**Bryan Richard Goldsmith** **Curriculum Vitae**

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University of Michigan
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## EDUCATION

2010 – 2015 Ph.D. Chemical Engineering, University of California Santa Barbara
*thesis*: First-principles modeling of catalysts: novel algorithms and reaction mechanisms
*advisor*: Baron G. Peters

2006 – 2010 B.S. *with honors and distinction* in Chemical Engineering, University of California Riverside

## PROFESSIONAL EXPERIENCE

9/2022 – Present Associate Professor, University of Michigan, Department of Chemical Engineering
9/2017 – 9/2022 Assistant Professor, University of Michigan, Department of Chemical Engineering
- Dow Corning Assistant Professor of Chemical Engineering (2020 – 2022)
- Associate Director, Michigan Catalysis Science & Technology Institute (2018 – )
- Affiliations: Michigan Institute for Computational Discovery and Engineering; Michigan Institute for Data Science

8/2015 – 8/2017 Humboldt Postdoctoral Fellow, Fritz Haber Institute of the Max Planck Society, Theory Department, Berlin, Germany. Director: Matthias Scheffler

## HONORS AND AWARDS

2023 1938E Award (College of Engineering at the University of Michigan, one per year)
2023 Journal of Catalysis, Early Career Editorial Board Member
2023 NSF CAREER Award
2022 ACS OpenEye Outstanding Junior Faculty Award in Computational Chemistry
2022 Featured as a "Movers & Shakers" in Catalysis, The Catalyst Review magazine
2020 AIChE 35 under 35 Award
2020 Chem Catalysis, Advisory Board Member
2020 ACS Petroleum Research Fund Doctoral New Investigator
2020 Dow Corning Assistant Professorship in Chemical Engineering
2017 U.S. Delegate to the 67$^{th}$ Lindau Nobel Laureate Meeting on Chemistry
2016 Alexander von Humboldt Postdoctoral Research Fellowship
2015 Max Planck Society Postdoctoral Research Fellowship
2014 UC Santa Barbara Co-Curricular Activities and Leadership Award
2013 Schlinger Fellowship for Excellence in Chemical Engineering Research (UCSB, one per year)
2013 Amgen Scholar Alumni Travel Award (UCLA-Amgen Scholar Alumni)
2012 NSF PIRE-ECCI Graduate Research Fellowship
2010 Academic Excellence Award in Chemical Engineering (UC Riverside, one per year)
2009 Bourns College of Engineering Scholarship
2009 Tau Beta Pi Record Scholarship

## RESEARCH INTERESTS

Understanding catalysts and materials via computational modeling to advance sustainable chemical processes, environmental remediation, and energy production. Energy · Environment · Heterogeneous Catalysis · Electrocatalysis · First-Principles Modeling · Molecular Simulation · Data Science · Machine Learning

## JOURNAL ARTICLES [Google Scholar]

*Corresponding author ‡Goldsmith lab member #Undergraduate ^Co-first author &Co-advised

49. High-performance iridium-molybdenum oxide electrocatalysts for water oxidation in acid: Bayesian optimization discovery and experimental testing, J. A. Esterhuizen,[‡,&] A. Mathur, B. R. Goldsmith, S. Linic*, *J. Am. Chem. Soc.* 146, 8 (2024). [doi]

48. Substituent impact on quinoxaline performance and degradation in redox flow batteries, S. Modak, D. Pert[‡,#], J. Tami, W. Shen, I. Abdullahi, X. Huan, A. McNeil, B. R. Goldsmith, D. G. Kwabi*, *J. Am. Chem. Soc.* 146, 8 (2024). [doi]

47. Selective catalytic reduction of $CO_2$ to CO by a single-site heterobimetallic iron-potassium complex supported on alumina, A. A. Isah, O. Ohiro[‡], L. Li, Y. Nasiru, K. C. Szeto, P.-Y. Dugas, A. Benayad, A. De Mallmann, S. L. Scott*, B. R. Goldsmith*, M. Taoufik*, *ACS Catal.* 14, 2418 (2024). [doi]

