

T. DAVID HARRIS

University of California
Department of Chemistry
Berkeley, CA 94720

Phone: (510) 501-2266
Email: dharris@berkeley.edu

PROFESSIONAL APPOINTMENTS

| | |
|--|--------------|
| Associate Project Scientist, University of California, Berkeley | 2019–current |
| Assistant Professor of Chemistry, Northwestern University | 2012–2019 |
| Postdoctoral Associate, Harvard University (Advisor: Theodore A. Betley) | 2010–2012 |

EDUCATION

| | |
|--|---|
| Ph.D. in Chemistry (Advisor: Jeffrey R. Long) | <i>University of California, Berkeley</i> , December 2010 |
| <i>Thesis Title:</i> Directed Assembly of Single-Molecule and Single-Chain Magnets: From Mononuclear High Spin Iron(II) Complexes to Cyano-Bridged Chain Compounds | |
| B. S. <i>summa cum laude</i> in Chemistry (Advisor: Michael P. Castellani) | <i>Marshall University</i> , May 2004 |

RESEARCH INTERESTS

Inorganic chemistry; synthetic chemistry; materials chemistry; magnetism; molecular imaging; bioinorganic chemistry; electronic structure and bonding; small-molecule activation; quantum information science; metal-organic frameworks

AWARDS AND HONORS

| | |
|--|-----------|
| Associated Student Government Faculty Honor Roll | 2018–2019 |
| Keith Fagnou Lectureship, University of Ottawa | 2018 |
| Chemistry of Life Processes Institute Cornew Innovation Award | 2017–2018 |
| Presidential Early Career Award for Scientists and Engineers | 2017–2022 |
| Weinberg College of Arts and Sciences Distinguished Teaching Award | 2016 |
| Alfred P. Sloan Research Fellowship | 2016–2018 |
| Institute for Sustainability and Energy at Northwestern Early Career Investigator Award | 2015 |
| U. S. Army Research Office Young Investigator Program | 2014–2017 |
| National Science Foundation CAREER Award | 2014–2019 |
| Chemistry of Life Processes Institute Chairman's Innovation Award | 2013–2014 |
| Associated Student Government Faculty Honor Roll | 2013–2014 |
| American Chemical Society (ACS) Division of Inorganic Chemistry Young Investigator Award | 2011 |
| Outstanding Graduating Chemist, Marshall University | 2004 |
| Council on Undergraduate Research Posters on the Hill Presenter, Washington, D.C. | 2004 |

SCIENTIFIC PUBLICATIONS

- (66) Chakarawet, K.; Harris, T. D.; Long, J. R. "Semiquinone Radical-Bridged M_2 ($M = Fe, Co, Ni$) Complexes with Strong Magnetic Exchange Giving Rise to Slow Magnetic Relaxation" *Chem. Sci.* **2020**, in revision.
- (65) Thorarinsdottir, A. E.; Harris, T. D. "Metal–Organic Framework Magnets" *Chem. Rev.* **2020**, 10.1021/acs.chemrev.9b00666 (invited article for Thematic Issue, "Porous Framework Chemistry").
- (64) Zee, D. Z.; Harris, T. D. "Enhancing Catalytic Alkane Hydroxylation by Tuning the Outer Coordination Sphere in a Heme-Containing Metal–Organic Framework" *Chem. Sci.* **2020**, *11*, 5447–5452.
- (63) Thorarinsdottir, A. E.; Bjornsson, R.; Harris, T. D. "Insensitivity of Magnetic Coupling to Ligand Substitution in a Series of Tetraoxolene Radical-Bridged Fe_2 Complexes" *Inorg. Chem.* **2020**, *59*, 4634–4649.

