
  - (16) PCT Application No. PCT/US2021/050738: “Charged Membranes Incorporated with Porous Polymer Frameworks” Long, J. R.; Uliana, A., filed September 16, 2021.
  - (17) PCT Application No. PCT/US2022/37901: “Controlling Metal–Organic Framework Morphology through Coordinative Mimicry” Jackson, M.; Long, J.; Falkowski, J., filed July 21, 2022.

#### **Provisional Patent Applications**

- (1) US Provisional Patent Application No. 61/606,948: “Carbon Dioxide Capture from Air in Alkylamine-Functionalized Metal–Organic Frameworks” Long, J. R.; McDonald, T. M., filed March 5, 2012.
- (2) US Provisional Patent Application No. 61/679,474: “Cation-Exchanged Zeolite Adsorbents for Post-Combustion Carbon Dioxide Capture” Bae, T.-H.; Long, J. R., filed August 3, 2012.
- (3) US Provisional Patent Application No. 62/460,548: “Amine-Appended Metal–Organic Frameworks with a New Mechanism for CO<sub>2</sub> Separations” Long, J. R.; Milner, P. J.; Siegelman, R. L., filed February 17, 2017.
- (4) US Provisional Patent Application No. 62/968,359: “Metal-Ligand Exchange Coupling Promotes Iron Catalyzed Electrochemical CO<sub>2</sub> Reduction” Derrick, J.; Loipersberger, M.; Head-Gordon, M.; Long, J. R.; Chang, C. J., filed January 31, 2020.
- (5) US Provisional Patent Application No. 63/079,457: “Multifunctional Separations Using Adsorbent-Based Membranes” Long, J. R.; Uliana, A. A.; Urban, J. J.; Bui, N., filed September 16, 2020.
- (6) US Provisional Patent Application No. 63/326,255: “Gas Separation Membranes Enhanced by Porous Aromatic Frameworks” Long, J. R.; Uliana, A. A.; Velasquez, E. O., filed March 31, 2022.
- (7) US Provisional Patent Application No. 63/477,976: “Acid Gas Capture Through Metal-Ligand Insertion in Porous Materials at Elevated Temperatures” Long, J. R.; Carsch, K. M.; Rohde, R. C., filed December 30, 2022.
- (8) US Provisional Patent Application No. 63/483,555: “Cooperative Ligand Insertion Mechanism for Ammonia Capture and Storage in Metal–Organic Frameworks” Snyder, B. E. R.; Velasquez, E. O.; Long, J. R., filed February 7, 2023.
- (9) US Provisional Patent Application No. 63/460,810: “Oxygen-Selective Adsorption from Air with a Metal–Organic Framework Featuring Open Copper Sites” Long, J. R.; Carsch, K. M., filed April 20, 2023.
- (10) US Provisional Patent Application No. 63/516,154: “Selective Carbon Monoxide Uptake by Porous Materials with Metal Carbanions” Long, J. R.; Pletier, J. L.; Carsch, K. M.; Boergel, J., filed July 28, 2023.

## Professional Activities

- Symposium Co-organizer, The Metal-Cyanide Renaissance: On the Tricentennial of the Synthesis of Prussian Blue, The 229th Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2005
- Scientific Committee Member, MOF2008: 1st International Conference on Metal-Organic Frameworks and Open Framework Compounds, Augsburg, Germany, October 8-10, 2008
- Guest Editor, *Chemical Society Reviews*, Themed Issue on Metal-Organic Frameworks, May, 2009
- Conference Committee Member, 3rd International Symposium on Advancing the Chemical Sciences: Challenges in Inorganic and Materials Chemistry, Hong Kong, China, July 20-23, 2010
- Scientific Committee Member, MOF2010: 2nd International Conference on Metal-Organic Frameworks and Open Framework Compounds, Marseilles, France, September 5-8, 2010
- Symposium Co-organizer, Synthesis and Applications of Metal-Organic Frameworks, Pacificchem 2010, Honolulu, HI, December 15-20, 2010
- Conference Committee Member, 4th International Symposium on Advancing the Chemical Sciences: Challenges in Renewable Energy, Boston, MA, July 5-8, 2011
- International Advisory Committee Member, 3rd European Conference on Molecular Magnetism (ECMM11), Paris, France, November 22-25, 2011
- Guest Editor, *Chemical Reviews*, Themed Issue on Metal-Organic Frameworks, 2012
- Conference Committee Member, 8th International Symposium on Advancing the Chemical Sciences: Challenges in Inorganic and Materials Chemistry, Toronto, Canada, July 19-22, 2012
- Advisory Board Member, MOF2012: 3rd International Conference on Metal-Organic Frameworks and Open Framework Compounds, Edinburgh, UK, September 16-19, 2012
- Co-organizer, Sixteenth Mesilla Chemistry Workshop on Ligand-Based Control of Spin and Reactivity in Metal Complexes, Mesilla, NM, February 11-15, 2012
- Scientific Advisory Board Member, The Molecular Foundry, Lawrence Berkeley National Laboratory, 2012-2014
- Conference Committee Member, 12th International Symposium on Advancing the Chemical Sciences: Challenges in Chemical Renewable Energy, Cambridge, September 3-6, 2013
- International Advisory Board Member, 4th European Conference on Molecular Magnetism, Karlsruhe, Germany, October 6-10, 2013
- International Science Advisory Board Member, School of Physical Science and Technology, Shanghai Institute of Technology, 2013-present
- International Advisory Board Member, Symposium on Hydrogen Production and Storage, 6<sup>th</sup> Forum on New Materials, Montecatini Terme, Italy, June 15-20, 2014
- Conference Committee Member, 13th International Symposium on Advancing the Chemical Sciences: Challenges in Inorganic Chemistry and Materials Chemistry, Dublin, July, 2014
- Advisory Board Member, 4th International Conference on Metal-Organic Frameworks and Open Framework Compounds (MOF2014), Kobe, Japan, September 28-October 1, 2014
- International Advisory Board Member, 5th European Conference on Molecular Magnetism, Zaragoza, Spain, September 6-10, 2015
- Symposium Co-organizer, Metal-Organic Frameworks: Synthesis, Properties, and Applications, Pacificchem 2015, Honolulu, HI, December 15-20, 2015
- International Advisory Board Member, 5th International Conference on Metal-Organic Frameworks and Open Framework Compounds (MOF2016), Long Beach, CA, September 11-15, 2016
- Guest Editor, *Inorganic Chemistry*, Forum on Metal-Organic Frameworks for Energy-Related Applications, 2016
- International Advisory Board Member, 6th European Conference on Molecular Magnetism, Bucharest, Romania, August 27-31, 2017
- Co-organizer, 2017 Japan-US Bilateral Meeting on Coordination Chemistry, Sapporo, Japan, February 15-16, 2017
- Presidential Nominee, Chemistry Visiting Committee, MIT Corporation, 2017-2025
- Co-organizer, University of California, Berkeley-Seoul National University Symposium on Frontiers of Chemistry, Berkeley, CA, July 23, 2018
- Guest Editor, *Organometallics*, Themed Issue on Organometallic Chemistry within Metal-Organic

Frameworks, 2019  
Molecular Foundry Division Director Search Committee, Lawrence Berkeley National Laboratory, 2019-2020  
Guest Editor, *Chemical Reviews*, Themed Issue on Porous Framework Chemistry, 2020  
Member, Negative Energy Technologies Working Group, Lawrence Berkeley National Laboratory, 2020-present  
Facilitator, Scialog Meeting on Negative Emissions Science, November 5 and 6, 2020, November 4 and 5, 2021, November 9-12, 2022  
Jury Member, BBVA Foundation Frontiers of Knowledge Award in Basic Sciences (Physics, Chemistry, Mathematics), 2021-2022  
Advisory Board Member, Columbia University Materials Research Science and Engineering Center, 2021-present  
Member, Staff Promotion Ad Hoc Committee, Lawrence Berkeley National Laboratory, 2022  
Direct Air Capture Panel Lead, Department of Energy Roundtable on Foundational Science for Carbon Dioxide Removal Technologies, March 2-4, 2022  
Direct Air Capture and Storage Session Co-Lead, Carbon Negative Workshop, Lawrence Berkeley National Laboratory, June 30, 2022  
Committee Member, Search for an Associate Lab Director for Energy Technologies at Lawrence Berkeley National Laboratory, 2022  
Visiting Committee, Department of Chemistry and Chemical Biology, Harvard University, March 20-21, 2023  
International Advisory Board Member, International Conference on Metal-Organic Frameworks and Open Framework Compounds (MOF2024), Singapore

#### **University Service (since 2007)**

Designated Emphasis in Energy Science and Technology Executive Committee and Graduate Group Admissions Committee, 2007-present  
Berkeley Nanoscience and Nanoengineering Institute Faculty Search Committee, 2008  
Department of Chemistry Curriculum Committee, 2008-2011  
Department of Chemistry Visiting Fellows Advisory Committee, 2008-2010  
Department of Chemistry Graduate Life Committee, 2009-2012 (Chair, 2011-2012)  
Department of Chemistry Inorganic Seminar Chair, Fall 2009, Fall 2012, Fall 2015, Fall 2017, Spring 2023  
Academic Senate Committee on Undergraduate Scholarships, Honors, and Financial Aid, 2011-2012  
College of Chemistry Advisory Committee for Space and Renovations, 2011-2012  
Department of Chemistry Planning Committee, 2012-2015, 2018-present  
Department of Chemistry Faculty Search Committee, 2014-2015  
Department of Chemistry Inorganic Chemistry Student Advisor, 2014-2015  
College of Chemistry X-Ray Director Search Committee, 2017  
University Radiation Safety Committee, 2017-2019  
Campus Ad-Hoc Review Committee for Promotion to Tenure, 2018, 2020  
Chancellor's Advisory Council for Physical Sciences, Co-Chair, 2019-2021  
College of Chemistry Shops Committee, 2019-2021  
Heising-Simons Faculty Fellows Selection Committee, 2021  
Executive Committee Member, Miller Institute for Basic Research in Science, 2022-2025