46. Electrocatalytic hydrogenation of phenol on platinum-cobalt alloys, J. Akinola^, I. Barth^,[‡], B. R. Goldsmith*, N. Singh*, *J. Catal.* 430, 115331 (2024). [60th anniversary issue] [doi]

45. Effects of ions on electrocatalytic hydrogenation and oxidation of organics in aqueous phase, A. Mathanker, W. Yu, N. Singh*, B. R. Goldsmith*, *Curr. Opin. Electrochem.* 40, 101347 (2023). [doi]

44. Thermodynamic stability and anion ordering of perovskite oxynitrides, S. D. Young[‡], J. Chen, W. Sun*, B. R. Goldsmith*, G. Pilania*, *Chem. Mater.* 35, 5975 (2023). [doi]

43. Understanding capacity fade in organic redox-flow batteries by combining spectroscopy with statistical inference techniques, S. Modak , W. Shen, S. Singh, D. Herrera[‡,#], F. Oudeif, B. R. Goldsmith, X. Huan*, and D. G. Kwabi*, *Nat. Commun.* 4, 3602 (2023). [doi]

42. Clarifying trust of materials property predictions using neural networks with distribution-specific uncertainty quantification, C. Gruich[‡], V. Madhavan[‡,#], Y. Wang, B. R. Goldsmith*, *Mach. Learn.: Sci. Technol.* 4, 025019 (2023). [doi]

41. Modeling plasma-induced surface charge effects on $CO_2$ activation by single atom catalysts supported on reducible and irreducible metal oxides, F. Doherty[‡] and B. R. Goldsmith*, *Plasma Sources Sci. Technol.* 32, 034004 (2023). [doi]

40. Explaining kinetic trends of inner-sphere transition metal ion redox reactions on metal electrodes, H. Agarwal, J. Florian[‡,#], D. Pert[‡,#], B. R. Goldsmith, Nirala Singh*, *ACS Catal.* 13, 2223 (2023). [doi]

39. Unveiling the cerium(III)/(IV) structures and charge transfer mechanism in sulfuric acid, C. Buchanan, D. Herrera,[‡,#] M. Balasubramanian, B. R. Goldsmith, N. Singh*, *JACS Au* 2, 2742 (2022). [doi]

38. Metal oxynitrides for the electrocatalytic reduction of nitrogen to ammonia, S. Young[‡], B. M. Ceballos, A. Banerjee, R. Mukundan, G. Pilania*, B. R. Goldsmith*, *J. Phys. Chem. C.* 126, 31 (2022). [Editors' Choice] [doi]

37. Recent advances in computational materials design: methods, applications, algorithms, and informatics, G. Pilania*, B. R. Goldsmith, M. Yoon, A. Dongare, *J. Mater. Sci.* 57, 10471 (2022). [Special Issue Editorial] [doi]

36. Explaining the structure sensitivity of Pt and Rh for aqueous-phase hydrogenation of phenol, I. Barth[‡], J. Akinola, J. Lee[‡,#], O. Gutiérrez, U. Sanyal, N. Singh*, B. R. Goldsmith*, *J. Chem. Phys.* 156, 104703 (2022). [Emerging Investigators Special Collection] [doi]

35. Interpretable machine learning for knowledge generation in heterogeneous catalysis, J. A. Esterhuizen[‡,&], B. R. Goldsmith*, S. Linic*, *Nat. Catal.* 5, 174 (2022). [doi]

34. Accelerating the structure search of catalysts with machine learning, E Musa[‡,#], F. Doherty[‡], B. R. Goldsmith*, *Curr. Opin. Chem. Eng.* 35, 100771 (2022). [doi]

33. Electrocatalytic nitrate reduction on rhodium sulfide compared to Pt and Rh in the presence of chloride, D. Richards, S. Young[‡], B. R. Goldsmith*, N. Singh*, *Catal. Sci. Technol.* 11, 7331 (2021). [Emerging Investigators Special Collection] [doi]