- (62) Liu, L.; Li, L.; Ziebel, M. E.; Harris, T. D. "Metal-Diamidobenzoquinone Frameworks via Post-Synthetic Linker Exchange" *J. Am. Chem. Soc.* **2020**, *142*, 4705–4713.
- (61) Valdez-Moreira, J. A.; Thorarinsdottir, A. E.; DeGayner, J. A.; Lutz, S. A.; Chen, C.-H.; Losovyj, Y.; Pink, M.; Harris, T. D.; Smith, J. M. "Strong π -Backbonding Enables Record Magnetic Exchange Coupling Through Cyanide" *J. Am. Chem. Soc.* **2019**, *141*, 17092–17097.
- (60) Hua, C.; Tay, H. M.; He, Q.; Harris, T. D. "A Series of Early Lanthanide Chloranilate Networks with a Square Grid Topology" *Aust. J. Chem.* **2019**, *72*, 778–785 (invited article for special issue dedicated to Richard Robson).
- (59) Hickey, A. K.; Greer, S. M.; Valdez-Moreira, J.; Pink, M.; DeGayner, J. A.; Harris, T. D.; Hill, S.; Telser, J.; Smith, J. M. "A Hydride-Bridged Iron Dimer with Geometrically Distinct Iron Centers Giving Rise to an $S = 3$ Ground State" *J. Am. Chem. Soc.* **2019**, *141*, 11970–11975.
- (58) Hua, C.; DeGayner, J. A.; Harris, T. D. "Thiosemiquinoid Radical-Bridged Cr^{III}_2 Complexes with Strong Magnetic Exchange Coupling" *Inorg. Chem.* **2019**, *58*, 7044–7053.
- (57) Du, K.; Thorarinsdottir, A. E.; Harris, T. D. "Selective Binding and Quantitation of Calcium with a Cobalt-Based Magnetic Resonance Probe" *J. Am. Chem. Soc.* **2019**, *141*, 7163–7172.
- (56) Liu, L.; DeGayner, J. A.; Sun, L.; Zee, D. Z.; Harris, T. D. "Reversible Redox Switching of Magnetic Order and Electrical Conductivity in a 2D Manganese Benzoquinoid Framework" *Chem. Sci.* **2019**, *10*, 4652–4661.
- (55) Thorarinsdottir, A. E.; Harris, T. D. "Dramatic Enhancement of pH Sensitivity and Signal Intensity through Ligand Modification of a Dicobalt PARACEST Probe" *Chem. Commun.* **2019**, *55*, 794–797.
- (54) Thorarinsdottir, A. E.; Tatro, S. M.; Harris, T. D. "Electronic Effects of Ligand Substitution in a Family of Co_2 PARACEST pH Probes" *Inorg. Chem.* **2018**, *57*, 11252–11263.
- (53) Liu, L.; Li, L.; DeGayner, J. A.; Winegar, P. H.; Fang, Y.; Harris, T. D. "Harnessing Structural Dynamics in a 2D Manganese-Benzoquinoid Framework to Dramatically Accelerate Metal Transport in Diffusion-Limited Metal Exchange Reactions" *J. Am. Chem. Soc.* **2018**, *140*, 11444–11453.
- (52) DeGayner, J. A.; Wang, K.; Harris, T. D. "A Ferric Semiquinoid Single-Chain Magnet via Thermally-Switchable Metal-Ligand Electron Transfer" *J. Am. Chem. Soc.* **2018**, *140*, 6550–6553.
- (51) Lilley, L. M.; Du, K.; Krzyaniak, M. D.; Parigi, G.; Luchinat, C.; Harris, T. D.; Meade, T. J. "Effect of Magnetic Coupling on Water Proton Relaxivity in a Series of Transition Metal-Gd(III) Complexes" *Inorg. Chem.* **2018**, *57*, 5810–5819.
- (50) Gallagher, A. T.; Lee, J. Y.; Kathiresan, V.; Anderson, J. S.; Hoffman, B. M.; Harris, T. D. "A Structurally-Characterized Peroxomanganese(IV) Porphyrin from Reversible O_2 Binding within a Metal-Organic Framework" *Chem. Sci.* **2018**, *9*, 1596–1603.
- (49) Gaudette, A. I.; Thorarinsdottir, A. E.; Harris, T. D. "pH-Dependent Spin State Population and ^{19}F NMR Frequency via Remote Ligand Protonation in an Iron(II) Complex" *Chem. Commun.* **2017**, *53*, 12962–12965.
- (48) Thorarinsdottir, A. E.; Du, K.; Collins, J. H. P.; Harris, T. D. "Ratiometric pH Imaging with a Co^{II}_2 MRI Probe via CEST Effects of Opposing pH Dependences" *J. Am. Chem. Soc.* **2017**, *139*, 15836–15847.
- (47) Zadrozny, J. M.; Gallagher, A. T.; Harris, T. D.; Freedman, D. E. "A Porous Array of Clock Qubits" *J. Am. Chem. Soc.* **2017**, *139*, 7089–7094.
- (46) Du, K.; Waters, E. A.; Harris, T. D. "Ratiometric Quantitation of Redox Status with a Molecular Fe_2 Magnetic Resonance Probe" *Chem. Sci.* **2017**, *8*, 4424–4430.
- (45) Bucinsky, L.; Breza, M.; Lee, W.-T.; Hickey, A. K.; Dickie, D. A.; Nieto, I.; DeGayner, J. A.; Harris, T. D.; Meyer, K.; Krzystek, J.; Ozarowski, A.; Nehrkorn, J.; Schnegg, A.; Holldack, K.; Herber, R. H.; Telser, J.; Smith, J. M. "Spectroscopic and Computational Studies of Spin States of Iron(IV) Nitrido and Imido Complexes" *Inorg. Chem.* **2017**, *56*, 4752–4769.
- (44) Gallagher, A. T.; Malliakas, C. D.; Harris, T. D. "CO Binding at a Four-Coordinate Cobaltous Porphyrin Site in a Metal-Organic Framework: Structural, EPR, and Gas Adsorption Analysis" *Inorg. Chem.* **2017**, *56*, 4655–4662.

- (43) DeGayner, J. A.; Jeon, I.-R.; Sun, L.; Dincă, M.; Harris, T. D. “2D Conductive Iron-Quinoid Magnets Ordering up to $T_c = 105$ K via Heterogeneous Redox Chemistry” *J. Am. Chem. Soc.* **2017**, *139*, 4175–4184.
- (42) Thorarinsdottir, A. E.; Gaudette, A. I.; Harris, T. D. “Spin-Crossover and High-Spin Iron(II) Complexes as Chemical Shift ^{19}F Magnetic Resonance Thermometers” *Chem. Sci.* **2017**, *8*, 2448–2456.
- (41) Liu, L.; Harris, T. D. “A Structurally-Characterized Zinc 2,5-Diiminobenzoquinoid Chain Compound” *Inorg. Chim. Acta.* **2017**, *460*, 108–113 (invited article for special issue, “Next Generation”).
- (40) Du, K.; Harris, T. D. “A Cu^{II} Paramagnetic Chemical Exchange Saturation Transfer Contrast Agent Enabled by Magnetic Exchange Coupling” *J. Am. Chem. Soc.* **2016**, *138*, 7804–7807.
- (39) Kelty, M. L.; Morris, W.; Gallagher, A. T.; Anderson, J. S.; Brown, K. A.; Mirkin, C. A.; Harris, T. D. “High-Throughput Synthesis and Characterization of Nanocrystalline Porphyrinic Zirconium Metal-Organic Frameworks” *Chem. Commun.* **2016**, *52*, 7854–7857.
- (38) Jeon, I.-R.; Sun, L.; Negru, B.; Van Duyne, R. P.; Dincă, M.; Harris, T. D. “Solid-State Redox Switching of Magnetic Coupling and Electronic Conductivity in a Benzoquinoid-Bridged Mn^{II} Chain Compound” *J. Am. Chem. Soc.* **2016**, *138*, 6583–6590.
- (37) Liu, L.; Harris, T. D. “Metal-Organic Frameworks as Potential Catalysts for Industrial 1-Butene Production” *ACS Cent. Sci.* **2016**, *2*, 125–127 (invited “First Reaction” article).
- (36) Gallagher, A. T.; Kelty, M. L.; Park, J. G.; Anderson, J. S.; Mason, J. A.; Walsh, J. P. S.; Collins, S. L.; Harris, T. D. “Dioxygen Binding at a Four-Coordinate Cobaltous Porphyrin Site in a Metal-Organic Framework: Structural, EPR, and O_2 Adsorption Analysis” *Inorg. Chem. Front.* **2016**, *3*, 536–540 (invited article for “Emerging Investigators Issue”).
- (35) Jeon, I.-R.; Harris, T. D. “An $S = 12$ Semiquinoid Radical-Bridged Mn_6 Wheel Complex Assembled from an Asymmetric Redox-Active Bridging Ligand” *Chem. Commun.* **2016**, *52*, 1006–1008.
- (34) Jeon, I.-R.; Negru, B.; Van Duyne, R. P.; Harris, T. D. “A 2D Semiquinone Radical-Containing Microporous Magnet with Solvent-Induced Switching from $T_c = 26$ to 80 K” *J. Am. Chem. Soc.* **2015**, *137*, 15699–15702.
- (33) Gaudette, A. I.; Jeon, I.-R.; Anderson, J. S.; Grandjean, F.; Long, G. J.; Harris, T. D. “Electron Hopping through Double-Exchange Coupling in a Mixed-Valence Diiminobenzoquinone-Bridged Fe_2 Complex” *J. Am. Chem. Soc.* **2015**, *137*, 12617–12626.
- (32) DeGayner, J. A.; Jeon, I.-R.; Harris, T. D. “A Series of Tetraazalene Radical-Bridged M_2 ($\text{M} = \text{Cr}^{\text{III}}$, Mn^{II} , Fe^{II} , Co^{II}) Complexes with Strong Magnetic Exchange Coupling” *Chem. Sci.* **2015**, *6*, 6639–6648.
- (31) Demir, S.; Jeon, I.-R.; Long, J. R.; Harris, T. D. “Radical Ligand-Containing Single-Molecule Magnets” *Coord. Chem. Rev.* **2015**, *289*, 149–176.
- (30) Park, J. G.; Jeon, I.-R.; Harris, T. D. “Electronic Effects of Ligand Substitution on Spin Crossover in a Series of Diiminoquinonoid-Bridged Fe^{II}_2 Complexes” *Inorg. Chem.* **2015**, *54*, 359–369.
- (29) Anderson, J. S.; Gallagher, A. T.; Mason, J. A.; Harris, T. D. “A Five-Coordinate Heme Dioxygen Adduct Isolated within a Metal-Organic Framework” *J. Am. Chem. Soc.* **2014**, *136*, 16489–16492.
- (28) Jeon, I.-R.; Park, J. G.; Haney, C. R.; Harris, T. D. “Spin Crossover Iron(II) Complexes as PARACEST MRI Thermometers” *Chem. Sci.* **2014**, *5*, 2461–2465.
- (27) Jeon, I.-R.; Park, J. G.; Xiao, D. J.; Harris, T. D. “An Azophenine Radical-Bridged Fe_2 Single-Molecule Magnet with Record Magnetic Exchange Coupling” *J. Am. Chem. Soc.* **2013**, *135*, 16845–16848.
- (26) Forshaw, A. P.; Smith, J. M.; Ozarowski, A.; Krzystek, J.; Smirnov, D.; Zvyagin, S. A.; Harris, T. D.; Karunadasa, H. I.; Zadrozny, J. M.; Schnegg, A.; Holldack, K.; Jackson, T. A.; Alamiri, A.; Barnes, D. M.; Telsler, J. “Low-Spin Hexa-Coordinate $\text{Mn}(\text{III})$: Synthesis and Spectroscopic Investigation of Homoleptic Tris(pyrazolyl)borate and Tris(carbene)borate Complexes” *Inorg. Chem.* **2013**, *52*, 144–159.
- (25) Fout, A. R.; Xiao, D. J.; Zhao, Q.; Harris, T. D.; King, E. R.; Eames, E. V.; Zheng, S.-L.; Betley, T. A. “Trigonal Mn_3 and Co_3 Clusters Supported by Weak-Field Ligands: A Structural, Spectroscopic, Magnetic, and Computational Investigation into the Correlation of Molecular and Electronic Structure” *Inorg. Chem.* **2012**, *51*, 10290–10299.

