Carl K. Brozek

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Lewis Integrated Science Building
Eugene, Oregon 97403

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Professional Appointments

Assistant Professor, University of Oregon **06/2018**–Present
Postdoctoral Fellow, University of Washington (Advisor: Daniel Gamelin) **07/2015**–**05/2018**

Education

Ph.D. in Inorganic Chemistry (Advisor: Mircea Dincă) *Massachusetts Institute of Technology*, June, **2015**
S.B. *Honors* in Chemistry (Advisor: Gregory Hillhouse) *University of Chicago*, June, **2010**

Awards and Honors

Dream Chemistry Award Finalist — 1st Prize **2022**
Cottrell Scholar Award **2022**
Young Investigator Award – ACS Division of Inorganic Chemistry **2016**
Alan Davison Prize (Best Inorganic Thesis) – MIT **2015**
Washington Research Foundation Innovation Fellow in Clean Energy **2015**
MIT School of Science Appreciation Award **2015**
National Science Foundation Graduate Research Fellowship **2010-2014**
Beckman Scholars Program in Molecular Sciences Fellowship **2007-2009**

External Funding

"Impacts of Dynamic Bonding on the Properties of Porous Materials" **2024-2027**
Department of Energy, Basic Energy Sciences – $648,637 – Single-PI
"Synthetic Control over MOF Particle Growth and Surface Chemistry" **2021-2025**
National Science Foundation, Division of Materials Research – $450,000 – Single-PI
"Impacts of Dynamic Bonding on the Properties of Porous Materials" **2021-2024**
Department of Energy, Basic Energy Sciences – $525,000 – Single-PI
"Clean Water from Porous Nanocrystals" **2022-2025**
Cottrell Scholar Award, Research Corporation – $100,000 – Single-PI
"Direct Reduction of Metal Oxides to Metals for Electrowinning and Energy Storage" **2022-2025**
Department of Energy, Basic Energy Sciences – $752,144 – Co-PI
"MRI: Acquisition of a Direct Detection Electron Camera for an Existing Scanning Transmission Electron Microscope for Low-Dose and Phase-Sensitive Imaging of Materials" **2022-2025**
National Science Foundation, Division of Materials Research – $390,733 – Co-PI

Research Group Members and Alumni

Current

Michael A. LeRoy (6th year PhD candidate)
Jacob McKenzie (5th year PhD candidate)
Ashley Mapile (5th year PhD candidate)
Quinn Valentine (4th year PhD candidate)
Audrey Davenport (3rd year PhD candidate)
Faiqa Khaliq (2nd year PhD candidate)
Golnaz Navidi (2nd year PhD candidate)
Adam Mather (1st year PhD candidate)
Rachel Galfo (1st year PhD candidate)
Dario Nunez (1st year PhD candidate)
Dr. Jiawei Huang (postdoctoral fellow)
Dr. Erik Svensson Grape (postdoctoral fellow)
Haiden Hodges (undergraduate)
Miles Griffith (undergraduate)
Emma Mahady (undergraduate)

Carl K. Brozek

Alumni – Current Position

Kevin Fabrizio – PhD, 2023 – Transaera, Principal Materials Engineer
Checkers R. Marshall – PhD, 2022 – Svante, Materials Synthesis R&D Chemist
Dr. Kasinath Ojha – Postdoc – February 2022 through August 2023 – *Sr. Electrochemist – Utility Global*
Dr. Kentaro Kadota – Postdoc – August 2020 through August 2022 – *Assist. Prof. – Kyoto University*
Dr. Konstantinos Lazarou – Postdoc – September 2019 through April 2020 – *CAS*
Augie Witkowski – M.S. – June 2020 through April 2021 – *Medtronic*
Emma E. Timmel – M.S. – June through August 2020 – *Evidera*
Maria Anderson – Undergraduate – October 2019 through June 2020
Sara A. Staudhammer – Undergraduate – June 2018 through June 2020 – *Ph.D. Candidate – ETH Zurich*
Micaela Verbitsky – Undergraduate – October 2019 through June 2021
Jiayi Yin – Undergraduate – September 2019 through March 2020
Jeremy Love – Undergraduate – September 2019 through June 2023
Jeffrey Gombart – Undergraduate – May 2022 through June 2023
Kelsie Heffernan – Undergraduate – June 2021 through March 2023