32. Comparing electrocatalytic and thermocatalytic conversion of nitrate on platinum-ruthenium alloys, Z. Wang[‡,&], E. M. Ortiz[#], B. R. Goldsmith*, N. Singh*, *Catal. Sci. Technol.* 11, 7098 (2021). [doi]

31. Why halides enhance heterogeneous metal ion charge transfer reactions, J. Florian[‡,#] , H. Agarwal, N. Singh*, B. R. Goldsmith*, *Chem. Sci.* 12, 12704 (2021). [doi]

30. Uncovering electronic and geometric descriptors of chemical activity for metal alloys and oxides using unsupervised machine learning, J. A. Esterhuizen[‡,&], B. R. Goldsmith*, S. Linic*, *Chem Catalysis* 1, 4 (2021). [doi] [highlighted in a *Trends Chem.* Spotlight, link].

29. Perovskite oxynitrides as tunable materials for electrocatalytic nitrogen reduction to ammonia, S. D. Young[‡], A. Banerjee, G. Pilania*, B. R. Goldsmith*, *Trends Chem.* 3, 694 (2021). [doi]

28. Rhodium single-atom catalysts on titania for reverse water gas shift reaction explored by first principles mechanistic analysis and compared to nanoclusters, F. Doherty[‡] and B. R. Goldsmith*, *ChemCatChem* 13, 3155 (2021). [doi]

27. Increasing electrocatalytic nitrate reduction activity by controlling adsorption through PtRu alloying, Z. Wang[‡,&], S. D. Young[‡], B. R. Goldsmith*, N. Singh*, *J. Catal.* 395, 143 (2021). [doi]

26. The effect of anion bridging on heterogeneous charge transfer for $V^{2+}/V^{3+}$, H. Agarwal, J. Florian[‡,#], B. R. Goldsmith, N. Singh*, *Cell Rep. Phys. Sci.* 2, 100307 (2021). [doi]

25. Theory-guided machine learning finds geometric structure-property relationships for chemisorption on subsurface alloys, J. A. Esterhuizen[‡,&], B. R. Goldsmith*, S. Linic*, *Chem* 6, 1 (2020). [doi]

24. Structures and free energies of cerium ions in acidic electrolytes, C. A. Buchanan, E. Ko[‡], S. Cira[#], M. Balasubramanian, B. R. Goldsmith, N. Singh*, *Inorg. Chem*. 59, 12552 (2020). [doi]

23. Nanocluster and single-atom catalysts for thermocatalytic conversion of CO and $CO_2$, F. Doherty[‡,^], H. Wang^, Ming Yang*, B. R. Goldsmith*, *Catal. Sci. Technol.* 10, 5772 (2020). [doi]

22. Adsorption energies of oxygenated aromatics and organics on rhodium and platinum in aqueous phase, J. Akinola, I. Barth[‡], B. R. Goldsmith*, N. Singh*, *ACS Catal.* 10, 4929 (2020). [doi]

21. Inorganic halide double perovskites with optoelectronic properties modulated by sublattice mixing, C. J. Bartel*, J. M. Clary, C. Sutton, D. Vigil-Fowler, B. R. Goldsmith, A. M. Holder, C. B. Musgrave*, *J. Am. Chem. Soc.* 142, 5135 (2020). [doi]

20. Role of electrocatalysis in the remediation of water pollutants, N. Singh* and B. R. Goldsmith*, *ACS Catal.* 10, 3365 (2020). [doi]

19. $V^{2+}/V^{3+}$ redox kinetics on glassy carbon in acidic electrolytes for vanadium redox flow batteries, H. Agarwal, J. Florian[‡,#], B. R. Goldsmith, N. Singh*, *ACS Energy Lett.* 4, 2368 (2019). [doi]

18. Nitrogen-doped graphene layers for electrochemical oxygen reduction reaction boosted by lattice strain, J. Li^, J.-X Liu[^,‡], X. Gao, B. R. Goldsmith, Y. Cong, Z. Zhai, S. Miao, Q. Jiang, Y. Dou, J. Wang, Q. Shi, X. Guo, D. Wang, H. Yu, W. Li*, Y. Song*, *J. Catal.* 378, 113 (2019). [doi]