- (24) Bhowmick, I.; Dechambenoit, P.; Hillard, E. A.; Coulon, C.; Harris, T. D.; Clérac, R. “A Canted Antiferromagnetic Ordered Phase of Cyanido-Bridged $\text{Mn}^{\text{III}}\text{Re}^{\text{IV}}$ Single-Chain Magnets” *Chem. Commun.* **2012**, 48, 9717–9719.
- (23) Bhowmick, I.; Harris, T. D.; Dechambenoit, P.; Hillard, E. A.; Pichon, C.; Jeon, I.-R.; Clérac, R. “Cyanido-Bridged One-Dimensional Systems Assembled from $[\text{Re}^{\text{IV}}\text{Cl}_4(\text{CN})_2]^{2-}$ and $[\text{M}^{\text{II}}(\text{cyclam})]^{2+}$ (M = Ni, Cu) Precursors” *Sci. China Chem.* **2012**, 55, 1004–1012.
- (22) Feng, X.; Liu, J.; Harris, T. D.; Hill, S.; Long, J. R. “Slow Magnetic Relaxation Induced by a Large Transverse Zero-Field Splitting in a $\text{Mn}^{\text{II}}\text{Re}^{\text{IV}}(\text{CN})_2$ Single-Chain Magnet” *J. Am. Chem. Soc.* **2012**, 134, 7521–7529.
- (21) Eames, E. V.; Harris, T. D.; Betley, T. A. “Modulation of Magnetic Behavior via Ligand-Field Effects in the Trigonal Clusters ($^{\text{Ph}}\text{L}$) Fe_3L^*_3 (L* = thf, py, PMe₂Ph)” *Chem. Sci.* **2012**, 3, 407–415.
- (20) Harris, T. D.; Betley, T. A. “Multi-Site Reactivity: Reduction of Six Equivalents of Nitrite to Give an $\text{Fe}_6(\text{NO})_6$ Cluster with a Dramatically Expanded Octahedral Core” *J. Am. Chem. Soc.* **2011**, 133, 13852–13855.
- (19) Feng, X.; Harris, T. D.; Long, J. R. “Influence of Structure on Exchange Strength and Relaxation Barrier in a Series of $\text{Fe}^{\text{II}}\text{Re}^{\text{IV}}(\text{CN})_2$ Single-Chain Magnets” *Chem. Sci.* **2011**, 2, 1688–1694.
- (18) Harris, T. D.; Zhao, Q.; Hernández Sánchez, R.; Betley, T. A. “Expanded Redox Accessibility via Ligand Substitution in an Octahedral Fe_6Br_6 Cluster” *Chem. Commun.* **2011**, 47, 6344–6346.
- (17) Zhao, Q.; Harris, T. D.; Betley, T. A. “[$(^{\text{H}}\text{L})_2\text{Fe}_6(\text{NCMe})_m$] $^{n+}$ (m = 0, 2, 4, 6; n = -1, 0, 2, 3, 4, 6): An Electron-Transfer Series Featuring Octahedral Fe_6 Clusters Supported by a Weak-Field Hexaamide Ligand Platform” *J. Am. Chem. Soc.* **2011**, 133, 8293–8306.
- (16) Hazra, S.; Sasmal, S.; Fleck, M.; Grandjean, F.; Sougrati, M. T.; Ghosh, M.; Harris, T. D.; Bonville, P.; Long, G. J.; Mohanta, S. “Slow Magnetic Relaxation and Electron Delocalization in an $S = 9/2$ Iron(II/III) Complex with Two Crystallographically Inequivalent Iron Sites” *J. Chem. Phys.* **2011**, 134, 174507/1–13.
- (15) Harris, T. D.; Soo, H. S.; Chang, C. J.; Long, J. R. “A Cyano-Bridged $\text{Fe}^{\text{II}}\text{Re}^{\text{IV}}$ Cluster Incorporating Two High-Magnetic Anisotropy Building Units” *Inorg. Chim. Acta* **2011**, 369, 91–96.
- (14) Scepaniak, J. J.; Harris, T. D.; Vogel, C. S.; Sutter, J.; Meyer, K.; Smith, J. M. “Spin Crossover in a Four-Coordinate Iron(II) Complex” *J. Am. Chem. Soc.* **2011**, 133, 3824–3827.
- (13) Harris, T. D.; Coulon, C.; Clérac, R.; Long, J. R. “Record Ferromagnetic Exchange Through Cyanide and Elucidation of the Magnetic Phase Diagram for a $\text{Cu}^{\text{II}}\text{Re}^{\text{IV}}$ Chain Compound” *J. Am. Chem. Soc.* **2011**, 133, 123–130.
- (12) Harman, W. H.; Harris, T. D.; Freedman, D. E.; Fong, H.; Chang, A.; Rinehart, J. R.; Ozarowski, A.; Sougrati, M. T.; Grandjean, F.; Long, G. J.; Long, J. R.; Chang, C. J. “Slow Magnetic Relaxation in a Family of Trigonal Pyramidal Iron(II) Pyrrolide Complexes” *J. Am. Chem. Soc.* **2010**, 132, 18115–18126.
- (11) Zadrozny, J. M.; Freedman, D. E.; Jenkins, D. M.; Harris, T. D.; Iavarone, A. T.; Mathonière, C.; Clérac, R.; Long, J. R. “Slow Magnetic Relaxation and Charge Transfer in Cyano-Bridged Coordination Clusters Incorporating $[\text{Re}(\text{CN})_7]^{3-/4-}$ ” *Inorg. Chem.* **2010**, 49, 8886–8896.
- (10) Ley, A. N.; Dunaway, L. E.; Brewster, T. P.; Dembo, M. D.; Harris, T. D.; Baril-Robert, F.; Patterson, H. H.; Pike, R. D. “Reversible Luminescent Surface Reaction of Amines with Copper(I) Cyanide” *Chem. Commun.* **2010**, 46, 4565–4567.
- (9) Harris, T. D.; Bennett, M. V.; Clérac, R.; Long, J. R. “[$\text{ReCl}_4(\text{CN})_2$] $^{2-}$: A High Magnetic Anisotropy Building Unit Giving Rise to the Single-Chain Magnets $(\text{DMF})_4\text{MReCl}_4(\text{CN})_2$ (M = Mn, Fe, Co, Ni)” *J. Am. Chem. Soc.* **2010**, 132, 3980–3988.
- (8) Freedman, D. E.; Harman, W. H.; Harris, T. D.; Long, G. J.; Chang, C. J.; Long, J. R. “Slow Magnetic Relaxation in a High-Spin Iron(II) Complex” *J. Am. Chem. Soc.* **2010**, 132, 1224–1225.
- (7) Kong, X.-J.; Long, L.-S.; Huang, R.-B.; Zheng, L.-S.; Harris, T. D.; Zheng, Z. “A Four-Shell 136-Metal 3d-4f Heterometallic Cluster Approximating a Rectangular Parallelepiped” *Chem. Commun.* **2009**, 4354–4356.
- (6) Rinehart, J. D.; Harris, T. D.; Kozimor, S. A.; Bartlett, B. M.; Long, J. R. “Magnetic Exchange Coupling in Actinide-Containing Molecules” *Inorg. Chem.* **2009**, 48, 3382–3395.