#### **Ph.D. Students Supervised**

Michael L. Aubrey (2017), Assistant Professor, University of Texas at Austin  
Jordan C. Axelson (2016), Lecturer, University of Illinois at Urbana-Champaign  
Jonathan E. Bachman (2017), Research Scientist, PARC, a Xerox Company  
Laurance G. Beauvais (2002), Associate Professor, Point Loma Nazarene University  
Lianne M. C. Beltran (2007), Freelance Scientific Editor  
Miriam V. Bennett (2003), Adjunct Professor, San Diego State University  
Louise A. Berben (2005), Professor, University of California, Davis  
Naomi Biggins (2021), Associate, McKinsey & Company

Eric D. Bloch (2014), Veronica Siedle Associate Professor, Indiana University  
Philip C. Bunting (2019), Postdoctoral Scholar, University of California, San Diego  
Leslie G. Castro (expected 2027)  
Khetpakorn Chakarawet (2020), Postdoctoral Scholar, University of California, Davis  
Hannah Christianson (expected 2027)  
Stephanie Collins (2019-2021), Graduate Student, University of California, Berkeley  
Kristen Colwell (2019), Process Engineer, Intel Corporation  
Nathan R. M. Crawford (2004), Director, Molecular Modeling Facility, University of California, Irvine  
Lucy E. Darago (2018), Vice President, Strategy, XGS Energy  
Matthew Dickson (expected 2026)  
Mircea Dincă (2008), W. M. Keck Professor of Energy, Massachusetts Institute of Technology  
Matthew Dods (expected 2024)  
Kaitlyn Engler (2022), Scientist, Northrop Grumman Corporation  
Xiaowen Feng (2015), Postdoctoral Scholar, Harvard University  
Danna E. Freedman (2009), Frederick George Keyes Professor, Massachusetts Institute of Technology  
Miguel I. Gonzalez (2017), Assistant Professor, Dartmouth College  
Colin A. Gould (2020), Postdoctoral Scholar, Princeton University  
Katerina Graf (expected 2026)  
T. David Harris (2010), Project Scientist, University of California, Berkeley  
Ayah Hassan (expected 2027)  
Allan G. Hee (2005), Manager, Americas Business Development & Strategy, Chevron Corporation  
Leander Held (expected 2026)  
Zoey R. Herm (2014), Senior Scientist, Riffyn  
Kaipeng Hou (2022), Postdoctoral Scholar, University of California, San Francisco  
Adrian Huang (expected 2025)  
Emi Ito (expected 2027)  
David E. Jaramillo (2021), Co-Founder and Chief Technical Officer, Verne  
Henry Z. H. Jiang (expected 2023)  
Matthew T. Kapelewski (2018), Senior Researcher, Catalyst Scale-Up, ExxonMobil  
Sally Karstens (expected 2025)  
Hemamala I. Karunadasa (2009), Associate Professor, Stanford University  
Steven S. Kaye (2007), Chief Technology Officer, Our Next Energy  
Ruby Kharod (expected 2027)  
Rebecca Khoo (2015-2018), Graduate Student Researcher, Lawrence Berkeley National Laboratory  
Eugene Kim (2021), Process Engineer, Intel Corporation  
Jeong Won Kim (expected 2027)  
Hyunchul Kwon (expected 2024)  
Dana J. Levine (2015), Senior Research Scientist, Gilead Sciences  
Daniel Lussier (expected 2021)  
Kennedy McCone (expected 2024)  
Thomas M. McDonald (2015)  
Jarad A. Mason (2015), Assistant Professor, Harvard University  
Katie R. Meihaus (2015), Science Editor, University of California, Berkeley  
Ryan A. Murphy (expected 2021)  
Danh X. Ngo (expected 2024)  
Julia Oktawiec (2019), Postdoctoral Scholar, Northwestern University  
Maria Paley (2022), Chemist, ChemFinity Technologies  
Jesse Park (2021), Postdoctoral Scholar, KAIST  
Surya Parker (2022), Scientist, Carbon Capture  
Priya Patel (expected 2027)  
Kyle Pekar (expected 2027)  
Ethan Pezoulas (expected 2026)  
Douglas A. Reed (2018), Assistant Professor, University of Washington  
Nicole Removski (expected 2027)

Rhea-Donna Reyes (expected 2027)  
Jeffrey D. Rinehart (2010), Associate Professor, University of California, San Diego  
Rachel Rohde (expected 2024)  
Matthew P. Shores (2002), Professor and Chair of Chemistry, Colorado State University  
Rebecca L. Siegelman (2019), Senior Research Investigator, Emerging Technologies, DuPont  
Jennifer J. Sokol (2003), Product and Technology Development Specialist, 3M Corporation  
Nathan Stovall (expected 2027)  
Kenji Sumida (2012), Chief Scientific Officer, Atomis  
Mercedes K. Taylor (2018), Assistant Professor, University of Maryland  
Rodolfo M. Torres-Gastovo (2019), Process Engineer, Intel Corporation  
Eric G. Tulsy (2002), Assistant General Manager, Carolina Hurricanes  
Ari Turkiewicz (2021), Postdoctoral Scholar, Harvard University  
Adam Uliana (2022), CEO, ChemFinity Technologies  
Ever Velasquez (2022), CTO, ChemFinity Technologies  
Alexandre Vincent (expected 2023)  
Eric J. Welch (2007), Senior Research & Development Manager, Thermo Fisher Scientific  
Brian M. Wiers (2015), Senior Battery Scientist, Zēlos Energy  
Dianne J. Xiao (2016), Assistant Professor, University of Washington  
Yuto Yabuuchi (expected 2024)  
Joseph M. Zadrozny (2013), Associate Professor, Ohio State University  
Isaac Zakaria (expected 2025)  
David Z. Zee (2017), Postdoctoral Scholar, Northwestern University  
Ziting Zhu (expected 2023)  
Michael E. Ziebel (2020), Postdoctoral Scholar, Columbia University

#### **Postdoctoral Scholars Supervised**

Rob Ameloot (2012-2013), Associate Professor, University of Leuven  
Hasan Babaei (2019-2022), Senior Engineer, Totus Medicines  
Tae-Hyun Bae (2011-2013), Associate Professor, Korea Advanced Institute of Science and Technology  
Gokhan Barin (2013-2016), Chief Technology Officer, CycloPure  
Brandon R. Barnett (2016-2020), Assistant Professor, University of Rochester  
Bart M. Bartlett (2005-2008), Professor, University of Michigan  
Stephane Baudron (2002-2004), CNRS Research Director, Institut Le Bel, University of Strasbourg  
Bettina Bechlars Christle (2007-2009), Senior Scientist, Analytical Chemistry, Novoloop  
Jogendra Behera (2007-2009), Associate Professor, National Institute of Science Education and Research  
Jonas Börgel (2020-present)  
Kurtis Carsch (2021-present)  
Hye Jin Choi (2004-2011), Senior Research Scientist II, Kinestral Technologies  
Deanna M. D'Alessandro (2007-2009), Professor, University of Sydney  
Pierre Dechambenoit (2009-2010), Associate Professor, University of Bordeaux  
Marty W. DeGroot (2004-2006), Director of Global Technology, DuPont  
Aude Demessence (2007-2008), CNRS Researcher, IRCELYON, University of Lyon  
Selvan Demir (2010-2015), Assistant Professor, Michigan State University  
Stephanie Didas (2017-2021), Director of Innovation, Global Thermostat  
Maw Lin Foo (2008-2010), Lecturer, National University of Singapore  
Alexander Forse (2016-2019), Lecturer, Cambridge University  
Lena M. Funke (2019-2021), Research Scientist, BASF  
Hiroyasu Furukawa (2016-present)  
Stephen Geier (2010-2012), Data and Digital Services Librarian, Mount Allison University  
Bahman Golesorkhi (2020-present)  
Paulina Gomora (2010-2012), Associate Professor, National Autonomous University of Mexico  
Tarkeshwar Gupta (2008-2009), deceased  
Dominik Halter (2018-2020), Liebig Fellow, Technical University of Munich  
Won Seok Han (2005-2006), Research Professor, Kyung-Sang University



Julie L. Heinrich (1997-1999), Counsel, McNeill Baur PLLC  
 Tatsuya Higaki (2020-2022), Assistant Professor, Kyoto University  
 Chang Seop Hong (2002-2003), Professor, Korea University  
 Satoshi Horike (2007-2009), Professor, Kyoto University  
 Megan Jackson (2019-2022), Assistant Professor, University of North Carolina, Chapel Hill  
 Adam Jaffe (2017-2021), Assistant Professor, Notre Dame University  
 Suzanne Jansze (2019-2021), Senior Scientist and Team Lead, Materials and Texture, Impossible Foods  
 David M. Jenkins (2005-2008), Ziegler Professor of Chemistry, University of Tennessee  
 Jovan Kamcev (2017-2019), Assistant Professor, University of Michigan  
 B. Keith Keitz (2012-2015), Associate Professor, University of Texas at Austin  
 Yoji Kobayashi (2008-2009), Associate Professor, King Abdullah University of Science and Technology  
 Stosh Kozimor (2005-2007), Chemist, Los Alamos National Laboratory  
 Aravind Kumar Chandiran (2014-2016), Assistant Professor, Indian Institute of Technology, Madras  
 Ohchan Kwon (2023-present)  
 Victor C. Lau (2001-2002), Associate Director, Knowledge Transfer Officer, City University of Hong Kong  
 In Su Lee (2004-2005), Professor, Pohang University of Science and Technology  
 Jiwoong Lee (2014-2016), Associate Professor, University of Copenhagen  
 Yeh-Yung Lin (2015-2017), Research Development Technical Manager, TSMC  
 Jeffrey D. Martell (2015-2019), Assistant Professor, University of Wisconsin, Madison  
 C. Michael McGuirk (2016-2019), Assistant Professor, Colorado School of Mines  
 Zachary Mensinger (2010-2012), Associate Professor, Metropolitan State University  
 Phillip J. Milner (2015-2018), Assistant Professor, Cornell University  
 Elizabeth Montalvo (2010-2012), Research Scientist, Chevron Corporation  
 Jennifer Murphy (2021-2022), Assistant Professor, University of Guelph  
 Leslie J. Murray (2007-2010), Associate Professor, University of Florida  
 Muralee Murugesu (2005-2006), Professor, University of Ottawa  
 Michael Nippe (2011-2014), Associate Professor, Texas A&M University  
 Inseon Oh (2021-2022), Postdoctoral Scholar, Lawrence Berkeley National Laboratory  
 Hye Jeong Park (2014-2016), Postdoctoral Scholar, Texas A&M University  
 Jesse Peltier (2020-2023), Assistant Professor, Northeastern University  
 Wendy L. Queen (2011-2012), Associate Professor, EPFL Sion  
 Farshid Ramezanipour (2013-2015), Associate Professor, University of Louisville  
 David L. Rogow (2010-2012), Instructor, Linn-Benton Community College  
 Syamantak Roy (2019-2021), Postdoctoral Scholar, University of California, Berkeley  
 Tomce Runčevski (2015-2018), Assistant Professor, Southern Methodist University  
 Sebastian Sandl (2021-2022)  
 Maheswaran Shanmugam (2006-2009), Professor, Indian Institute of Technology, Bombay  
 Dong-Myeong Shin (2017-2019), Assistant Professor, Hong Kong University  
 Zachary P. Smith (2014-2016), Assistant Professor, Massachusetts Institute of Technology  
 Benjamin E. R. Snyder (2018-2022), Assistant Professor, University of Illinois at Urbana-Champaign  
 Navid Soheilnia (2006-2008), Senior Research Scientist, 3E Nano  
 Yoshiaki Tanabe (2002-2003), Project Lecturer, University of Tokyo  
 Ming Lee Tang (2008-2012), Associate Professor, University of Utah  
 Jordan Taylor (2020-2022), Patent Examiner, US Patent Office  
 Günther Thiele (2016-2017), Junior Group Leader, Free University of Berlin  
 Alexander Tskhovrebov (2014-2016), Deputy Director, Institute of Chemistry, RUDN University  
 Jeffrey Van Humbeck (2011-2014), Assistant Professor, University of Calgary  
 Juan Valdez-Moreira (2022), Process Engineer, Intel Corporation  
 Julian Amado Vigil (2023-present)  
 Shuao Wang (2012-2013), Professor, Soochow University  
 Yang Wang (2022-present)  
 Shuoyan Xiong (2023-present)  
 Yang Yang (2016-2018), Assistant Professor, University of California, Santa Barbara

