

# Carl K. Brozek

1253 University of Oregon  
Lewis Integrated Science Building  
Eugene, Oregon 97403

541-346-4601  
cbrozek@uoregon.edu

## 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

Research Fellow, Japanese Society for the Promotion of Science 2024  
NSF CAREER Award 2024  
Dream Chemistry Award 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

“CAREER: Colloidal Nanoparticle Interfaces Probed by Vibrational Sum-Frequency Scattering Spectroscopy” 2025-2030  
*National Science Foundation, Division of Chemistry* – \$700,000 – Single-PI  
“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

Quinn Valentine (5<sup>th</sup> year PhD candidate)  
Audrey Davenport (4<sup>th</sup> year PhD candidate)  
Faiqa Khaliq (3<sup>rd</sup> year PhD candidate)  
Golnaz Navidi (3<sup>rd</sup> year PhD candidate)  
Adam Mather (2<sup>nd</sup> year PhD candidate)  
Rachel Galfo (2<sup>nd</sup> year PhD candidate)  
Dario Nunez (2<sup>nd</sup> year PhD candidate)  
Dr. Erik Svensson Grape (postdoctoral fellow)  
Dr. Jacob McKenzie (postdoctoral fellow)  
Dr. Ashley Mapile (postdoctoral fellow)  
Haiden Hodges (undergraduate)

# Carl K. Brozek

Miles Griffith (undergraduate)  
Emma Mahady (undergraduate)

## Alumni – Current Position

Michael A. LeRoy – PhD, 2024 – Google, Data Analyst  
Jacob McKenzie – PhD, 2024 – Postdoctoral fellow  
Ashley Mapile – PhD, 2024 – Postdoctoral fellow  
Dr. Jiawei Huang – Postdoc – August 2021 through March 2024 – *Electrochemist* – “Stealth Mode”  
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 Padiál – Visiting Professor, ICMol – July – September 2023

## Publication List (57 total, see Google Scholar) – h-index 31 – ~4600 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"  
*Adv. Mater.* **2024** 2409959.
- (56) Mapile, A. N.; Svensson Grape, E.; **Brozek, C. K.\***  
"Solvation of Nanoscale Materials"  
*Chem. Mater.* **2024**, *Just Accepted*
- (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"  
*J. Am. Chem. Soc.* **2024**, *146*, 23692.
- (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**, *146*, 21099.
- (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**, *acsam.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.\***

## Carl K. Brozek

- "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<sub>4</sub>S<sub>4</sub>]-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)<sub>2</sub>"  
*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<sub>2</sub>S within the pores of MOFs: formation of polysulfides"  
*Chem. Mater.* **2021**, *33*, 6269.

## Carl K. Brozek

- (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.

## Carl K. Brozek

- (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  $^{57}\text{Fe}$  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  $\text{Fe}^{2+}$  Center in  $\text{Fe}^{2+}$ -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  $\text{Ni}_3(2,3,6,7,10,11\text{-hexaiminotriphenylene})_2$ , 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  $\text{Mn}_2(2,5\text{-dioxidoterephthalate})$  ( $\text{Mn-MOF-74}$ )" *J. Am. Chem. Soc.* **2014**, *136*, 3334.

## Carl K. Brozek

- (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<sub>3</sub>-Symmetric Heterobimetallic Cr/M (M = Fe, Co, and Cu) Complexes" *Chem. Sci.* **2014**, 5, 1617.
- (5) **Brozek, C. K.**; Dincă, M. "Ti<sup>3+</sup>-, V<sup>2+/3+</sup>-, Cr<sup>2+/3+</sup>-, Mn<sup>2+</sup>-, and Fe<sup>2+</sup>-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<sub>3</sub>-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<sub>4</sub>O Clusters in MOF-5 Serve as Tripodal Chelating Ligands for Ni<sup>2+</sup>" *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" **2024** – 12,043,635 – Active
- (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 <b>2024</b>           |
| (44) University of Tulsa  | Tulsa, OK, November <b>2024</b>          |
| (43) University of California—Berkeley                          | Berkeley, CA, September <b>2024</b>      |
| (42) Argonne National Laboratory                                | Lemont, IL, August <b>2024</b>           |
| (41) University of Illinois, Chicago                            | Chicago, IL, May <b>2024</b>             |
| (40) Stanford University  | Palo Alto, CA, April <b>2024</b>         |
| (39) Indiana University—Bloomington                             | Bloomington, IN, March <b>2024</b>       |
| (38) Massachusetts Institute of Technology                      | Cambridge, MA, February <b>2024</b>      |
| (37) Harvard University   | Cambridge, MA, February <b>2024</b>      |
| (36) Institute of Organic Chemistry and Biochemistry of the CAS | Prague, CZ, December <b>2023</b>         |
| (35) University of Alabama                                      | Tuscaloosa, AL, October <b>2023</b>      |
| (34) University of Pittsburgh                                   | Pittsburgh, PA, September <b>2023</b>    |
| (33) University of Illinois, UC                                 | Urbana-Champaign, September <b>2023</b>  |
| (32) Yale University  | New Haven, CT, April <b>2023</b>         |
| (31) University of Central Florida                              | Orlando, FL, January <b>2023</b>         |
| (30) Rice University  | Houston, TX, January <b>2023</b>         |
| (29) Brandeis University  | Waltham, MA, January <b>2023</b>         |
| (28) University of California—Irvine                            | Irvine, CA, November <b>2022</b>         |
| (27) California Institute of Technology                         | Pasadena, CA, November <b>2022</b>       |
| (26) University of Southern California                          | Los Angeles, CA, November <b>2022</b>    |
| (25) Columbia University  | New York, NY, October <b>2022</b>        |
| (24) Texas A&M University                                       | College Station, TX, October <b>2022</b> |
| (23) University of Notre Dame                                   | South Bend, IN, September <b>2022</b>    |
| (22) University of Chicago                                      | Chicago, IL, September <b>2022</b>       |