- (5) Dincă, M.; Harris, T. D.; Iavarone, A. T.; Long, J. R. "Synthesis and Characterization of the Cubic Coordination Cluster $[\text{Co}^{\text{III}}_6\text{Co}^{\text{II}}_2(\text{IBT})_{12}]^{14+}$ ($\text{H}_3\text{IBT} = 4,5\text{-bis}(\text{tetrazol-5-yl})\text{imidazole}$)" *J. Mol. Struct.* **2008**, *890*, 139–143.
- (4) Bartlett, B. M.; Harris, T. D.; DeGroot, M. W.; Long, J. R. "High-Spin $\text{Ni}_3\text{Fe}_2(\text{CN})_6$ and $\text{Cu}_3\text{Cr}_2(\text{CN})_6$ Clusters Based on a Trigonal Bipyramidal Geometry" *Z. Anorg. Allg. Chem.* **2007**, 2380–2385.
- (3) Harris, T. D.; Long, J. R. "Linkage Isomerism in a Face-Centered Cubic $\text{Cu}_6\text{Cr}_8(\text{CN})_{24}$ Cluster with an $S = 15$ Ground State" *Chem. Commun.* **2007**, 1360–1362.
- (2) Davis, K. B.; Harris, T. D.; Castellani, M. P.; Golen, J. A.; Rheingold, A. L. "Synthesis and X-ray Crystal Structure of $[(\text{C}_5\text{Ph}_5)\text{CrCl}(\mu\text{-Cl})_2\text{Ti}]_2$: An Example of the Rare M-X-Ti^I Linkage (X = Halide)" *Organometallics* **2007**, *26*, 4843–4845.
- (1) Harris, T. D.; Castellani, M. P.; Rheingold, A. L.; Reiff, W. M.; Yee, G. T. "1,1'-Diethyl-2,2',3,3',4,4',5,5'-Octamethylferrocenium Tetracyanoethylenide, $[\text{Fe}(\text{C}_5\text{EtMe}_4)_2]^+[\text{TCNE}]^-$, A Charge-Transfer Salt Magnetic Solid with a Novel Structural Motif" *Inorg. Chim. Acta* **2006**, *359*, 4651–4654.