Mengshan Ye (2022-present)  
Minyoung Yoon (2012-2013), Associate Professor, Kyungpook National University  
Jian Zeng (2022-2023), Assistant Professor, Hong Kong University of Science and Technology

### **Undergraduate Students Supervised**

Kristine Arquero (2007-2008), Professor, MiraCosta College  
Kushaan Bahl (2021-2022)  
Audrey Bartlett (2021-2022), Graduate Student, Massachusetts Institute of Technology  
Nicholas Brune (2013-2015), Graduate Student, University of Washington  
Stephanie Chang (2018-2019)  
Orlando A. Conde-Del Moral (2022, 2023), Undergraduate Student, University of Puerto Rico  
Robert W. Cumberland (1998-1999), Research Scientist, HRL Laboratories  
Bhavish Dinakar (2017-2020), Graduate Student, Massachusetts Institute of Technology  
Mary Faia (2005-2007)  
Alex Gagnon (2000-2002), Assistant Professor, University of Washington  
Ruixuan Gao (2007-2009), Assistant Professor, University of Illinois Chicago  
Marcus Gibson (2007-2008), Research Scientist, Omega Therapeutics  
Brittany Gomez (2015-2017)  
David Gygi (2012-2015), Process Chemist, Bristol Myers Squibb  
Grace Han (2009), Assistant Professor, Brandeis University  
Winn Huynh (2015), Postdoctoral Scholar, Cal Poly Pomona  
Arun Johnson (2020-2023), Graduate Student, Massachusetts Institute of Technology  
Sandra Lee Knowles, Associate Principal Scientist, Merck & Co., Inc.  
Jason S. Kong (2004-2005), Chemical Laboratory Supervisor, Ohio Department of Agriculture  
Jennifer C. Lee (1997), Senior Investigator, NIH  
Christina Legendre (2015), Graduate Student, University of Göttingen  
Kin Wei Lei (2007-2009)  
David Lu (2022-present)  
Victor Y. Mao (2016-2019), Research Assistant, Cornell University  
Jonathan Melville (2014-2016), Graduate Student, Massachusetts Institute of Technology  
Edward Mu (2018-2020), Graduate Student, Stanford University  
Helena Pletsch (2016), B.S. Student, Federal University of Parana  
Connor Pollak (2019-2020), Graduate Student, Princeton University  
Leo Porter-Zasada (2016-2018), Graduate Student, University of Washington  
Halle Nicole Redfearn (2017-2019)  
Won Ryu (2018-2019)  
Chung Keun Shin (2019-2021), Graduate Student, Caltech  
Nathan Smythe (1999-2001), Staff Scientist, Los Alamos National Laboratory  
Nhi Tran (2020-2022)  
Charlene Tsay, Academic Coordinator, University of California, Riverside  
Kaitlyn Weeber (2010-2012), MS3, Vanderbilt University  
Leah Webster (2018), Undergraduate Student, University of Manchester  
Nathan Wong (2022-present)  
Shaun D. Wong (2003-2004), Process Engineer, Lam Research  
Justin Wilson (2007-2008), Associate Professor, Cornell University  
Yuto Yabuuchi (2018-2019), Graduate Student, University of California, Berkeley  
Jenny Yang (2001-2003), Associate Professor, University of California, Irvine  
Yolanda Yang (2018-2019)  
Anta Yu (2005-2006), Psy.D., Clinical Psychology  
Chun Liang Yu, Patent Agent, Cooley LLP  
Raymond Yu (2013-2015), Postdoctoral Scholar, University of California, San Diego

### Visiting Scientists Hosted (mainly since 2016)

Matthew Allen (2016), Professor and Chair of Chemistry, Wayne State University  
Heseong An (2023-2024), Postdoctoral Research Scholar, Sogang University  
Naoto Bessho (2021-2022), Research Scientist, Kao Corporation, Japan  
Jiun-Jen Chen (2017-2018), Researcher, Industrial Technology Research Institute (ITRI), Taiwan  
Henry Cheng (2016-2017), Associate Professor, Ryerson University  
Valentina Colombo (2010-2011, 2017), Associate Professor, University of Milan  
Matthew R. Hill (2009), Professor, Monash University, Team Leader, CSIRO  
Lingchang Jiang (2016-2017), Graduate Student Researcher, Jilin University  
Ki Chul Kim (2023), Associate Professor, Konkuk University  
Jong Suk Lee (2022-2023), Associate Professor, Sogang University  
Cynthia Lopes Martins Pereira (2019-2020), Associate Professor, Federal University of Minas Gerais  
Carmen Montoro (2012), Postdoctoral Scholar, Autonomous University of Madrid  
Hoi Ri Moon (2021-2022), Professor, Ulsan National Institute of Science and Technology (UNIST)  
Yusuke Mukae, Researcher, Toyota Central Research and Development Laboratories  
Lucie Norel (2016-2017), Associate Professor, University of Rennes  
Durga Parajuli (2016-2017), Senior Researcher, National Institute of Advanced Industrial Science and Technology (AIST), Japan  
Kasper S. Pedersen (2014), Professor of Inorganic Chemistry, Technical University of Denmark  
Kátilla Monique Costa Santos (2021-2022), Graduate Student Researcher, Universidade Tiradentes  
Wei Shi, Professor, Nankai University  
Jeremy Smith (2009-2010), Professor, Indiana University  
Manabu Tanaka (2018-2019), Associate Professor, Tokyo Metropolitan University  
Hyun Jung Yu (2023), Graduate Student Researcher, Sogang University

### Presentations

“Distortions in the Structure of Calcium Carbide: A Theoretical Investigation” University of Rennes, France (July 19, 1991).

“Deriving Clusters from Parent Solids: A Graph Theoretical Approach” The 206th Meeting of the American Chemical Society, Chicago, Illinois (August 23, 1993); University of Rennes, France (September 9, 1993).

“Dimensional Reduction of  $\text{Re}_6\text{Q}_8\text{Cl}_2$  (Q = S, Se): A Solid State Route to Molecular  $[\text{Re}_6\text{Q}_8]^{2+}$  Core-Containing Clusters” The 209th Meeting of the American Chemical Society, Anaheim, CA (April 6, 1995).

“Extended Solid Frameworks and Their Molecular Cluster Derivatives” Texas A&M University (December 11, 1995); Washington University (December 13, 1995); Georgia Institute of Technology (January 4, 1996); Ohio State University (January 11, 1996); Purdue University (January 16, 1996); Indiana University (January 18, 1996); Boston College (January 22, 1996); University of California, Berkeley (January 25, 1996); Duke University (January 30, 1996); University of California, Los Angeles (February 21, 1996); University of California, San Diego (February 23, 1996).

“Molecular Prussian Blue Analogues: Synthesis, Structure, and Properties of Cubic  $\text{M}_8(\text{CN})_{12}$  Clusters” The 216th Meeting of the American Chemical Society, Boston, MA (August 27, 1998).

“Cyano-Bridged  $\text{Re}_6\text{Q}_8$  (Q = S, Se, Te) Cluster-Metal Frameworks: New Layered and Porous Materials” The 216th Meeting of the American Chemical Society, Boston, MA (August 27, 1998).

“Cyanide-Bridged Materials: From Cluster Magnets to Porous Solids” Arizona State University (February 2, 1999); University of California, Davis (January 6, 2000); University of Detroit Mercy (March 27, 2001).

“Cluster-Expanded Prussian Blue Analogues” The 217th Meeting of the American Chemical Society, Anaheim, CA (March 22, 1999).

“Expanding Coordination Solids: A Molecular Approach to the Synthesis of Porous Materials” The 218th Meeting of the American Chemical Society, New Orleans, LA (August 24, 1999).

“Dimensional Reduction: A Practical Formalism for Manipulating Solid Structures” The 219th Meeting of the American Chemical Society, San Francisco, CA (March 28, 2000).