Visiting Scientists – Dates

Haeun Chang – Visiting Ph.D. student, UC–San Diego – October 2022
Sergio Tatay – Visiting Professor, ICMol – May 2022
Hooman Parhizkar – Joint Ph.D. student, UO Architecture – September 2019-June 2022
Natalia Padial – Visiting Professor, ICMol – July – September 2023

Publication List (57 total, see Google Scholar) – h-index 30 – ~4300 citations

*# denotes undergraduate coauthor; * denotes corresponding co-author*

Since joining the University of Oregon

(57) McKenzie, J.; Pennington, D. L.; Kadota, K.; Ericson, T.; Cope, E.; Cozzolino, A. F.; Hendon, C. H.*; **Brozek, C. K.***
"Tunable Interlayer Interactions in 2D van der Waals Frameworks"
Submitted **2024**.

(56) Mapile, A. N.; Svensson Grape, E.; **Brozek, C. K.***
"Solvation of Nanoscale Materials"
Submitted **2024**.

(55) Davenport, A. M.; Marshall, C. R.; Kadota, K.; Andreeva, A. B.; Horike, S.; **Brozek, C. K.***
"Size-Dependent Spin Crossover and Bond Flexibility in Metal-Organic Framework Nanoparticles"
Submitted **2024**.

(54) Huang, J.; Heffernan, K.;# Debela, T. T.; Marshall, C. R.; Davenport, A. M.; McKenzie, J.; Meikun Shen, M.; Hou, S.; Mitchell, J. B.; Ojha, K.; Hendon, C. H.; **Brozek, C. K.***
"Electrochemical Anion Sensing in Conductive Porous Manifolds"
J. Am. Chem. Soc., **2024**, *Just Accepted.*

(53) Svensson Grape, E.; Huang, J.; Roychowdhury, D.; Debela, T.; Chang, H.; Jenkins, A.;# Schimpf, A.; Hendon, C. H.; **Brozek, C. K.***
"Converting Heat to Electrical Energy Using Highly Charged Polyoxometalate Electrolytes"
ACS Appl. Energy Mater. **2024**, *acsaem.4c00036.*
Invited as part of the "Early Career Forum 2024" Issue.

(52) Mapile, A. N.; LeRoy, M. A.; Fabrizio, K.; Scatena, L. F.; **Brozek, C. K.***
"The Surface of Colloidal Nanocrystals Revealed by Vibrational Sum Frequency Scattering Spectroscopy"
ACS Nano **2024,** *18*, 13406.

(51) LeRoy, M. A.; Perera, A. S.; Lamichhane, S.; Mapile, A. N.; Khaliq, F.; Kadota, K.; Zhang, X.; Ha, S.; **Brozek, C. K.***
"The Colloidal Stability and Solubility of Metal-Organic Framework Particles"
Chem. Mater. **2024**, *36*, 3673.

(50) Svensson Grape, E.; Davenport, A. M.; **Brozek, C. K.***
"Dynamic metal-linker bonds in metal-organic frameworks"
Dalton Trans. **2024**, *53*, 1935.
Invited as part of the "2024 Frontier and Perspective" articles.

(49) Kadota, K.; Chen, T.; Gormley, E.; Hendon, C. H.; Dincă, M.; **Brozek, C. K.***
"Electrically Conductive [Fe_4S_4]-based Organometallic Polymers"
Chem. Sci. **2023** *14*, 11410.

(48) Fabrizio, K.; Gormley, E.; Davenport, A. M.; Hendon, C. H.;* **Brozek, C. K.***
"Gram Scale Synthesis of MIL-125 Nanoparticles and their Solution Processability"
Chem. Sci. **2023**, *14,* 8946.