PROFESSIONAL PRESENTATIONS

Invited Lectures:

- (122) *University of Bordeaux* – Bordeaux, France, November **2019**
- (121) *ACS Award in Pure Chemistry in Honor of Danna E. Freedman* – San Diego, CA, August **2019**
- (120) *Mahidol University* – Bangkok, Thailand, July **2019**
- (119) *4th Bordeaux Olivier Kahn Discussions Symposium* – Bordeaux, France, June **2019**
- (118) *University of Florida* – Gainesville, FL, April **2019**
- (117) *University of Pittsburgh* – Pittsburgh, PA, February **2019**
- (116) *University of California, Irvine* – Irvine, CA, February **2019**
- (115) *Michigan State University* – East Lansing, MI, January **2019**
- (114) *University of California, Riverside* – Riverside, CA, January **2019**
- (113) *North Carolina State University* – Raleigh, NC, December **2018**
- (112) *MOF2018: 6th International Conference on Metal-Organic Frameworks and Open Framework Compounds* – Auckland, New Zealand, December **2018**
- (111) *Advanced Materials Mini-Symposium, Curtin University* – Perth, Australia, December **2018**
- (110) *University of Illinois at Chicago* – Chicago, IL, November **2018**
- (109) *III Project Meeting on Reticular Chemistry of Porous Polymers, Northeast Normal University* – Changchun, China, November **2018**
- (108) *Northeast Normal University* – Changchun, China, October **2018**
- (107) *Imaging in 2020* – Jackson Hole, WY, September **2018**
- (106) *University of Ottawa (Fagnou Lecture)* – Ottawa, Canada, September **2018**
- (105) *Chongqing Normal University* – Chongqing, China, July **2018**
- (104) *Chongqing University* – Chongqing, China, July **2018**
- (103) *University of Kent* – Canterbury, United Kingdom, July **2018**
- (102) *Stanford University* – Stanford, CA, May **2018**
- (101) *Apple, Inc.* – Cupertino, CA, May **2018**
- (100) *University of Pennsylvania* – Philadelphia, PA, April **2018**
- (99) *University of Washington* – Seattle, WA, March **2018**
- (98) *ACS Award in Pure Chemistry in Honor of Mircea Dincă* – New Orleans, LA, March **2018**
- (97) *Texas A&M University* – College Station, TX, February **2018**
- (96) *North Carolina State University* – Raleigh, NC, February **2018**
- (95) *California Institute of Technology* – Pasadena, CA, October **2017**
- (94) *Illinois State University* – Normal, IL, October **2017**
- (93) *University of California, Santa Barbara* – Santa Barbara, CA, October **2017**
- (92) *University of California, Los Angeles* – Los Angeles, CA, October **2017**
- (91) *Japan Society of Coordination Chemistry Annual Meeting* – Sapporo, Japan, September **2017**
- (90) *2nd Japan-US Bilateral Meeting on Coordination Chemistry* – Sapporo, Japan, September **2017**

- (89) *Telluride Science Research Center: "Regulating the Interfacial Physicochemical Processes of Organic Semiconductors by Design"* – Telluride, CO, July **2017**
- (88) *Chemical Society of Canada "Metal and Covalent Organic Frameworks" Symposium* – Toronto, Canada, May **2017**
- (87) *Harvard University* – Cambridge, MA, May **2017**
- (86) *Massachusetts Institute of Technology* – Cambridge, MA, April **2017**
- (85) *University of California, Irvine* – Irvine, CA, April **2017**
- (84) *University of California, Berkeley* – Berkeley, CA, March **2017**
- (83) *Colorado State University* – Fort Collins, CO, March **2017**
- (82) *International Conference on Advanced Materials and Nanotechnology (Keynote Lecture)* – Queenstown, New Zealand, February **2017**
- (81) *Florida State University* – Tallahassee, FL, January **2017**
- (80) *University of Florida* – Gainesville, FL, January **2017**
- (79) *University of South Florida* – Tampa, FL, January **2017**
- (78) *Feinberg School of Medicine, Northwestern University* – Chicago, IL, November **2016**
- (77) *Wright-Patterson Air Force Base* – Dayton, OH, November **2016**
- (76) *Columbia University* – New York, NY, November **2016**
- (75) *Michigan State University* – East Lansing, MI, October **2016**
- (74) *University of Illinois at Chicago* – Chicago, IL, October **2016**
- (73) *University of Maryland* – College Park, MD, September **2016**
- (72) *MOF2016: 5th International Conference on Metal-Organic Frameworks and Open Framework Compounds* – Long Beach, CA, September **2016**
- (71) *University of Tokyo* – Tokyo, Japan, September **2016**
- (70) *International Conference on Molecule-Based Magnets (Keynote Lecture)* – Sendai, Japan, September **2016**
- (69) *The 3rd International Bioinorganic Chemistry Conference on Small Molecule Activation in Biomimetic Chemistry* – Seoul, Korea, July **2016**
- (68) *International Conference on Porphyrins and Phthalocyanines* – Nanjing, China, July **2016**
- (67) *Inorganic Chemistry Gordon Research Conference* – Biddeford, ME, June **2016**
- (66) *PPG-Pitt Innovations in Materials Symposium (Keynote Lecture)* – Pittsburgh, PA, May **2016**
- (65) *University of California, San Diego* – San Diego, CA, April **2016**
- (64) *University of Barcelona* – Barcelona, Spain, April **2016**
- (63) *Marshall University* – Huntington, WV, April **2016**
- (62) *ACS Award Inorganic Chemistry Award in Honor of Mercuri G. Kanatzidis* – San Diego, CA, March **2016**
- (61) *Indiana University* – Bloomington, IN, March **2016**
- (60) *Ewha Womans University* – Seoul, Korea, November **2015**
- (59) *Yonsei University* – Seoul, Korea, November **2015**
- (58) *Seoul National University* – Seoul, Korea, November **2015**
- (57) *Korea University* – Seoul, Korea, November **2015**
- (56) *Fudan University* – Shanghai, China, November **2015**
- (55) *Nankai University* – Tianjin, China, November **2015**
- (54) *Tsinghua University* – Beijing, China, November **2015**
- (53) *Peking University* – Beijing, China, November **2015**
- (52) *ACS "Operando Spectroscopic Approach to Quantifying Structure-Activity Relationships of Real Catalysts under Ambient Conditions" Symposium* – Boston, MA, August **2015**
- (51) *ACS "Synthetic Chemistry Approaches to Magnetic Materials" Symposium* – Boston, MA, August **2015**
- (50) *University of Kent* – Canterbury, United Kingdom, July **2015**
- (49) *University College London* – London, United Kingdom, July **2015**
- (48) *Telluride Science Research Center: "Zero-Field Spin Effects in Molecular Systems"* – Telluride, CO, June **2015**
- (47) *Telluride Science Research Center: "Metal-Organic Frameworks: Experiments and Simulations"* – Telluride, CO, June **2015**
- (46) *North America-Greece-Cyprus Workshop on Paramagnetic Materials* – Athens, Greece, June **2015**
- (45) *ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry in Honor of Kim R. Dunbar* – Denver, CO, March **2015**