“Toward Molecular Data Storage: Directed Assembly of Metal-Cyanide Cluster Magnets” National Science Foundation Inorganic Workshop, Baltimore, MD (June 5, 1999); The 219th Meeting of the American Chemical Society, San Francisco, CA (March 27, 2000); California Institute of Technology (May 8, 2000); The 34th International Conference on Coordination Chemistry, Edinburgh, Scotland (July 10, 2000); Inorganic Chemistry Gordon Research Conference, Newport, RI (July 25, 2000); University of California, Berkeley (September 8, 2000); University of Florida (September 11, 2000); National High Magnetic Field Laboratory, Tallahassee, FL (September 12, 2000); The VIIth International Conference on Molecule-Based Magnets, San Antonio, TX (September 17, 2000); Boston College (October 2, 2000); Texas A&M University (October 25, 2000); University of Chicago (November 3, 2000); University of California, Los Angeles (November 8, 2000); Pacifichem 2000, Honolulu, HI (December 14, 2000); University of Missouri-St. Louis (February 12, 2001); Purdue University (February 27, 2001); Indiana University (March 1, 2001); Michigan State University (March 29, 2001); University of Michigan (March 30, 2001); 2001 Northwest Regional Meeting of the American Chemical Society, Seattle, WA (June 17, 2001); Institut des Matériaux Jean Rouxel, University of Nantes, France (July 5, 2001); Gordon Research Conference on Clusters, Nanocrystals and Nanostructures, New London, CT (July 30, 2001); Stanford University (October 23, 2001); University of North Carolina, Chapel Hill (October 30, 2001); Duke University (October 31, 2001); North Carolina State University (November 2, 2001); University of Georgia (January 22, 2002); University of Illinois at Urbana-Champaign (January 29, 2002); Harvard University (March 19, 2002); University of Washington (May 21, 2002); University of California, San Diego (May 31, 2002); University of Kentucky (December 6, 2002); The 223rd Meeting of the American Chemical Society, Orlando, FL (April 8, 2002); 85th Canadian Society for Chemistry Conference, Vancouver (June 2, 2002); The 225th Meeting of the American Chemical Society, New Orleans, LA (March 26, 2003); Francqui Foundation Symposium on Techniques for the Characterization of Modern Magnetic Materials, Liege, Belgium (June 3, 2003); Spring 2003 Meeting of the European Material Research Society, Strasbourg, France (June 12, 2003); University of Texas, El Paso (October 31, 2003); Tyco Electronics, Menlo Park, CA (November 18, 2003); Aspen Workshop on Spins in Nanostructures, Aspen, CO (January 7, 2004); University of California, Riverside (January 21, 2004); German-American Frontiers of Science Symposium, Hamburg, Germany (June 26, 2004).

“Cluster-Expanded Solids: A Strategy for Assembling Functional Microporous Materials” National Science Foundation Materials Chemistry Workshop, Timberline Lodge, OR (October 13, 2000); University of Kentucky (December 6, 2002); The 39th IUPAC Congress and 86th Canadian Society for Chemistry Conference, Ottawa (August 11, 2003); NSF Workshop on Reticular Chemistry, San Diego, CA (November 22, 2003); DoE Catalysis Contractors Meeting, Rockville, MD (May 24, 2004); Symposium in Honor of Cotton Medal Recipient Richard H. Holm, Texas A&M University (March 3, 2005); DoE Catalysis Contractors Meeting, Rockville, MD (May 19, 2005).

“Cluster-Expanded Coordination Solids: Probing Function via EXAFS” Workshop on XAFS Spectroscopy and X-Ray Holography at the Advanced Light Source, Lawrence Berkeley National Laboratory (October 18, 2000).

“Controlling Inorganic Structure: Cyanide-Bridged Materials as Sieves, Sensors, and Magnets” California Institute of Technology (December 10, 2001); Purdue University (January 30, 2002); University of California, Los Angeles (February 27, 2002); University of California, Berkeley (September 13, 2002); University of Karlsruhe (October 17, 2002); Iowa State University (November 13, 2002); Northwestern University (November 15, 2002); Colorado State University (March 4, 2003).

“Manipulation of Hexanuclear Transition Metal Chalcohalide Clusters via Solid State and Solution Routes” Symposium on the Second Generation of Octahedral Metal Compounds, Sapporo, Japan (March 19, 2004).

“Directed Assembly of Metal-Cyanide Cluster Magnets” Pennsylvania State University (November 1, 2004); University of California, Davis (November 18, 2004); University of Chicago (February 11, 2005); The 229th Meeting of the American Chemical Society, San Diego, CA (March 14, 2005); University of California, Santa Cruz (April 11, 2005); Harvard/MIT Inorganic Seminar (May 11, 2005); China-US Workshop on Materials Chemistry, Beijing, China (May 25, 2005); Peking University (May 27, 2005);

Nanjing University (May 30, 2005); Purdue University (August 25, 2005); Princeton University (October 12, 2005); University of Akron (November 8, 2005); Case Western Reserve University (November 10, 2005); University of Tsukuba (November 17, 2005); University of Pennsylvania (November 29, 2005); Pohang University of Science and Technology (December 8, 2005); KAIST-Chemistry (BK21) Symposium, Jeju Island, Korea (February 2, 2006); Seoul National University (February 6, 2006); International Advanced Materials Forum for Young Scientists, Shizuoka, Japan (February 28, 2006); University of Manchester (April 21, 2006); University of Karlsruhe (June 14, 2006); Workshop on Current Trends in Nanoscopic and Mesoscopic Magnetism, Santorini, Greece (September 8, 2006); IBM Almaden Research Center (February 9, 2007); Olivier Kahn Memorial Lecture, University of Bordeaux (December 7, 2007); Nanoscale Science and Engineering Seminar, University of California, Berkeley (February 8, 2008); University of Bielefeld (June 17, 2008); Université Louis Pasteur, Strasbourg, France (June 26, 2008); Aspen Physics Meeting (January 12, 2009); Atomic Molecular and Optical Physics Seminar, Dept. of Physics, University of California, Berkeley (February 11, 2009).

“Cyanide-Bridged Materials for Separations, Sensing, and Gas Storage” Workshop on Prospects in New Materials Science, Kyoto, Japan (April 26, 2005); International Symposium on Chemistry of Coordination Space, Nagoya, Japan (November 15, 2005).

“Hydrogen Storage in Microporous Coordination Solids with Exposed Metal Sites” Inorganic Chemistry Gordon Research Conference, Newport, RI (July 19, 2005); Korea Conference on Innovative Science & Technology, Gyeongju, Korea (December 5, 2005); Pacificchem 2005, Honolulu, HI (December 18, 2005); Symyx Technologies, Santa Clara, CA (February 21, 2006); University of Karlsruhe (June 9, 2006); Université Louis Pasteur (June 26, 2006); Joint Sandia-LBNL Symposium on Hydrogen Storage Materials, Berkeley, CA (July 21, 2006); The 232nd Meeting of the American Chemical Society, San Francisco, CA (September 12, 2006); University of Washington (October 3, 2006); Michigan State University (October 9, 2006); University of Wisconsin (October 11, 2006); San Diego State University (October 13, 2006); University of California, Santa Barbara (October 23, 2006); Fall 2006 Meeting of the Materials Research Society, Boston, MA (November 29, 2006); University of Oregon Materials Science Institute Retreat (December 13, 2006); Sandia National Laboratories (February 5, 2007); University of Arizona (February 22, 2007); University of Notre Dame (March 29, 2007); Materials Research Program, California Institute of Technology (April 18, 2007); National Institute of Standards and Technology, Gaithersburg, MD (May 17, 2007); Nanjing University (May 31, 2007); Jilin University (June 4, 2007); Nankai University (June 6, 2007); Sydney University (June 18, 2007); Monash University (June 19, 2007); Bragg Institute, Australian Nuclear Science and Technology Organisation (June 20, 2007); Japan-USA Joint Symposium on Coordination Space, Evanston, IL (June 25, 2007); Neutron School, Los Alamos National Laboratory (July 14, 2007); SPIE International Symposium on Optics and Photonics, San Diego, CA (August 28, 2007); University of Nebraska-Lincoln (September 7, 2007); Materials Science & Technology 2007 Conference, Detroit, MI (September 19, 2007); University of California, Berkeley (September 21, 2007); University of Erlangen-Nuremberg (October 5, 2007); Workshop on Metal Rich Compounds, Karlsruhe, Germany (October 9, 2007); University Lectureship, University of Ottawa (October 19, 2007); Argonne National Laboratory (November 1, 2007); University of Delaware (November 14, 2007); UCSB-MPG Workshop on Inorganic Materials for Energy Conversion, Storage, and Conservation, Lake Arrowhead, CA (February 20, 2008).

“Selective Precipitation of Prions by Polyoxometalate Complexes” University of California, San Francisco (January 20, 2006); University of California, San Francisco (January 5, 2007).

“Synthesis, Electrochemistry, and Ligand Substitution Reactions of the Centered, Trigonal Prismatic Clusters  $[W_6XCl_{18}]^{2-}$  ( $X = C, N$ )” The 231st Meeting of the American Chemical Society, Atlanta, GA (March 28, 2006).

“Bulk Synthetic Routes to Molecular Aluminum Clusters” Second Eglin Symposium on Nano Energetics, Shalimar, FL (March 22, 2006).

“Symmetry-Breaking Substitutions of  $[Re(CN)_8]^{3-}$  into the Centered, Face-capped Octahedral Clusters  $(CH_3OH)_{24}M_9M'_6(CN)_{48}$  ( $M = Mn, Co$ ;  $M' = Mo, W$ )” Dalton Discussion 9—Functional Molecular Assemblies, Manchester, England (April 20, 2006).

“A Synergistic Approach to the Discovery of New Hydrogen Storage Materials” DoE Hydrogen Program

Review, Arlington, VA (May 19, 2006; June 10, 2008; May 22, 2009); FreedomCAR and Fuel Partnership Hydrogen Storage Technical Team Meeting, Detroit, MI (July 19, 2007); DoE BES Hydrogen Storage Meeting, Germantown, MD (August 16, 2007).

“Assembly of High-Spin Metal-Cyanide Cluster Cages” The 232nd Meeting of the American Chemical Society, San Francisco, CA (September 10, 2006).

“Synthesis and Magnetism of Halide-Bridged Uranium-Transition Metal Clusters” Workshop on the Chemistry of Actinide Molecular Clusters, Karlsruhe, Germany (November 18, 2006).

“Hydrogen Storage via Physisorption” Neutrons for the Hydrogen Economy National Community Focus Day, Australian Nuclear Science and Technology Organisation (June 21, 2007).

“High-Throughput Methodology for Discovery of Metal-Organic Frameworks with a High Hydrogen Binding Enthalpy” DoE Workshop on High-Throughput Screening of Hydrogen Storage Materials, Bethesda, MD (June 26, 2007); Conference on Materials Innovations in an Emerging Hydrogen Economy, Cocoa Beach, FL (February 26, 2008).