(47) Huang, J.; Marshall, C. R.; Ojha, K.; Shen, M.; Golledge, S.; Kadota, K.; McKenzie, J.; Fabrizio, K.; Mitchell, J. B.; Khaliq, F.; Davenport, A. M.; LeRoy, M. A.; Mapile, A. N.; Debela, T. T.; Twight, L. P.; Hendon, C. H.; **Brozek, C. K.***
"Giant Redox Entropy in the Intercalation versus Surface Chemistry of Nanocrystal Frameworks with Confined Pores"
J. Am. Chem. Soc. **2023**,*145*, 6257.

(46) Fabrizio, F.; Andreeva, S. B;[#] Kadota, K.; **Brozek, C. K.***
"Guest-Dependent Bond Flexibility in UiO-66, a 'Stable' MOF"
Chem. Commun. **2023**, *59*, 1309.
Invited as part of the "2022 Emerging Investigators" Issue.

(45) Fabrizio, K.; **Brozek, C. K.***
"Size-dependent Thermal Shifts to MOF Nanocrystal Optical Gaps Induced by Dynamic Bonding"
Nano Lett **2023**, *23*, 905.

(44) McKenzie, J.; Kempler, P. A.; **Brozek, C. K.***
"Solvent-Controlled Ion-Coupled Charge Transport in Microporous Metal Chalcogenides"
Chem. Sci. **2022** *13*, 12747.

(43) Nolan McNeill, J. N.; Karas, L. J.; Bard, J. P.; Fabrizio, K.; Zakharov, L. N.; MacMillan, S. N.; **Brozek, C. K**.; Wu, J. I.; Johnson, D. W.;* Haley, M. M.*
"Controlling Tautomerization in Pyridine-Fused Phosphorus-Nitrogen Heterocycles"
Chem—Eur. J. **2022** *28*, e2022004.

(42) Fabrizio, K.; Le, K. N.; Andreeva, S. B.;[#] Hendon, C. H.*; **Brozek, C. K.***
"Determining Optical Band Gaps of MOFs"
ACS Mater. Lett. **2022** *4*, 457.

(41) McKenzie, J.; Le, K. N.; Bardgett, D. J.;[#] Collins, K.; Ericson, T.; Wojnar, M. E.; Chouinard, J.; Golledge, S.; Cozzolino, A. F.; Johnson, D.C.; Hendon, C. H.*; **Brozek, C. K.***
"Conductivity in Open Framework Chalcogenides Tuned via Band Engineering and Redox Chemistry"
Chem. Mater. **2022** *34*, 1905.

(40) Marshall, C. R.; Dvorak, J. P.; Twight, L. P.; Chen. L.; Kadota, K.; Andreeva, A. B.;[#] Overland, A. E.;[#] Ericson, T.; Cozzolino, A. F.; **Brozek, C. K.***
"Solution-Processable Nanocrystals of Conductive MOFs"
J. Am. Chem. Soc. **2022**, *144*, 5784.

(39) Andreeva, S. B.;[#] Le, K. N.; Kadota, K.; Horike, S.; Hendon, C. H.[*]; **Brozek, C. K.***
"Cooperativity and Metal Linker Dynamics in Spin Crossover Framework Fe(1,2,3-Triazolate)$_2$"
Chem. Mater. **2021**, *33*, 8534.

(38) López-Olvera, A.; Flores, J. G.; Aguilar-Pliego, J.; **Brozek, C. K.***; Gutierrez-Alejandre, A.*; Ibarra, I.*
"Chemical transformation of H_2S within the pores of MOFs: formation of polysulfides"
Chem. Mater. **2021**, *33*, 6269.

(37) Mancuso, J.; Fabrizio, K.; **Brozek, C. K.*;** Hendon, C. H.*
"On the limit of proton-coupled electronic doping in a Ti(IV)-containing MOF"
Chem. Sci. **2021**, *12*, 11779.