- (44) *Loyola University Chicago* – Chicago, IL, November **2014**
- (43) *University of California, Riverside* – Riverside, CA, October **2014**
- (42) *Los Alamos National Laboratory* – Los Alamos, NM, September **2014**
- (41) *ACS “The Inorganic Chemistry of Neurobiology, Immunology and Bioenergy: New Faces” Symposium* – San Francisco, CA, August **2014**
- (40) *ACS Inorganic Chemistry Lectureship Award Symposium in Honor of Jeffrey R. Long* – San Francisco, CA, August **2014**
- (39) *International Conference on Molecule-Based Magnets* – St. Petersburg, Russia, July **2014**
- (38) *Chemistry of Life Processes (CLP) Institute* – Evanston, IL, November **2013**
- (37) *Missouri University of Science and Technology* – Rolla, MO, October **2013**
- (36) *ACS “New Trends in Molecular Magnetic Materials” Symposium* – Indianapolis, IN, September **2013**
- (35) *National High Magnetic Field Laboratory* – Tallahassee, FL, August **2013**
- (34) *ACS Fresenius Award Symposium in Honor of Theodore A. Betley* – New Orleans, LA, April **2013**
- (33) *University of Maryland* – College Park, MD, August **2012**
- (32) *Mesilla Workshop in Inorganic Chemistry* – Mesilla, NM, February **2012**
- (31) *University of Minnesota* – Minneapolis, MN, January **2012**
- (30) *Princeton University* – Princeton, NJ, January **2012**
- (29) *Massachusetts Institute of Technology* – Cambridge, MA, January **2012**
- (28) *Stanford University* – Stanford, CA, December **2011**
- (27) *Yale University* – New Haven, CT, December **2011**
- (26) *Tufts University* – Medford, MA, December **2011**
- (25) *Northwestern University* – Evanston, IL, November **2011**
- (24) *Northeastern University* – Boston, MA, November **2011**
- (23) *ACS Division of Inorganic Chemistry Young Investigator Award Symposium* – Denver, CO, August **2011**
- (22) *University of California, Berkeley* – Berkeley, CA, March **2011**
- (21) *Current Trends in Molecular and Nanoscale Magnetism Workshop* – Orlando, FL, June **2010**
- (20) *IBM Almaden Research Center* – San Jose, CA, February **2010**
- (19) *Quantum Coherent Properties of Spins II Meeting* – Vancouver, BC, Canada, December **2009**
- (18) *National High Magnetic Field Laboratory* – Tallahassee, FL, November **2009**
- (17) *Harvard University* – Cambridge, MA, October **2009**
- (16) *Centre de Recherche Paul Pascal* – Bordeaux, France, September **2009**
- (15) *Marshall University Outstanding Graduating Chemist Award Lecture* – Huntington, WV, April **2004**

Selected Contributed Presentations:

- (14) *Metals in Biology Gordon Research Conference (poster)* – Ventura, CA, January **2017**
- (13) *Conductivity & Magnetism in Molecular Materials Gordon Research Conference (poster)* – South Hadley, MA, August **2016**
- (12) *Pacificchem 2015 “Metal-Organic Frameworks: Synthesis, Properties and Applications” Symposium* – Honolulu, HI, December **2015**
- (11) *MOF2014: 4th International Conference on Metal-Organic Frameworks and Open Framework Compounds* – Kobe, Japan, October **2014**
- (10) *Inorganic Chemistry Gordon Research Conference (poster)* – Biddeford, ME, June **2014**
- (9) *242nd ACS National Meeting* – Denver, CO, August **2011**
- (8) *Organometallics Gordon Research Conference (poster)* – Newport, RI, July **2011**
- (7) *240th ACS National Meeting* – Boston, MA August **2010**
- (6) *Materials Research Society Spring Meeting* – San Francisco, CA, April **2010**
- (5) *239th ACS National Meeting* – San Francisco, CA March **2010**
- (4) *232nd ACS National Meeting* – San Francisco, CA, September **2006**
- (3) *227th ACS National Meeting (poster)* – Anaheim, CA, March **2004**
- (2) *ACS Meeting in Miniature at MU (poster)* – Huntington, WV, **2004**
- (1) *NSF REU Research Day (poster)* – Huntington, WV, **2003**

Doctoral Students (5): Agnes E. Thorarinsdottir (Ph.D., 2019), Postdoctoral Associate, Harvard University; Jordan A. DeGayner (Ph.D., 2018), Patent Agent, MBHB Law; Kang Du (Ph.D., 2018), Postdoctoral Associate, University of Pennsylvania; Audrey T. Gallagher (Ph.D., 2017), Technical Advisor, Perkins Coie Law Firm; Alexandra I. Gaudette (Ph.D., 2017), Principal Chemist, Ecolab

Postdoctoral Associates (7): John S. Anderson (2013–2015), Assistant Professor, University of Chicago; Hoa Phan (2014–2015); Je-Rang Jeon (2013–2016), CNRS Researcher, University of Rennes; Jung Yoon Lee (2015–2016), Patent Analyst, Cardinal Intellectual Property; Carol Hua (2017–2018), McKenzie Fellow, University of Melbourne; Lujia Liu (2015–2019), Lecturer, Victoria University of Wellington; David Z. Zee (2018–2019), Postdoctoral Associate, Northwestern University

Undergraduate Students (13)*: Jesse G. Park (2013–2015), Graduate Student and NSF Graduate Research Fellow, University of California, Berkeley; Pranee Pairs (2014–2015), Graduate Student and NSF Graduate Research Fellow, University of California, Riverside; Margaret L. Kelty (2013–2016), Graduate Student and NSF Graduate Research Fellow, University of Chicago; Samuel I. Dorman (2015–2016); Qilin He (2017) Graduate Student, MIT; Liang Li (2016–2019), Graduate Student, Columbia University; Yiran Wang (2016–2017), Graduate Student, Northwestern University; Nina S. Pappas (2017–2018), Graduate Student, Harvard University; Scott M. Tatro (2017–2018); Kunyu Wang (2017–2018), Graduate Student, Texas A&M University; Ziyi Zhao (2017–2018), Graduate Student, Brown University; Jiayi Li (2018), Stanford University; Youwei Shu (2018–2019)

*List includes only current undergraduate students and those who carried out research with TDH for >2 months

TEACHING AT NORTHWESTERN UNIVERSITY

Winter 2013:

Course: CHEM 102-0-01
Title: General Inorganic Chemistry
Enrollment: 91
CTEC*: 5.29/6.00

Course: CHEM 102-0-02
Title: General Inorganic Chemistry
Enrollment: 228
CTEC: 5.38/6.00

Course: CHEM 435-0-03
Title: Advanced Inorganic Chemistry
Enrollment: 19
CTEC: 5.40/6.00

Winter 2014:

Course: CHEM 435-0-03
Title: Advanced Inorganic Chemistry
Enrollment: 26
CTEC: 5.09/6.00

Spring 2014:

Course: CHEM 103-0-01
Title: General Physical Chemistry
Enrollment: 92
CTEC: 4.90/6.00

Course: CHEM 103-0-02
Title: General Physical Chemistry
Enrollment: 111
CTEC: 5.15/6.00