“Hydrogen Storage in Microporous Metal-Organic Frameworks with Exposed Metal Sites” University of Florida (February 25, 2008); University of South Florida (February 28, 2008); Florida State University (February 29, 2008); Caribbean Coordination Chemistry Conference, Cancun, Mexico (March 7, 2008); Simon Fraser University (March 27, 2008); The 235th Meeting of the American Chemical Society, New Orleans, LA (April 7, 2008); American Conference on Neutron Scattering, Santa Fe, NM (May 13, 2008); 8th International Symposium on the Characterization of Porous Solids, Edinburgh, Scotland (June 12, 2008); Université Louis Pasteur, Strasbourg, France (June 19, 2008); Leiden University (July 14, 2008); Solid State Chemistry Gordon Research Conference, New London, NH (July 29, 2008); Boston University (September 29, 2008).

“Hydrogen Storage in Metal-Organic Frameworks” Ewha Womans University (November 7, 2008); Seoul National University (November 10, 2008); Korea University (November 11, 2008); Osaka University Forum on Bio-Environmental Chemistry, San Francisco, CA (December 10, 2008); University of Chicago (February 23, 2009); American Physical Society Meeting, Pittsburgh, PA (March 18, 2009); University of Pittsburgh (March 19, 2009); The 237th Meeting of the American Chemical Society, Salt Lake City, UT (March 23, 2009); ADVANCE Distinguished Lecture, Dept. of Chemical Engineering, Kansas State University (April 7, 2009); University of North Carolina, Chapel Hill (April 14, 2009); Wake Forest University (April 15, 2009); UCLA (April 22, 2009); EC Workshop on Hydrogen Storage, Crete, Greece (June 12, 2009); Princeton University (October 23, 2009); Yonsei University (November 9, 2009); Beijing University of Chemical Technology (November 13, 2009); Peking University (November 13, 2009); University of Tennessee (January 14, 2010); Oak Ridge National Laboratory (January 15, 2010); Third International Symposium on Creation of Functional Nanospace by Metal-Organic Frameworks, Yokohama City, Japan (February 22, 2010); Oberlin College (April 14, 2010); Los Alamos National Laboratory (May 6, 2010); German-American Frontiers of Science Symposium, Potsdam, Germany (June 3, 2010); Sun Yat-Sen University (July 19, 2010); The 240th Meeting of the American Chemical Society, Boston, MA (August 23, 2010); Seventh Workshop on Computational Chemistry and Molecular Spectroscopy, Punta de Tralca, Chile (October 20, 2010); First North African Crystallographic Conference, Casablanca, Morocco (November 26, 2010); Pacificchem 2010, Honolulu, HI (December 18, 2010); Yale University (January 28, 2011); Texas A&M University (October 31, 2011); 243rd Meeting of the American Chemical Society, San Diego, CA (March 27, 2012); 244th Meeting of the American Chemical Society, Philadelphia, PA (August 21, 2012); 4th International Congress on Alternative Energies and 1st International Meeting of the IPN Energy Network, Mexico City, Mexico (October 18, 2013); Workshop on Materials Science for Energy Storage, Trieste, Italy (May 13, 2015).

“Carbon Dioxide Capture in Metal-Organic Frameworks” US-China Workshop on Carbon Dioxide Capture and Storage, Beijing, China (November 12, 2009); SNU-UC Berkeley Joint Symposium, Seoul, South Korea (November 8, 2010); Korea University (November 9, 2010); Pacificchem 2010, Honolulu, HI (December 18, 2010); University of Cambridge (March 10, 2011); VNUHCM-UCLA Joint Symposium on the Chemistry of Metal-Organic Frameworks and Related Materials, Ho Chi Minh City, Viet Nam (March 20, 2011); 241st Meeting of the American Chemical Society, Anaheim, CA (March 28, 2011); California Institute of Technology (April 4, 2011); Spring 2011 Meeting of the Materials Research

Society, San Francisco, CA (April 27, 2011); 6<sup>th</sup> China-US Nano Forum, Changchun, China (July 2, 2011); Jilin University (July 3, 2011); Fudan University (July 5, 2011); University of Sydney (July 8, 2011); 2011 PACRIM Conference, Cairns, Australia (July 11, 2011); International Conference on Membranes and Membrane Processes, Amsterdam, The Netherlands (July 29, 2011); 242nd Meeting of the American Chemical Society, Denver, CO (August 29, 2011); Texas A&M University (November 1, 2011); Ewha Womens University (November 7, 2011); Korea Center for Artificial Photosynthesis (November 9, 2011); Argonne National Laboratory (November 22, 2011); Bruker/MIT Symposium on Supramolecular Chemistry (February 18, 2012); University of Science and Technology of China, Suzhou Campus (February 22, 2012); Shanghai Normal University (February 23, 2012); 243rd Meeting of the American Chemical Society, San Diego, CA (March 27, 2012); University of Calgary (March 30, 2012); Spring 2012 Meeting of the Materials Research Society, San Francisco, CA (April 11, 2012); Symposium on Assembly of Functional Nanomaterials, Ilsan, South Korea (April 27, 2012); 95th Canadian Chemical Society Conference, Calgary, Canada (May 28, 2012); Institute of Materials Research and Engineering, Singapore (June 12, 2012); First KRICT Lecture of World's Outstanding Chemist (June 15, 2012); 5<sup>th</sup> International Conference on Molecular Materials (MOLMAT 2012), Barcelona, Spain (July 4, 2012); Fudan-UC Berkeley Workshop on Materials Beyond, Fudan University (October 29, 2012); Spring 2014 Meeting of the Materials Research Society, San Francisco, CA (April 22, 2014); 13th International Conference on Carbon Dioxide Utilization, Singapore (July 6, 2015); 1st International Symposium on Energy Chemistry and Materials, Fudan University (October 31, 2015).

“Metal-Organic Frameworks with Exposed Metal Sites: Applications in Heterogeneous Catalysis” 239th Meeting of the American Chemical Society, San Francisco, CA (March 23, 2010).

“Applications of Coordination Chemistry in the Synthesis of Single-Molecule Magnets” Los Alamos National Laboratory (May 6, 2010); Glenn T. Seaborg Seminar, Lawrence Berkeley National Laboratory (May 12, 2010); Third Workshop on Current Trends in Molecular and Nanoscale Magnetism, Orlando, FL (June 22, 2010); International Symposium on Advancing the Chemical Sciences: Challenges in Inorganic and Materials Chemistry (ISACS3), Hong Kong, China (July 21, 2010); 240th Meeting of the American Chemical Society, Boston, MA (August 24, 2010); International Conference on Molecule-Based Magnets 2010, Beijing, China (October 9, 2010); 94<sup>th</sup> Canadian Chemical Society Conference, Montreal, Canada (June 7, 2011); Texas A&M University (November 2, 2011); Sixteenth Mesilla Chemistry Workshop, Mesilla, NM (February 11, 2012); 243rd Meeting of the American Chemical Society, San Diego, CA (March 27, 2012); University of Utah (May 1, 2012); Frontier and Perspectives in Molecule-Based Quantum Magnets, Sendai, Japan (May 8, 2012); ALS Workshop on Advanced Characterization of Critical Magnetic Materials, Berkeley, CA (October 10, 2012); University of California, Irvine (November 15, 2012).

“Design and Synthesis of Metal-Organic Frameworks for Hydrogen Storage Applications” International Center for Materials Research Summer School on Preparative Strategies in Solid State and Materials Chemistry, Santa Barbara, CA (August 14, 2010).

“Hydrogen Storage and Carbon Dioxide Capture in Metal-Organic Frameworks” GCOE International Symposium on Global Education and Research Center for Bio-Environmental Chemistry, Osaka, Japan (December 20, 2009); CORE-Complex Materials Conference on Complex Materials for Energy Applications, Michigan State University (June 14, 2010); Massachusetts Institute of Technology (September 29, 2010).

“Applications of Coordination Chemistry in Making and Storing Hydrogen” 2010 Welch Conference on Chemical Research: Green Chemistry and Sustainable Energy, Houston, TX (October 26, 2010).

“Molecular Molybdenum Catalysts for Generating Hydrogen from Water” Gordon Research Conference on Renewable Energy: Solar Fuels (January 18, 2011).

“New Porous Materials for Reducing Carbon Dioxide Emissions” Halcyon Molecular, Redwood City, CA (June 24, 2011).

“Hydrogen Storage and Carbon Dioxide Capture in Main-Group Metal-Organic Frameworks” Symposium on Main Group Chemistry at the 2011 IUPAC Congress, San Juan, Puerto Rico (August 3, 2011).

“Hydrogen Storage and Carbon Dioxide Capture in Azolate-Based Metal-Organic Frameworks” 5<sup>th</sup>

EuChemMS Conference on Nitrogen Ligands, Granada, Spain (September 6, 2011).

“f-Element Single-Molecule Magnets” Spring 2012 Meeting of the Materials Research Society, San Francisco, CA (April 12, 2012); Actinides 2013, Karlsruhe, Germany (July 23, 2013); Dalton Discussion 14: Advancing the Chemistry of the f Elements, Edinburgh, UK (July 29, 2014); Workshop on the Coordination Chemistry of Actinides, Suzhou, China (October 26, 2014); 249th Meeting of the American Chemical Society, Denver, CO (March 22, 2015).

“High-Throughput Methodology for the Synthesis and Characterization of Metal-Organic Frameworks” Freeslate Forum, San Francisco, CA (April 26, 2012).