(36) Araujo, J.; **Brozek, C. K.;** Liu, H.; Merkulova, A.; Li, X.; Gamelin, D.
"Tunable Band-Edge Potentials and Charge Storage in Colloidal Tin-Doped Indium Oxide (ITO) Nanocrystals"
ACS Nano. **2021**, *15*. 14116.

(35) Allendorf, M.*; Stavila, V.; Witman, M.; **Brozek, C. K.**; Hendon, C. H.
"What Lies Beneath a MOF Crystal Structure: New Design Principles from Unexpected Behaviors"
J. Am. Chem. Soc. **2021**, *143*, 6705.

(34) Fabrizio, K.; Lazarou, K. A.; Payne, L. I.;[#] Twight, L.; Hendon, C. H.*; **Brozek, C. K.***
"Tunable Band Gaps in MUV-10(M): A Family of Photoredox-Active MOFs with Earth-Abundant Open Metal Sites"
J. Am. Chem. Soc. **2021**, *143*, 12609.

(33) Boettcher, S. W.*; Oener, S. Z.; Lonergan, M. C.; Surendranath, Y.; Ardo, S.; **Brozek, C. K.;** Kempler, P. A.
"Potentially Confusing: Potentials in Electrochemistry"
ACS Energy Lett. **2020**, *6*, 261.

(32) LeRoy, M. A.; Mroz, A. M.; Mancuso, J. L.; Miller, A.; Van Cleve, A.; Check, C.; Heinz, H.; Hendon, C. H.; **Brozek, C. K.***
"Post-Synthetic Modification of Ionic Liquids Using Redox and Ligand-Exchange Coordination Chemistry."
J. Mater. Chem. A **2020**, *8*, 22674.
Invited as part of the "2020 Emerging Investigators Themed Issue"

(31) Andreeva, S. B;[#] Le, K. N.; Chen, L.; Kellman, M. E.; Hendon, C. H.*; **Brozek, C. K.***
"Soft Mode Metal-Linker Dynamics in Carboxylate MOFs Evidenced by Variable-Temperature Infrared Spectroscopy"
J. Am. Chem. Soc. **2020**, *142*, 19291.

(30) Marshall, C. R.; Timmel, E.; Staudhammer, S. A.;[#] **Brozek, C. K.***
"Experimental Evidence for a General Model of Modulated MOF Nanoparticle Growth."
Chem. Sci. **2020**, *11*, 11539.

(29) Schaub, T. A.; Prantl, E. A.; Kohn, J.; Bursch, M.; Marshall, C. R.; Leonhardt, E. J.; Lovell, T. C.; Zakharov, L. N.; **Brozek, C. K.;** Waldvogel, S. R.; Grimme, S.; Jasti, R.
"Exploration of the Solid-State Sorption Properties of Shape-persistent Macrocyclic Nanocarbons as Bulk Materials and Small Aggregates."
J. Org. Chem. **2020**, *142*, 8763.

(28) Jover, J.; **Brozek, C. K.;** Dincă, M.; Lopez, N.
"Computational exploration of NO single-site disproportionation on Fe-MOF-5"
Chem. Mater. **2019**, *31*, 8875.

(27) Van Raden, J.; Leonhardt, E.; Zakharov, L.; Pérez-Guardiola, A.; Pérez-Jiménez, Á.; Marshall, C.; **Brozek, C.;** Sancho-García, J.-C.; Jasti, R.
"Precision Nanotube Mimics via Self-Assembly of Programmed Carbon Nanohoops"
J. Org. Chem. **2019**, *85*, 129.

(26) Marshall, C. R.; Staudhammer, S. A.;[#] **Brozek, C. K.***
"Size Control of Metal-Organic Framework Porous Nanocrystals."
Chem. Sci. **2019**, *10*, 9396.

Prior to the University of Oregon

(25) Araujo, J.; **Brozek, C. K.**; Kroupa, D.; Gamelin, D. R.; "Degenerately n-Doped Colloidal PbSe Quantum Dots: Band: Assignments and Electrostatic Effects."
Nano Lett. **2018**, *18*, 3893.