Winter 2015:

Course: CHEM 435-0-03
Title: Advanced Inorganic Chemistry
Enrollment: 26
CTEC: 4.75/6.00

Spring 2015:

Course: CHEM 103-0-01
Title: General Physical Chemistry
Enrollment: 101
CTEC: 4.90/6.00

Course: CHEM 103-0-02
Title: General Physical Chemistry
Enrollment: 115
CTEC: 4.71/6.00

Winter 2016:

Course: CHEM 435-0-03
Title: Advanced Inorganic Chemistry
Enrollment: 30
CTEC: 5.13/6.00

Spring 2016:

Course: CHEM 103-0-01
Title: General Physical Chemistry
Enrollment: 107
CTEC: 4.92/6.00

Course: CHEM 103-0-02
Title: General Physical Chemistry
Enrollment: 145
CTEC: 5.00/6.00

Winter 2017:

Course: CHEM 435-0-03
Title: Advanced Inorganic Chemistry
Enrollment: 25
CTEC: 5.20/6.00

Spring 2017:

Course: CHEM 103-0-01
Title: General Physical Chemistry
Enrollment: 106
CTEC: 4.98/6.00

Course: CHEM 103-0-02
Title: General Physical Chemistry
Enrollment: 167
CTEC: 5.10/6.00

Winter 2018:

Course: CHEM 152-0-01
Title: Accelerated General Chemistry
Enrollment: 165
CTEC: 5.45/6.00

Course: CHEM 152-0-02
Title: Accelerated General Chemistry
Enrollment: 110
CTEC: 5.55/6.00

Course: CHEM 435-0-20
Title: Advanced Inorganic Chemistry
Enrollment: 21
CTEC: 5.18/6.00

Winter 2019:

Course: CHEM 152-0-01
Title: Accelerated General Chemistry
Enrollment: 150
CTEC: 5.68/6.00

Course: CHEM 152-0-02
Title: Accelerated General Chemistry
Enrollment: 91
CTEC: 5.71/6.00

Course: CHEM 435-0-20
Title: Advanced Inorganic Chemistry
Enrollment: 18
CTEC: 5.00/6.00

*CTEC scores correspond to "Overall Rating of Instruction" response.

CURRICULUM DEVELOPMENT AT NORTHWESTERN UNIVERSITY

Designed and implemented the new graduate-level chemistry course, “Advanced Inorganic Chemistry: Chemical Structure and Bonding”

Co-developed and implemented a revised General Chemistry curriculum aimed toward enhancing student engagement and on lowering the attrition rate of under-represented minorities

UNIVERSITY SERVICE AT NORTHWESTERN UNIVERSITY

Integrated Molecular Structure Education and Research Center Committee, **2017–2019**

Faculty Mentor and Selection Committee, Beckman Scholars Program, **2017–2019**

Department of Chemistry Teaching Line Faculty Search Committee, **2016–2017**

Northwestern University Laboratory Chemical Safety Committee, **2015–2016**

Department of Chemistry Junior Faculty Search Committee, **2015–2016**

Selection Committee, Phi Lambda Upsilon Edmund W. Gelewitz Award, **2015, 2016**

Department of Chemistry General Chemistry Curriculum Revision Committee, **2014–2019**

Department of Chemistry Chair’s Advisory Committee, **2014–2015**

Faculty Mentor, Mentored Discussions of Teaching Program, **2014**

Faculty Mentor, Posner Summer Fellowship Program, **2013**

Faculty Mentor, Searle Teaching Fellowship Program, **2013**

Department of Chemistry Graduate Admissions and Recruiting Committee, **2012–2017**

Department of Chemistry Safety Committee, **2012–2014, 2016–2017**

Thesis/Qualifying Examination Committee: Thomas Aldrich (Ph.D., 2019), Andrea D’Aquino (Ph.D., 2019), Majed Fataftah (Ph.D., 2019), Hao Li (Ph.D., 2019), Matthew Leonardi (Ph.D., 2019), Samantha Clarke (Ph.D., 2018), Ruby Krueger (Ph.D., 2018), Alexander Lou (Ph.D., 2018), Aaron Peters (Ph.D., 2018), Shunzhi Wang (Ph.D., 2018), Michael Graham (Ph.D., 2017), Laura Lilley (Ph.D., 2017), Alyssa Haynes (Ph.D., 2016), Michael McGuirk (Ph.D., 2016), Mark Bachrach (Ph.D., 2015), Christiane Carney (Ph.D., 2015), Rachel Korkosz (Ph.D., 2015), Nathan Strut (Ph.D., 2014), Joseph Bailey (M.S., 2017, Chair), Kimberly Sung (M.S., 2015), Ahmet Atilgan, Ho Fung Cheng, Kelsey Collins, Yuexing Cui (Chair), Bryan Eckstein, Shaunna McLeod, Katie Stallings, Steven Swick, Yiqun Wang (Chair), Chung Jui Yu (Chair)

Undergraduate Honors Thesis Reader: Kelly Powderly (2017), Joseph Coomes (2014)

PROFESSIONAL ACTIVITIES

Symposium Co-Organizer, Advanced Multifunctional Molecular Materials Based on Dynamic Spin, Pacificchem 2020, Honolulu, HI, December **2020**

External Ph.D. Thesis Examiner, Panagiota Perlepe, University of Bordeaux, November **2019**

Short-Term Teaching Project, Northeast Normal University, October **2018**

Conference Co-Vice Chair, Conductivity & Magnetism in Molecular Materials Gordon Research Conference, Smithfield, RI, August **2018**

Discussion Leader, Conductivity & Magnetism in Molecular Materials Gordon Research Conference, Smithfield, RI, August **2018**

Discussion Leader, Inorganic Chemistry Gordon Research Conference, Biddeford, ME, June **2018**

Journal Advisory Board, *Chemistry Squared*

Conference Organizer, Long Group 20th Anniversary Research Symposium, Berkeley, CA, July **2017**

Conference Co-Organizer, Faraday Discussion on Porous Crystalline Materials, Edinburgh, United Kingdom, June, **2017**

Symposium Co-Organizer, Synthetic Chemistry Approaches to Magnetic Materials, 250th ACS National Meeting, Boston, MA, August, **2015**

External Ph.D. Thesis Examiner, Fatemah Habib, University of Ottawa, February **2015**

Proposal Reviewer, National Science Foundation, Department of Defense, Department of Energy, Natural Sciences and Engineering Research Council of Canada, National High Magnetic Field Laboratory

Manuscript Reviewer, Science Magazine, American Chemical Society, Royal Society of Chemistry, Wiley Publishing, Elsevier Publishing