“Carbon Dioxide Capture and Hydrocarbon Separations in Metal-Organic Frameworks” UOP, Des Plaines, IL (November 7, 2012); 3M Corporation, St. Paul, MN (November 28, 2012); University of Minnesota (November 29, 2012); Pacific Northwest National Laboratory (January 10, 2013); Stanford University (February 5, 2013); University of Wisconsin (February 20, 2013); The Third Multifunctional, Hybrid, and Nanomaterials Conference, Sorrento, Italy (March 6, 2013); University of Southern California (March 12, 2013); University of Missouri-Columbia (April 19, 2013); Missouri University of Science and Technology (April 22, 2013); Xingda Lecture, Peking University (May 3, 2013); University of Amsterdam (May 14, 2013); University of Versailles-St-Quentin (May 16, 2013); University of Pierre and Marie Curie Paris 6 (May 27, 2013); Northwestern University (June 5, 2013); Jilin University (June 28, 2013); International Conference on Materials for Advanced Technologies, Singapore (July 2, 2013); Membrane Technology and Research, Inc., Newark, CA (August 2, 2013); Workshop on Carbon Capture, KAIST (October 1, 2013); University of Texas, Austin (October 30, 2013); Ray Q. Brewster Lecture, University of Kansas (November 1, 2013); Clifford B. Purves Lecture, McGill University (November 19, 2013); Columbia University (November 21, 2013); Harvard University (December 2, 2013); University of Victoria (January 13, 2014); 3M Research Lecture in Materials Science, University of British Columbia (January 14, 2014); Simon Fraser University (January 15, 2014); Indiana University (January 17, 2014); University of Illinois at Urbana-Champaign (February 20, 2014); University of Maryland (May 9, 2014); University of Chicago (May 12, 2014); Peter Wall Symposium on Nanomaterials for Alternative Energy Applications, Vancouver, Canada (May 31, 2014); Canadian Society for Chemistry Meeting, Vancouver (June 3, 2014); 41st International Conference on Coordination Chemistry, Singapore (July 21, 2014); Chemistry of Energy Conversion Workshop, Singapore (July 22, 2014); Chemical Science Symposium, Beijing, China (August 6, 2014); MOF 2014, Kobe, Japan (September 29, 2014); Symposium on 150 Years of Beautiful Structures and Defects, Ho Chi Minh City, Vietnam (November 16, 2014); University of the Pacific (December 2, 2014); University of California, San Diego (January 16, 2015); AMN-7: Advanced Materials and Nanotechnology, Nelson, New Zealand (February 10, 2015); University of Otago (February 16, 2015); North Carolina State University (March 27, 2015); San Jose State University (May 5, 2015); Stockholm University (June 4, 2015); National University of Singapore (July 2, 2015); 45<sup>th</sup> World Chemistry Congress of the International Union of Pure and Applied Chemistry, Busan, South Korea (August 12, 2015); University of California, Berkeley (August 28, 2015); Merck & Co., Rahway, NJ (April 26, 2016); University of Massachusetts, Amherst (April 28, 2016).

“Hydrocarbon Separations in Metal-Organic Frameworks” 245th Meeting of the American Chemical Society, New Orleans, LA (April 7, 2013); Fudan University (March 25, 2014); 255th Meeting of the American Chemical Society, New Orleans, LA (March 18, 2018); Materials Research Society 2018 Spring Meeting, Phoenix, AZ (April 4, 2018); 111 Project Opening Ceremony, Northeast Normal University, Changchun, China (November 9, 2018); 257th Meeting of the American Chemical Society, Orlando, FL (March 31, 2019).

“New Single-Molecule Magnets with High Blocking Temperatures” Peking University (May 2, 2013); Northwestern University (June 6, 2013); 246th Meeting of the American Chemical Society, Indianapolis, IN (September 9, 2013); 248th Meeting of the American Chemical Society, San Francisco, CA (August 12, 2014); Michigan State University (November 20, 2014); 249th Meeting of the American Chemical Society, Denver, CO (March 22, 2015); Institute for Molecules and Materials Symposium, Radboud University (June 1, 2015); TSRC Workshop on Zero-Field Spin Effects in Molecular Systems, Telluride, CO (June 24, 2015); 250th Meeting of the American Chemical Society, Boston, MA (August 16, 2015).

“New Single-Molecule Magnets and Porous Frameworks” University of Paris Sud (May 28, 2013).



“Metal-Organic Frameworks for On-Board Storage of Hydrogen and Natural Gas” Northwestern University (June 7, 2013); 248th Meeting of the American Chemical Society, San Francisco, CA (August 11, 2014); 249th Meeting of the American Chemical Society, Denver, CO (March 22, 2015).

“Towards Lightweight Metal-Organic Magnets” Workshop on New Directions in Magnetic Materials, Lawrence Berkeley National Laboratory (August 5, 2013); Advanced Light Source Crosscutting Review and Workshop on Magnetism and Spintronics (October 22, 2013).

“Using Neutrons to Probe Adsorptive Interactions in Metal-Organic Frameworks” 22nd International Materials Research Congress, Cancun, Mexico (August 12, 2013).

“Gas Separations in Metal-Organic Frameworks” TSRC Workshop on Metal-Organic Frameworks: Experiments and Simulations, Telluride, CO (July 10, 2014); Workshop on Characterization of Nanoporous Materials: Correlating Textural Properties to Applications in Gas and Energy Storage, Separation, and Catalysis, Palo Alto, CA (August 8, 2014); 248th Meeting of the American Chemical Society, San Francisco, CA (August 11, 2014); 249th Meeting of the American Chemical Society, Denver, CO (March 22, 2015); Process Science and Technology Center Sponsor’s Meeting, University of Texas, Austin (May 1, 2015); International Conference on Materials for Advanced Technologies, Singapore (July 1, 2015); ShanghaiTech University (October 30, 2015); Nankai University (March 28, 2016); University of Barcelona (April 8, 2016); 20th International Conference on Solid Compounds of Transition Elements, Zaragoza, Spain (April 11, 2016); 2nd Bordeaux Olivier Kahn Discussions, University of Bordeaux (May 27, 2016); Inorganic Chemistry Gordon Research Conference, Biddeford, ME (June 20, 2016); International Conference on Molecule-Based Magnets, Sendai, Japan (September 5, 2016); Process Science and Technology Center Sponsor’s Meeting, University of Texas, Austin (October 18, 2016); University of Colorado, Boulder (October 31, 2016); Heriot-Watt University (November 14, 2016); University of Edinburgh (November 14, 2016); University of St. Andrews (November 15, 2016); University of Glasgow (November 16, 2016); Georgia Institute of Technology (November 30, 2016); University of Melbourne (December 12, 2016); University of Adelaide (December 14, 2016); University of Havana (January 6, 2017); 5<sup>th</sup> International Conference on Multifunctional, Hybrid and Nanomaterials, Lisbon, Portugal (March 8, 2017); First International Symposium on Frontiers in Coordination Chemistry, Nanjing, China (March 28, 2017); Habermann Distinguished Lecture, Marquette University (April 21, 2017); Northwestern University (April 24, 2017); Department of Chemical and Biomolecular Engineering, University of California, Berkeley (April 26, 2017); Columbia University (May 2, 2017); Gordon Research Conference on Self-Assembly and Supramolecular Chemistry, Les Diablerets, Switzerland (May 24, 2017); 100th Chemical Society of Canada Meeting, Toronto, Canada (May 29, 2017); International Symposium on Macrocyclic and Supramolecular Chemistry, Cambridge, UK (July 4, 2017); 13th International Conference on Materials Chemistry, Liverpool, UK (July 10, 2017); University of Manchester (July 11, 2017); Laboratory Research Experience Program, University of California, Berkeley (July 14, 2017); Gordon Research Conference on Nanoporous Materials and Their Applications, Andover, NH (August 8, 2017); Colorado State University (September 8, 2017); Harvard University (September 26, 2017).

“Metal-Organic Frameworks as Platforms for New Reaction Sites and Catalysis” ExxonMobil Active Materials Meeting, Hershey, PA (October 20, 2014).

“Magnetic Metal-Cyanide Coordination Clusters and Chains” 249th Meeting of the American Chemical Society, Denver, CO (March 22, 2015).

“Spin-Dependent Transformations in Metal-Organic Frameworks and Molecular Magnets” First Computational and Theoretical Chemistry Research Meeting (CTC 1), Washington, DC (April 29, 2015).

“Low-Energy Carbon Capture Using Metal-Organic Frameworks” National Association of Regulatory Utilities Commissioners Summer Committee Meetings, Subcommittee on Carbon Management, New York City, NY (July 12, 2015).

“Carbon Dioxide Capture in Diamine-Appended Metal-Organic Frameworks” Energy Frontier Research Center Principal Investigators’ Meeting (October 26, 2015); SNU-Berkeley Global Pioneers in Science Symposium, Seoul, South Korea (November 19, 2015); Pacificchem 2015, Honolulu, HI (December 19, 2015); Recent Progresses for Renewable Energy, National Taiwan Normal University (March 24, 2016); Advances in Materials for Sustainable Energy, Northeast Normal University, Changchun, China (March

26, 2016); University of Kent (July 11, 2016); 255th Meeting of the American Chemical Society, New Orleans, LA (March 20, 2018); Materials Research Society 2018 Fall Meeting, Boston, MA (November 26, 2018); 257th Meeting of the American Chemical Society, Orlando, FL (March 31, 2019).

“Metal-Organic Frameworks: Carbon Dioxide Capture, Towards Controlling Crystallization, and Other Developments” ExxonMobil Corporate Strategic Research, Annandale, NJ (January 29, 2016).

“High-Capacity Methane Storage in Flexible Metal-Organic Frameworks with Internal Thermal Management” 251st Meeting of the American Chemical Society, San Diego, CA (March 14, 2016).

“Lanthanide-Based Single-Molecule Magnets with High Blocking Temperatures” 251st Meeting of the American Chemical Society, San Diego, CA (March 14, 2016); Conductivity and Magnetism in Molecular Materials Gordon Research Conference, Mount Holyoke College, MA (August 15, 2016); 3<sup>rd</sup> International Conference on Bimetallic Complexes, Kaiserslautern, Germany (October 6, 2016); 253rd Meeting of the American Chemical Society, San Francisco, CA (April 2, 2017); 2017 Japan-US Bilateral Meeting on Coordination Chemistry, Sapporo, Japan (September 15, 2017); 257th Meeting of the American Chemical Society, Orlando, FL (March 31, 2019); 4th Bordeaux Olivier Kahn Discussions, Bordeaux, France (June 27, 2019); 258th Meeting of the American Chemical Society, San Diego, CA (August 25, 2019).

“Natural Gas Storage in Metal-Organic Frameworks” The Chemistry of Energy Conversion: From Molecular Design to Advanced Materials, Nanyang Technological University, Singapore (May 23, 2016); 5th International Conference on Metal-Organic Frameworks and Open Framework Compounds (MOF2016), Long Beach, CA (September 13, 2016); 2016 Users’ Meeting of the Advanced Light Source at the Lawrence Berkeley National Laboratory (October 3, 2016); Workshop on Switchability in Porous Metal-Organic Frameworks, Dresden, Germany (March 13, 2017).