(24) **Brozek, C. K.**; Zhou, D.; Liu, H.; Li, X.; Kittilstved, K. R.; Gamelin, D. R. "Soluble Supercapacitors: Large and Reversible Charge Storage in Colloidal Fe-Doped ZnO Nanocrystals."
Nano Lett. **2018**, *18,* 3297.

(23) Hartstein, K. H.; **Brozek, C. K.**; Hinterding, S. O. M.; Gamelin, D. R. "Copper-Coupled Electron Transfer in Colloidal Plasmonic Copper-Sulfide Nanocrystals Probed by in Situ Spectroelectrochemistry."
J. Am. Chem. Soc. **2018**, *140*, 3434.

(22) Liu, H.; **Brozek, C. K.**; Sun, S.; Lingerfelt, D. B.; Gamelin, D. R.; Li, X. "A Hybrid Quantum-Classical Model of Electrostatics in Multiply Charged Quantum Dots."
J. Phys. Chem. C **2017**, *121*, 26086.

(21) **Brozek, C. K.**; Ozarowski, A.; Stoian, S. A.; Dincă, M. "Dynamic Structural Flexibility of Fe-MOF-5 Evidenced by ^{57}Fe Mössbauer Spectroscopy."
Inorg. Chem. Front. **2017**, *3* 782.

(20) Carroll, G. M.; Tsui, E. Y.; **Brozek, C. K.**; Gamelin, D. R. "Spectroelectrochemical Measurement of Surface Electrostatic Contributions to Colloidal CdSe Nanocrystal Redox Potentials."
Chem. Mater. **2016**, *28*, 7912.

(19) **Brozek, C. K.**; Hartstein, K. H.; Gamelin, D. R. "Potentiometric Titrations for Measuring the Capacitance of Colloidal Photodoped ZnO Nanocrystals."
J. Am. Chem. Soc. **2016**, *138*, 10605.

(18) Carroll, G. M.; **Brozek, C. K.**; Hartstein, K. H.; Tsui, E. Y.; Gamelin, D. R. "Potentiometric Measurements of Semiconductor Nanocrystal Redox Potentials."
J. Am. Chem. Soc. **2016**, *138*, 4310.

(17) Metzger, E. D.; **Brozek, C. K.**; Comito, R. J.; Dincă, M. "Selective dimerization of ethylene to 1-butene with a porous catalyst"
ACS Central Science **2016**, *2*, 148.

(16) Akimbekov, Z.; Wu, D; **Brozek, C. K.**; Dincă, M.; Navrotsky, A. "Thermodynamics of Solvent Interaction with the Metal-Organic Framework MOF-5"
Phys. Chem. Chem. Phys. **2016**, *18*, 1158.

(15) **Brozek, C. K.**; Dincă, M. "Thermodynamic parameters of cation exchange in MOF-5 and MFU-4l"
Chem. Commun. **2015**, *51*, 11780.

(14) Bellarosa, L.; **Brozek, C. K.**; Garcia-Melchior, M.; Dincă, M.; López, N. "When the Solvent Locks the Cage: Theoretical Insight into the Transmetalation of MOF-5 Lattices and its Kinetic Limitations"
Chem. Mater. **2015**, *27*, 3422.

(13) **Brozek, C. K.**; Miller, J. T., Stoian, S. A.; Dincă, M. "NO Disproportionation at a Mononuclear Site-Isolated Fe^{2+} Center in Fe^{2+}-MOF-5"
J. Am. Chem. Soc. **2015**, *137*, 7495.

(12) **Brozek, C. K.**; Michaelis, V. K.; Ong, T.-C.; Bellarosa, L.; López, N.; Griffin, R. G.; Dincă, M. "Dynamic DMF Binding in MOF-5 Enables the Formation of Metastable Cobalt-Substituted MOF-5 Analogs "
ACS Central Science **2015**, *1*, 252.