## Carl K. Brozek

(21) University of Valencia	Valencia, ES, July <b>2022</b>
(20) Catalan Institute of Nanoscience and Nanotechnology	Barcelona, ES, July <b>2022</b>
(19) Materials Science Institute of Madrid	Madrid, ES, July <b>2022</b>
(18) University of California—San Diego	La Jolla, CA, April <b>2022</b>
(17) University of California—Los Angeles	Los Angeles, CA, April <b>2022</b>
(16) Mississippi State University	Starkville, MS, October <b>2021</b>
(15) Texas Tech University	Lubbock, TX, October <b>2021</b>
(14) Wayne State University	Detroit, MI, September <b>2021</b>
(13) Michigan State University	East Lansing, MI, September <b>2021</b>
(12) University of Michigan	Ann Arbor, MI, September <b>2021</b>
(11) University of Washington	Seattle, WA, August <b>2021</b>
(10) Pacific Lutheran University	Tacoma, WA, November <b>2019</b>
(9) Cornell University	Ithaca NY, February <b>2018</b>
(8) University of Colorado, Boulder	Boulder CO, February <b>2018</b>
(7) University of California, Riverside	Riverside CA, January <b>2018</b>
(6) Michigan State University	East Lansing MI, January <b>2018</b>
(5) University of Oregon	Eugene OR, December <b>2017</b>
(4) ETH-Zurich	Zurich CH, November <b>2017</b>
(3) University of Washington	Seattle WA, January <b>2017</b>
(2) Princeton University	Princeton NJ, January <b>2017</b>
(1) California Institute of Technology	Pasadena CA, January <b>2017</b>

### Invited Seminars (Conferences)

(19) TSRC Workshop on Porous Materials	Telluride, CO June <b>2025</b>
(18) Fall 2024 American Chemical Society	Denver, CO August <b>2024</b>
(17) Spring 2024 Electrochemistry Society	San Francisco, CA, June <b>2024</b>
(16) GRC—Inorganic Chemistry	Newport, RI, June <b>2024</b>
(15) Oregon Center for Electrochemistry	Eugene, OR, September <b>2023</b>
(14) 9 <sup>th</sup> International DMRCS	Chiba, JP, August <b>2023</b>
(13) 2 <sup>nd</sup> Kyoto Advanced Porous Science Symposium	Kyoto, JP, August <b>2023</b>
(12) NORM 2023	Bozeman, MT, June <b>2023</b>
(11) TSRC Workshop on Porous Materials ( <i>Keynote Speaker</i> )	Telluride, CO, June <b>2023</b>
(10) Fall 2022 ACS ( <i>Young Investigator Symposium</i> )	Chicago, IL, August <b>2022</b>
(9) Pacifichem 2021	Honolulu, HI, December <b>2021</b>
(8) 14th Pacific Rim Conference	Vancouver, BC, Canada, December <b>2021</b>
(7) MCARE 2021	Virtual, July <b>2021</b>
(6) 259th National ACS Meeting ( <i>canceled due to COVID-19</i> )	Philadelphia, PA, March <b>2020</b>
(5) 2019 Southeastern Regional ACS Meeting	Savannah, GA, October <b>2019</b>
(4) 2019 Nanoporous Materials GRS	Andover, NH, August <b>2019</b>
(3) 255th National ACS Meeting, Inorganic Division	New Orleans LA, March <b>2018</b>
(2) 252nd National ACS Meeting, Inorganic Division	Philadelphia PA, August <b>2016</b>
(1) 8th Annual Mössbauer Symposium	Northeastern University, Boston MA, January <b>2015</b>

### 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)

# Carl K. Brozek

## 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"	<i>MIT News</i> , 2015
"Advising communication"	<i>Science Magazine</i> , 2015
"Improving student advising"	<i>Science Magazine</i> , 2015
"New Nanocrystals could remove contaminants from air and water"	<i>Around the O</i> , 2022
"Chemistry prof honored for research innovation, teaching"	<i>Around the O</i> , 2022
"From capturing energy to capturing the Dream Chemistry Award 2022"	<i>dreamchemistryaward.org</i> , 2022