“Densely-Functionalized Porous Polymers for Ammonia Capture, Metal Ion Separations, and Battery Applications” 253rd Meeting of the American Chemical Society, San Francisco, CA (April 5, 2017); Bosch Energy Research Network Research Symposium, Palo Alto, CA (July 27, 2017).

“Cooperative Adsorption and Gas Separations in Metal-Organic Frameworks” Japan Society of Coordination Chemistry Meeting, Sapporo, Japan (September 16, 2017); Seoul National University (October 30, 2017); Texas A&M University (November 1, 2017); Stanford University (November 27, 2017); Jilin University (January 3, 2018); Northeast Normal University, Changchun (January 3, 2018); Hainan University (January 4, 2018); Technical University of Denmark (January 25, 2018); University of Copenhagen (January 25, 2018); 14th Aarhus Winter Meeting, Aarhus University, Denmark (January 26, 2018); Second International Symposium on Frontiers in Coordination Chemistry, Nanjing, China (March 5, 2018); Materials Research Society 2018 Spring Meeting, Phoenix, AZ (April 4, 2018); 8th International Workshop on Characterization of Porous Materials, Delray Beach, FL (May 7, 2018); IMDEA Nanoscience Institute, Madrid, Spain (June 5, 2018); 2018 International Conference for Innovation in Chemistry, Pattaya, Thailand (July 6, 2018); Chongqing University (July 16, 2018); Chongqing Normal University (July 16, 2018); German Inorganic Chemistry Conference, Regensburg, Germany (September 25, 2018); Curtin University, Perth, Australia (December 5, 2018); MOF2018, Auckland, New Zealand (December 10, 2018); 6th International Conference on Multifunctional, Hybrid, and Nanomaterials, Sitges, Spain (March 12, 2019); Penn State University (March 26, 2019); International Symposium on Porous Framework Materials, University of South Florida (March 29, 2019); 257th Meeting of the American Chemical Society, Orlando, FL (April 1, 2019); Seoul National University (June 5, 2019); Paul Scherrer Institute (June 24, 2019); University of Mahidol (July 24, 2019); Symposium on Contemporary Crystal Engineering and Solid-State Chemistry, Rehovot, Israel (October 24, 2019); University of California, Davis (November 7, 2019); Cell-iChEM Symposium on Next Generation Materials for Energy Applications, Xiamen, China (November 18, 2019); Rennes Institute of Chemical Sciences, virtual (June 10, 2020); Tata Steel, virtual (August 21, 2020); Johns Hopkins University, virtual (November 17, 2020); Malcolm H. Chisholm Workshop, The Ohio State University, virtual (February 17, 2021); NanoBio Lab, Singapore’s Agency for Science, Technology and Research (A\*STAR), virtual (February 19, 2021); 261st Meeting of the American Chemical Society, virtual (March 23, 2021); POSTECH, virtual (August 12, 2021); 263rd Meeting of the American Chemical Society, San Diego, CA (March 24, 2022); University of California, Santa Barbara (May 12, 2022); 264th Meeting of the American Chemical Society, Chicago, IL (August 24, 2022); 3M Lecture, University of British

Columbia (September 27, 2022); Korean Chemical Society General Meeting, Gyeongju (October 21, 2022); KAIST Emerging Materials Symposium, virtual (December 20, 2022); University of Florida (January 11, 2023); Florida State University (January 12, 2023); University of Rochester (April 26, 2023); Caltech (May 8, 2023); Hot Topics in Science, Havana, Cuba (June 2, 2023); Third International School on Porous Materials, Como, Italy (June 23, 2023); Nanoporous Materials Gordon Research Conference, Andover, NH (August 6, 2023); Nobel Symposium on Metal–Organic Frameworks, Karlskoga, Sweden (September 20, 2023); Chemical Separations Gordon Research Conference (Galveston, TX, January 22, 2024); Karcher-Barton Lecture, University of Oklahoma (February 16, 2024); John Stauffer Lecture in Chemistry, Stanford University (February 27, 2024); George H. Cady Lecture in Inorganic Chemistry, University of Washington (March 4, 2024); Brown University (March 15, 2024); 9<sup>th</sup> International Conference on Metal–Organic Frameworks and Open Framework Compounds (MOF2024), Singapore (July 16, 2024).

“Neutron Diffraction Studies of Gas Adsorption in Metal–Organic Frameworks” 50th Anniversary Symposium for the NIST Center for Neutron Research, Gaithersburg, MD (December 8, 2017); American Conference on Neutron Scattering 2018, College Park, MD (June 27, 2018); Panel on Assessment of the NIST Center for Neutron Research, virtual (July 20, 2021).

“Metal–Organic Frameworks as Tunable Platforms for Gas Storage, Separations, and Catalysis” University of Southern California (February 11, 2018).

“Applications of Flexible Metal–Organic Frameworks in Gas Storage and Separations” First International School on Advanced Porous Materials, Como, Italy (June 20, 2019).

“Coordinatively-Unsaturated Metal Sites and Molecular Separations in Metal–Organic Frameworks” First International School on Advanced Porous Materials, Como, Italy (June 20, 2019); Cornell University (August 8, 2019).

“Cooperative Adsorption in Metal–Organic Frameworks” Cornell University (August 9, 2019).

“New Porous Network Polymers for Metal Ion Separations and Water Purification” 258th Meeting of the American Chemical Society, San Diego, CA (August 25, 2019); 265th Meeting of the American Chemical Society, Indianapolis, IN (March 27, 2023).

“Stimulating New Carbon Capture Technologies through Basic Research” U.S. House Committee on Science, Space and Technology, Subcommittee on Energy, Field Hearing on the Future of Advanced Carbon Capture Research and Development, Houston, TX (November 22, 2019).

“Emerging Applications of Metal–Organic Frameworks” Energy SIG, virtual (September 2, 2020).

“Cooperative Carbon Dioxide Capture in Metal–Organic Frameworks” Symposium on Future of Asian LNG in an Uncertain Market, virtual (September 17, 2020); Stanford University, virtual (November 2, 2020); University of California, Irvine Carbon Capture Symposium, virtual (November 30, 2020); National Academies of Sciences, Engineering, and Medicine Chemical Sciences Roundtable Webinar on Advances in the Chemistry of CO<sub>2</sub> Capture (March 9, 2021); Weizmann Institute, virtual (May 3, 2021); 2021 Carbon Capture Summit, virtual (November 16, 2021); Argonne National Laboratory, virtual (February 17, 2022); CO<sub>2</sub> Research Center in Denmark, virtual (March 15, 2023); 265th Meeting of the American Chemical Society, Indianapolis, IN (March 27, 2023).

“Lanthanide-Based Single-Molecule Magnets and Qubits” Workshop on the Discovery of New Molecular and Solid-State Quantum Systems, Lawrence Berkeley National Laboratory, virtual (November 5, 2020).

“Structural, Electrochemical, and Magnetic Properties of Radical-Bridged Diuranium Complexes” Department of Energy Heavy Element Chemistry PI Meeting, virtual (June 11, 2021).

“Understanding and Controlling the Assembly of Metal–Organic Frameworks with Potential Applications in Gas Storage and Molecular Separations” The Advanced Light Source Tender Scattering Science Innovation Forum, virtual (August 16, 2021).

“Ultrahard Lanthanide-Based Single-Molecule Magnets” 263rd Meeting of the American Chemical Society, San Diego, CA (March 22, 2022); International Workshop on Metal-Ligand Interactions in Molecular Magnetism, virtual (June 20, 2022); Florida State University (January 13, 2023); Copenhagen Molecular Quantum Information Discussions (July 28, 2023); University of Washington (March 5, 2024).

“Separation Membranes Incorporating Metal–Organic Frameworks and Porous Network Polymers”  
North American Membrane Society Meeting, Tempe, AZ (May 16, 2022)

“Critical Needs for Atmospheric Carbon Removal” Scialog Meeting on Negative Emissions Science,  
Tucson, AZ (November 10, 2022)

“Reactive Transition Metal Sites in Metal–Organic Frameworks” Third International School on Porous  
Materials, Como, Italy (June 23, 2023).

## Publications of Jeffrey R. Long

(total citations > 93,000; *h*-index = 141)