(11) Sheberla, D.; Sun, L.; Blood-Forsythe, M. A.; Er, S.; Wade, C. R.; **Brozek, C. K.**; Aspuru- Guzik, A.; Dincă, M. "High Electrical Conductivity in Ni_3(2,3,6,7,10,11-hexaiminotriphenylene)$_2$, a Semiconducting Metal-Organic Graphene Analogue"
J. Am. Chem. Soc. **2014**, *136*, 8859.

(10) **Brozek, C. K.**; Dincă, M "Cation Exchange at the Secondary Building Units of Metal-organic Frameworks"
Chem. Soc. Rev. **2014**, *43*, 5456.

(9) **Brozek, C. K.**; Bellarosa, L.; Soejima, T.; Clark, T. V.; Lopez, N.; Dincă, M "Solvent-Dependent Cation Exchange in Metal-organic Frameworks"
Chem.–Eur. J. **2014**, *20*, 6871.

(8) Kuppuswamy, S.; Powers, T. M.; Johnson, B. M.; **Brozek, C. K.**; Krogman, J. P.; Bezpalko, M. W.; Berben, L. A.; Keith, J. M.; Foxman, B. M.; Thomas, C. M. "One-electron Oxidation Chemistry and Subsequent Reactivity of Diiron Imido Complexes"
Inorg. Chem. **2014**, *53*, 5429.

(7) Cozzolino, A. F.; **Brozek, C. K.**; Palmer, R. D.; Yano, J.; Li, M.; Dincă, M. "Ligand Redox Non-innocence in the Stoichiometric Oxidation of Mn_2(2,5-dioxidoterephthalate) (Mn-MOF-74)"
J. Am. Chem. Soc. **2014**, *136*, 3334.

(6) Kuppuswamy, S.; Bezpalko, M. W.; Powers, T. M.; Wilding, M. J. T.; **Brozek, C. K.**; C. K.; Foxman, B. M.; Thomas, C. M. "A Series of C_3-Symmetric Heterobimetallic Cr/M (M = Fe, Co, and Cu) Complexes"
Chem. Sci. **2014**, *5*, 1617.

(5) **Brozek, C. K.**; Dincă, M. "Ti^{3+}-, $V^{2+/3+}$-, $Cr^{2+/3+}$-, Mn^{2+}-, and Fe^{2+}-Substituted MOF-5 and Redox Reactivity in Cr- and Fe-MOF-5"
J. Am. Chem. Soc. **2013**, *135*, 12886.

(4) **Brozek, C. K.**; Cozzolino, A. F.; Teat, S. J.; Chen, Y.-C.; Dincă, M. "Quantification of Site-Specific

Cation Exchange in Metal-organic Frameworks Using Multi-Wavelength Anomalous X-ray Dispersion"
Chem. Mater. **2013**, *25*, 2998.

(3) Kuppuswamy, S.; Powers, T. M.; Johnson, B. M.; Bezpalko, M. W.; **Brozek, C. K.**; Foxman, B. M.; Berben, L. A.; Thomas, C. M. "Metal-Metal Interactions in C_3-Symmetric Diiron Imido Complexes Linked by Phosphinoamide Ligands"
Inorg. Chem. **2013**, *52*, 4802.

(2) **Brozek, C. K.**; Dincă, M. "Lattice-Imposed Geometry in Metal-Organic Frameworks: Lacunary Zn_4O Clusters in MOF-5 Serve as Tripodal Chelating Ligands for Ni^{2+}"
Chem. Sci. **2012**, *3*, 2110.

(1) Iluc, V. M.; Laskowski, C. K.; **Brozek, C. K.**; Harrold, N. D.; Hillhouse, G. L. "Monomeric and Dimeric Disulfide Complexes of Nickel(II)"
Inorg. Chem. **2010**, *49*, 6817.