Member, American Chemical Society Division of Inorganic Chemistry

EDUCATION AND PUBLIC OUTREACH ACTIVITIES

Co-hosted a Podcast interview series in the Center for Talent Development (CTD) at NU, which involves answering science questions posed by K-12 STEM students in the Chicago area

Established a collaborative program with the Osher Lifelong Learning Institute (OLLI) at NU that consists of a vigorous interactive learning program aimed toward educating older adults about the role of molecular magnetic materials and science in society

Collaborated with the CTD on a Weekend Enrichment program for middle school students, where a graduate student led two 45-minute sessions that included a lecture on the importance of the scientific method and the basic concepts of magnetic materials

COLLABORATORS (PAST 48 MONTHS)

Bjornsson, R. (Max Planck Institute); Collins, J. H. P. (University of Florida); Freedman, D. E. (Northwestern University); Hersam, M. C. (Northwestern University); Hoffman, B. M. (Northwestern University); Krystek, J. (National High Magnetic Field Laboratory); Long, J. R. (University of California, Berkeley); Meade, T. J. (Northwestern University); Meyer, K. (Friedrich-Alexander University Erlangen-Nürnberg); Neaton, J. B. (University of California, Berkeley); Rondinelli, J. M. (Northwestern University); Smirnov, D. (National High Magnetic Field Laboratory); Smith, J. M. (Indiana University); Telsner, J. (Roosevelt University)

RESEARCH SUPPORT

Current Funding:

Source: U. S. Army Research Office
Title: PECASE: Stabilization of Reactive Chemical Species and Fundamental Studies of Small-Molecule Reactivity in Metal-Organic Frameworks (W911NF-14-1-0168/P00005)
Role: PI
Period: 6/1/17–8/31/23
Amount: \$1,000,000

Source: France-Berkeley Fund
Title: Photo-Generated Molecule-Based Magnets
Role: PI with 1 other
Period: 7/1/20–6/30/22
Amount: \$12,000

Completed Funding:

Source: Initiative for Sustainability and Energy at Northwestern
Title: Microporous Magnets for the Room Temperature Separation of Oxygen from Air
Role: PI
Period: 1/1/13–12/31/13
Amount: \$40,000 (direct cost)

Source: Chemistry of Life Processes Institute
Title: Iron-Based Molecular MRI Thermometers for Monitoring Tumor Ablation Therapy
Role: PI
Period: 1/1/14–8/31/15
Amount: \$50,334 (direct cost)

Source: Institute for Sustainability and Energy at Northwestern
Title: Isolation and Studies of Metal-CO₂ Adducts in Metal-Organic Frameworks
Role: PI
Period: 6/1/14–8/31/15

Amount: \$45,000 (direct cost)

Source: U. S. Army Research Office
Title: STIR: Heme-Based Metal-Organic Frameworks for the Oxidative Degradation of Chemical Warfare Agents (W911NF-15-1-0119)
Role: PI
Period: 4/15/15–1/14/16
Amount: \$50,000 (direct cost)

Source: Institute for Sustainability and Energy at Northwestern
Title: Early Career Investigator Award: Isolation and Studies of Catalytic Intermediates in Metal-Organic Frameworks
Role: PI
Period: 1/1/15–2/29/16
Amount: \$75,000 (direct cost)

Source: International Institute of Nanotechnology
Title: Spherical Nucleic Acid – Molecular Iron Probe Conjugates as Nanothermometers for the MRI Mapping of Intracellular Temperature
Role: PI with 1 other
Period: 6/1/15–4/30/16
Amount: \$100,000 (TDH: \$50,000; direct cost)

Source: U.S. Army Research Office
Title: DURIP: UV-Visible-Near IR Spectrophotometer for the Study of Reactive Chemical Species and Small-Molecule Reactivity in Metal-Organic Frameworks (W911NF-15-1-0331)
Role: PI
Period: N/A
Amount: \$109,279 (direct cost)

Source: Alumnae of Northwestern University
Title: High-Pressure Magnetometry Cell for the Discovery and Insight into Magnetic Materials
Role: Co-PI with 1 other
Period: N/A
Amount: \$10,000 (direct cost)

Source: U. S. Army Research Office
Title: YIP: Stabilization of Reactive Chemical Species and Fundamental Studies of Small-Molecule Reactivity in Metal-Organic Frameworks (W911NF-14-1-0168)
Role: PI
Period: 4/15/14–12/31/16
Amount: \$150,000

Source: U. S. Air Force Office of Scientific Research
Title: BRI: Hybrid Plasmonic MOF-Nanoparticle Superlattices (FA9550-14-1-0274)
Role: Co-PI with 2 others
Period: 9/1/14–8/14/17
Amount: \$1,350,000 (TDH: \$270,000)

Source: ACS Petroleum Research Fund
Title: Isolation and Studies of Oxoheme Complexes in Metal-Organic Frameworks (PRF# 56081-DNI3)
Role: PI
Period: 9/1/16–8/31/18
Amount: \$110,000 (direct cost)

Source: Alfred P. Sloan Foundation
Title: Sloan Research Fellowship
Role: PI
Period: 9/1/16–9/15/18
Amount: \$55,000 (direct cost)

Source: Air Force Research Laboratory
Title: Programmable Molecular Magnetic Nanomaterials as MRI pH Sensors (FA8650-15-2-5518)
Role: PI
Period: 6/8/15–9/30/18
Amount: \$383,477

Source: U.S. Air Force Office of Scientific Research
Title: Reconfigurable Matter from Programmable Atom Equivalents (FA9550-17-1-0348)
Role: Co-PI with 3 others
Period: 9/1/17–11/30/18
Amount: \$7,500,000 (TDH: \$260,000)

Source: Center for Advanced Molecular Imaging
Title: Mapping the Temperature of Tumors Using Transition Metal-Based Molecular MRI Probes
Role: PI
Period: 4/1/18–3/31/19
Amount: \$5,000

Source: Chemistry of Life Processes Institute
Title: Cobalt-Based Molecular MR Probes for Imaging the Extracellular pH of Tumors
Role: PI
Period: 1/1/18–5/31/19
Amount: \$45,796

Source: Department of Energy
Title: Creating and Interfacing Designer Chemical Qubits
Role: Co-PI with 5 others
Period: 10/1/18–8/31/19
Amount: \$4,000,000 (TDH: \$600,000; \$400,000 transferred to J. R. Long at UC Berkeley on 9/1/19)

Source: National Science Foundation
Title: CAREER: Synthesis and Studies of One-Dimensional Magnets Supported by Bulky, Redox-Active Benzoquinonoid Bridging Ligands (DMR-1351959)
Role: PI
Period: 3/1/14–8/31/19
Amount: \$575,000