- (1) “Distortions in the Structure of Calcium Carbide: A Theoretical Investigation” Long, J. R.; Hoffmann, R.; Meyer, H.-J. *Inorg. Chem.* **1992**, *31*, 1734–1740.
- (2) “Structural Preferences Among the Rare Earth Dicarbides: The Electronic Structure of LaC<sub>2</sub> and ThC<sub>2</sub>” Long, J. R.; Halet, J.-F.; Saillard, J.-Y.; Hoffmann, R.; Meyer, H.-J. *New J. Chem.* **1992**, *16*, 839–846.
- (3) “SmF<sub>6</sub><sup>4-</sup> Conformation Caused by 5d-2p Orbital Interactions” Dronskowski, R.; Köhler, J.; Long, J. R. *J. Phys. Chem. Solids* **1993**, *54*, 801–808.
- (4) “Enumeration and Structural Classification of Clusters Derived from Parent Solids: Metal-Chalcogenide Clusters Composed of Edge-Sharing Tetrahedra” Long, J. R.; Holm, R. H. *J. Am. Chem. Soc.* **1994**, *116*, 9987–10002.
- (5) “Protein-Bound Iron-Sulfur Clusters: Application of a Structural Database” Long, J. R.; Holm, R. H. *Inorg. Chim. Acta* **1995**, *229*, 229–239.
- (6) “Dimensional Reduction of Re<sub>6</sub>Se<sub>8</sub>Cl<sub>2</sub>: Sheets, Chains and Discrete Clusters Composed of Chloride-Terminated [Re<sub>6</sub>Q<sub>8</sub>]<sup>2+</sup> (Q = S, Se) Cores” Long, J. R.; Williamson, A. S.; Holm, R. H. *Angew. Chem.* **1995**, *107*, 248–251; *Angew. Chem., Int. Ed. Engl.* **1995**, *34*, 226–229.
- (7) “Comprehensive Tungsten-Iodine Cluster Chemistry: Isolated Intermediates in the Solid State Nucleation of [W<sub>6</sub>I<sub>14</sub>]<sup>2-</sup>” Franolic, J. D.; Long, J. R.; Holm, R. H. *J. Am. Chem. Soc.* **1995**, *117*, 8139–8153.
- (8) “Octanuclear Iron-Sulfur Clusters with Symmetrically Coupled Fe<sub>4</sub>S<sub>4</sub> and Fe<sub>4</sub>S<sub>5</sub> Cores” Cai, L.; Segal, B. M.; Long, J. R.; Scott, M. J.; Holm, R. H. *J. Am. Chem. Soc.* **1995**, *117*, 8863–8864.
- (9) “A Solid State Route to Molecular Clusters: Access to the Solution Chemistry of [Re<sub>6</sub>Q<sub>8</sub>]<sup>2+</sup> (Q = S, Se) Core-Containing Clusters via Dimensional Reduction” Long, J. R.; McCarty, L. S.; Holm, R. H. *J. Am. Chem. Soc.* **1996**, *118*, 4603–4616.
- (10) “On the Reduction of Basic Iron Acetate: Isolation of Ferrous Species Mediating Gif-Type Oxidation of Hydrocarbons” Singh, B.; Long, J. R.; Papaefthymiou, G. C.; Stavropoulos, P. *J. Am. Chem. Soc.* **1996**, *118*, 5824–5825.
- (11) “Synthesis and Characterization of Four Consecutive Members of the Five-Member [Fe<sub>6</sub>S<sub>8</sub>(Pet<sub>3</sub>)<sub>6</sub>]<sup>n+</sup> (*n* = 0–4) Cluster Electron Transfer Series” Goddard, C. A.; Long, J. R.; Holm, R. H. *Inorg. Chem.* **1996**, *35*, 4347–4354.
- (12) “Polycubane Clusters: Synthesis of [Fe<sub>4</sub>S<sub>4</sub>(PR<sub>3</sub>)<sub>4</sub>]<sup>1+0</sup> (R = Bu<sup>t</sup>, Cy, Pr<sup>i</sup>) and [Fe<sub>4</sub>S<sub>4</sub>]<sup>0</sup> Core Aggregation Upon Loss of Phosphine” Goh, C.; Segal, B. M.; Huang, J.; Long, J. R.; Holm, R. H. *J. Am. Chem. Soc.* **1996**, *118*, 11844–11853.
- (13) “A Basis Set of Re<sub>6</sub>Se<sub>8</sub> Cluster Building Blocks and Demonstration of Their Linking Capability: Directed Synthesis of an Re<sub>12</sub>Se<sub>16</sub> Dicluster” Zheng, Z.; Long, J. R.; Holm, R. H. *J. Am. Chem. Soc.* **1997**, *119*, 2163–2171.
- (14) “Ligand-Unsupported Metal-Metal (M = Cu, Ag) Interactions Between Closed-Shell d<sup>10</sup> Trinuclear Systems” Singh, K.; Long, J. R.; Stavropoulos, P. *J. Am. Chem. Soc.* **1997**, *119*, 2942–2943.
- (15) “Synthesis, Reactivity and Catalytic Behavior of Fe/Zn-Containing Species Involved in Oxidation of Hydrocarbons under Gif-Type Conditions” Singh, B.; Long, J. R.; Fabrizi de Biani, F.; Gatteschi, D.; Stavropoulos, P. *J. Am. Chem. Soc.* **1997**, *119*, 7030–7047.
- (16) “Evidence for Cu⋯H Interactions in Dinuclear Cu(I) Complexes of Hindered Hydrotris(pyrazolyl)borate Ligands” Kiani, S.; Long, J. R.; Stavropoulos, P. *Inorg. Chim. Acta* **1997**, *263*, 357–366.
- (17) “Ligand Substitution Reactions of [Re<sub>6</sub>S<sub>8</sub>Br<sub>6</sub>]<sup>4-</sup>: A Basis Set of Re<sub>6</sub>S<sub>8</sub> Clusters for Building Multicluster Assemblies” Willer, M. W.; Long, J. R.; McLauchlan, C. C.; Holm, R. H. *Inorg. Chem.* **1998**, *37*, 328–333.

- (18) “Polynuclear Complexes of Copper(I) and the 2-(3(5)-Pyrazolyl),6-methylpyridine Ligand: Structures and Reactivity Toward Small Molecules” Singh, K.; Long, J. R.; Stavropoulos, P. *Inorg. Chem.* **1998**, *37*, 1073–1079.
- (19) “Molecular Prussian Blue Analogues: Synthesis and Structure of Cubic  $\text{Co}_4\text{Cr}_4(\text{CN})_{12}$  and  $\text{Co}_8(\text{CN})_{12}$  Clusters” Heinrich, J. L.; Berseth, P. A.; Long, J. R. *Chem. Commun.* **1998**, 1231–1232.
- (20) “Cyano-Bridged  $\text{Re}_6\text{Q}_8$  (Q = S, Se) Cluster-Metal Framework Solids: A New Class of Porous Materials” Beauvais, L. G.; Shores, M. P.; Long, J. R. *Chem. Mater.* **1998**, *10*, 3783–3786.
- (21) “Cluster-Expanded Prussian Blue Analogues” Shores, M. P.; Beauvais, L. G.; Long, J. R. *J. Am. Chem. Soc.* **1999**, *121*, 775–779.
- (22) “[ $\text{Cd}_2(\text{H}_2\text{O})_4$ ][ $\text{Re}_6\text{S}_8(\text{CN})_6$ ] $\cdot 14\text{H}_2\text{O}$ : A Cyano-Bridged Cluster-Cluster Framework Solid with Accessible Cubelike Cavities” Shores, M. P.; Beauvais, L. G.; Long, J. R. *Inorg. Chem.* **1999**, *38*, 1648–1649.
- (23) “Cyano-Bridged  $\text{Re}_6\text{Q}_8$  (Q = S, Se) Cluster-Cobalt(II) Framework Materials: Versatile Solid Chemical Sensors” Beauvais, L. G.; Shores, M. P.; Long, J. R. *J. Am. Chem. Soc.* **2000**, *122*, 2763–2772.
- (24) “Oxygenation of Hydrocarbons Mediated by Mixed-Valent Basic Iron Trifluoroacetate and Valence-Separated Component Species under Gif-Type Conditions Involves Carbon- and Oxygen-Centered Radicals” Tapper, A. E.; Long, J. R.; Staples, R. J.; Stavropoulos, P. *Angew. Chem. Int. Ed.* **2000**, *39*, 2343–2346.
- (25) “Expansion of the Porous Solid  $\text{Na}_2\text{Zn}_3[\text{Fe}(\text{CN})_6]_2 \cdot 9\text{H}_2\text{O}$ : Enhanced Ion-Exchange Capacity in  $\text{Na}_2\text{Zn}_3[\text{Re}_6\text{Se}_8(\text{CN})_6]_2 \cdot 24\text{H}_2\text{O}$ ” Bennett, M. V.; Shores, M. P.; Beauvais, L. G.; Long, J. R. *J. Am. Chem. Soc.* **2000**, *122*, 6664–6668.
- (26) “High-Nuclearity Metal-Cyanide Clusters: Assembly of a  $\text{Cr}_8\text{Ni}_6(\text{CN})_{24}$  Cage with a Face-Centered Cubic Geometry” Berseth, P. A.; Sokol, J. J.; Shores, M. P.; Heinrich, J. L.; Long, J. R. *J. Am. Chem. Soc.* **2000**, *122*, 9655–9662.
- (27) “High-Nuclearity Chromium-Nickel-Cyanide Clusters: An Open  $\text{Cr}_8\text{Ni}_5(\text{CN})_{24}$  Cage and a  $C_3$ -Symmetric  $\text{Cr}_{10}\text{Ni}_9(\text{CN})_{42}$  Cluster Incorporating Three Forms of Cyanonickelate” Sokol, J. J.; Shores, M. P.; Long, J. R. *Angew. Chem. Int. Ed.* **2001**, *40*, 236–239.
- (28) “Dimensional Reduction: A Practical Formalism for Manipulating Solid Structures” Tulskey, E. G.; Long, J. R. *Chem. Mater.* **2001**, *13*, 1149–1166.
- (29) “Manganese-Chromium-Cyanide Clusters: Molecular  $\text{MnCr}_6(\text{CN})_{18}$  and  $\text{Mn}_3\text{Cr}_6(\text{CN})_{18}$  Species and a Related  $\text{MnCr}_3(\text{CN})_9$  Chain Compound” Heinrich, J. L.; Sokol, J. J.; Hee, A. G.; Long, J. R. *J. Solid State Chem.* **2001**, *159*, 293–301.
- (30) “Edge-Bridged Octahedral Tungsten-Oxygen-Chlorine Clusters: Synthesis and Characterization of Two  $D_{3d}$ -Symmetric  $[\text{W}_6\text{O}_6\text{Cl}_{12}]^{2-}$  Isomers and  $[\text{W}_6\text{O}_7\text{Cl}_{11}]^{3-}$ ” Crawford, N. R. M.; Long, J. R. *Inorg. Chem.* **2001**, *40*, 3456–3462.
- (31) “Expanded Prussian Blue Analogues Incorporating  $[\text{Re}_6\text{Se}_8(\text{CN})_6]^{3-/4-}$  Clusters: Adjusting Porosity via Charge Balance” Bennett, M. V.; Beauvais, L. G.; Shores, M. P.; Long, J. R. *J. Am. Chem. Soc.* **2001**, *123*, 8022–8032.
- (32) “Heterometal Substitution in the Dimensional Reduction of Cluster Frameworks: Synthesis of Soluble  $[\text{Re}_{6-n}\text{Os}_n\text{Se}_8\text{Cl}_6]^{(4-n)-}$  ( $n = 1, 2, 3$ ) Cluster-Containing Solids” Tulskey, E. G.; Long, J. R. *Inorg. Chem.* **2001**, *40*, 6990–7002.
- (33) “Cyanide-Limited Complexation of Molybdenum(III): Synthesis of Octahedral  $[\text{Mo}(\text{CN})_6]^{3-}$  and Cyano-Bridged  $[\text{Mo}_2(\text{CN})_{11}]^{5-}$ ” Beauvais, L. G.; Long, J. R. *J. Am. Chem. Soc.* **2002**, *124*, 2110–2111.
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