Patents

(1) Dincă, M.; Metzger, E. M.; **Brozek, C. K.** "Compositions and methods for selective olefin oligomerization comprising metal-organic frameworks" **2016** – US10493441B2 – Active

(2) Brozek, C.K.; Marshall, R. "Products comprising 1,2,3-triazolate metal-organic frameworks and methods of making and using the same" **October 26, 2021 –** U.S. Provisional Patent Application No. 63/263,070 – Filed

(3) Brozek, C. K.; Huang, J. "Anion sensing using 1,2,3-triazolate metal-organic framework nanoparticles" **May 11, 2023** – U.S. Provisional Patent Application No. 63/463,837 – Filed

Invited Seminars (Departmental)

(45) University of Washington — Seattle, WA, April **2024**
(44) University of Tulsa — Tulsa, OK, November **2024**
(43) University of California—Berkeley — Berkeley, CA, September **2024**
(42) Argonne National Laboratory — Lemont, IL, August **2024**
(41) University of Illinois, Chicago — Chicago, IL, May **2024**
(40) Stanford University — Palo Alto, CA, April **2024**
(39) Indiana University—Bloomington — Bloomington, IN, March **2024**
(38) Massachusetts Institute of Technology — Cambridge, MA, February **2024**
(37) Harvard University — Cambridge, MA, February **2024**
(36) Institute of Organic Chemistry and Biochemistry of the CAS — Prague, CZ, December **2023**
(35) University of Alabama — Tuscaloosa, AL, October **2023**
(34) University of Pittsburgh — Pittsburgh, PA, September **2023**
(33) University of Illinois, UC — Urbana-Champaign, September **2023**
(32) Yale University — New Haven, CT, April **2023**
(31) University of Central Florida — Orlando, FL, January **2023**
(30) Rice University — Houston, TX, January **2023**
(29) Brandeis University — Waltham, MA, January **2023**
(28) University of California—Irvine — Irvine, CA, November **2022**
(27) California Institute of Technology — Pasadena, CA, November **2022**
(26) University of Southern California — Los Angeles, CA, November **2022**
(25) Columbia University — New York, NY, October **2022**
(24) Texas A&M University — College Station, TX, October **2022**
(23) University of Notre Dame — South Bend, IN, September **2022**
(22) University of Chicago — Chicago, IL, September **2022**
(21) University of Valencia — Valencia, ES, July **2022**
(20) Catalan Institute of Nanoscience and Nanotechnology — Barcelona, ES, July **2022**
(19) Materials Science Institute of Madrid — Madrid, ES, July **2022**
(18) University of California—San Diego — La Jolla, CA, April **2022**
(17) University of California—Los Angeles — Los Angeles, CA, April **2022**
(16) Mississippi State University — Starkville, MS, October **2021**
(15) Texas Tech University — Lubbock, TX, October **2021**

(14) Wayne State University — Detroit, MI, September **2021**
(13) Michigan State University — East Lansing, MI, September**2021**
(12) University of Michigan — Ann Arbor, MI, September **2021**
(11) University of Washington — Seattle, WA, August **2021**
(10) Pacific Lutheran University — Tacoma, WA, November **2019**
(9) Cornell University — Ithaca NY, February **2018**
(8) University of Colorado, Boulder — Boulder CO, February **2018**
(7) University of California, Riverside — Riverside CA, January **2018**
(6) Michigan State University — East Lansing MI, January **2018**
(5) University of Oregon — Eugene OR, December **2017**
(4) ETH-Zurich — Zurich CH, November **2017**
(3) University of Washington — Seattle WA, January **2017**
(2) Princeton University — Princeton NJ, January **2017**
(1) California Institute of Technology — Pasadena CA, January **2017**

Invited Seminars (Conferences)

(18) Fall 2024 American Chemical Society — Denver, CA August **2024**
(17) Spring 2024 Electrochemistry Society — San Francisco, CA, June **2024**
(16) GRC—Inorganic Chemistry — Newport, RI, June **2024**
(15) Oregon Center for Electrochemistry — Eugene, OR, September **2023**
(14) 9th International DMRCS — Chiba, JP, August **2023**
(13) 2nd Kyoto Advanced Porous Science Symposium — Kyoto, JP, August **2023**
(12) NORM 2023 — Bozeman, MT, June **2023**
(11) TSRC Workshop on Porous Materials (*Keynote Speaker*) — Telluride, CO, June **2023**
(10) Fall 2022 ACS (*Young Investigator Symposium*) — Chicago, IL, August **2022**
(9) Pacifichem 2021 — Honolulu, HI, December **2021**
(8) 14th Pacific Rim Conference — Vancouver, BC, Canada, December **2021**
(7) MCARE 2021 — Virtual, July **2021**
(6) 259th National ACS Meeting (*canceled due to COVID-19*) — Philadelphia, PA, March **2020**
(5) 2019 Southeastern Regional ACS Meeting — Savannah, GA, October **2019**
(4) 2019 Nanoporous Materials GRS — Andover, NH, August **2019**
(3) 255th National ACS Meeting, Inorganic Division — New Orleans LA, March **2018**
(2) 252nd National ACS Meeting, Inorganic Division — Philadelphia PA, August **2016**
(1) 8th Annual Mössbauer Symposium — Northeastern University, Boston MA, January **2015**

Journal Review (> 100 manuscripts since 2018)

Journal of the American Chemical Society, Angewandte Chemie International Edition, Chemical Science, Chemical Society Reviews, Inorganic Chemistry, Dalton Transactions, ACS Applied Materials and Interfaces, Chemical Communications, ACS Applied Energy Materials, Materials Chemistry, Materials Chemistry Frontiers, Journal of Materials Science, Inorganica Chimica Acta, Crystal Growth and Design, ACS Nano, Nature Communications, ACS Materials Letters

Grant Review

Ad hoc reviewer for the Department of Energy (BES)
Ad hoc reviewer for the ACS Petroleum Research Fund
Ad hoc reviewer for the National Science Foundation (DMR, CHE)
Ad hoc reviewer for the Murdoch Family Charitable Trust
Panel reviewer for the National Science Foundation (DMR, CHE)

Teaching Experience

Chem 225H: Advanced General Chemistry; Enrollment: 18-77 — **2020–present**
Chem 410/510: Materials Chemistry; Enrollment: 12-25 — **2018–present**
Chem 410/601: Research in Soft Materials; Enrollment: 5-12 — **2018–present**
Chem 623: OIM Journal Club; Enrollment: 12-28 — **2019–2021, 2023**

Departmental Service

Diversity, Equity, and Inclusion Committee — **2019–2021**

Graduate Admissions Committee	**2018-2022**
PhD thesis member	**>30 students since 2018**

University Service

P2P Exploratory Committee	**2019-2021**
Faculty Advisory Committee for CAMCOR	**2019-present**
Co-founder, Oregon Center for Electrochemistry	**2019-present**

Conference Organization

ACS NORM	**2019**
Fall 2022 ACS	**2022**

Major Outreach and Mentoring

Co-founder, UO DuckREFS	**2019–2022**
Co-founder, Mentor; Broader Impacts Cumulative Exam	**2019–2022**

Collaborations and other affiliations

Danna Freedman (MIT), Hendrik Heinz (Colorado University, Boulder), Xiaosong Li (University of Washington), Daniel Gamelin (University of Washington), Christopher Hendon (University of Oregon), Ilich Ibarra (National Autonomous University of Mexico), Satoshi Horike (Kyoto University), Chad Risko (U. Kentucky), Anthony Cozzolino (Texas Tech University), Clemens Heske (University of Nevada)

Selected Press

"MIT faculty share best practices in graduate student advising"	*MIT News*, **2015**
"Advising communication"	*Science Magazine*, **2015**
"Improving student advising"	*Science Magazine*, **2015**
"New Nanocrystals could remove contaminants from air and water"	*Around the O*, **2022**
"Chemistry prof honored for research innovation, teaching"	*Around the O*, **2022**
“From capturing energy to capturing the Dream Chemistry Award 2022”	*dreamchemistryaward.org*, **2022**