17. Surpassing the single-atom catalytic activity limit through a Pt-O-Pt ensemble built from isolated $Pt_1$ atoms, H. Wang^, J.-X. Liu[^,‡], L. F. Allard, S. Lee, J. Liu, H. Li, J. Wang, J. Wang, S. H. Oh, W. Li, M. Flytzani-Stephanopoulos, M. Shen*, B. R. Goldsmith*, M. Yang*, *Nat. Commun.* 10, 1 (2019). [doi]

16. Activity and selectivity trends in electrocatalytic nitrate reduction on transition metals, J.-X. Liu[‡], D. Richards, N. Singh*, B. R. Goldsmith*, *ACS Catal.* 9, 7052 (2019). [doi]

15. New tolerance factor to predict the stability of perovskite oxides and halides, C. J. Bartel*, C. Sutton, B. R. Goldsmith, R. Ouyang, C. B. Musgrave, L. M. Ghiringhelli, M. Scheffler*, *Sci. Adv.* 5, eaav0693 (2019). [doi]

14. Two-to-three dimensional transition in neutral gold clusters: the crucial role of van der Waals interactions and temperature, B. R. Goldsmith*, J. Florian[‡,#], J.-X. Liu[‡], P. Gruene, J. T. Lyon, D. M. Rayner, A. Fielicke*, M. Scheffler, L. M. Ghiringhelli*, *Phys. Rev. Mater.* 3, 016002 (2019). [doi]

13. Machine learning for heterogeneous catalyst design and discovery, B. R. Goldsmith*, J. Esterhuizen[‡], C. J. Bartel, C. Sutton, J.-X. Liu[‡], *AIChE J.*, 64, 2311 (2018). [doi]

12. Beyond ordered materials: understanding catalytic sites on amorphous solids, B. R. Goldsmith**, B. Peters, J. K. Johnson, B. C. Gates, S. L. Scott*, *ACS Catal.* 7, 7543 (2017). [doi]

11. Identifying consistent statements about numerical data with dispersion-corrected subgroup discovery, M. Boley*, B. R. Goldsmith, L. M. Ghiringhelli, J. Vreeken, *Data Min. Knowl. Disc.* 31, 1391 (2017). [doi]

10. Uncovering structure-property relationships of materials by subgroup discovery, B. R. Goldsmith**, M. Boley, J. Vreeken, M. Scheffler, L. M. Ghiringhelli*, *New J. Phys.* 19, 013031 (2017). [doi]

9. A $Cu_{25}$ nanocluster with partial Cu(0) character, T-A. D. Nguyen, Z. R. Jones, B. R. Goldsmith, W. R. Buratto, G. Wu, S. L. Scott*, T. W. Hayton*, *J. Am. Chem. Soc.* 137, 13319 (2015). [doi]

8. Rate-enhancing roles of water molecules in methyltrioxorhenium-catalyzed olefin epoxidation by $H_2O_2$, B. R. Goldsmith, T. Hwang, S. Seritan[#], B. Peters*, S. L. Scott*, *J. Am. Chem. Soc.* 137, 9604 (2015). [doi]

7. Synthesis and characterization of a $Cu_{14}$ hydride cluster supported by neutral donor ligands, T-A. D. Nguyen, B. R. Goldsmith, H. Zaman, G. Wu, B. Peters, T. W. Hayton*, *Chem. Eur. J.* 21, 5341 (2015). [doi]

6. CO and NO-induced disintegration and redispersion of three-way catalysts rhodium, palladium and platinum: an *ab initio* thermodynamics study, B. R. Goldsmith, E. D. Sanderson[#], R. Ouyang, W.-X. Li*, *J. Phys. Chem. C* 118, 9588 (2014). [doi]

5. Water-catalyzed activation of $H_2O_2$ by methyltrioxorhenium: a combined computational-experimental study, T. Hwang^, B. R. Goldsmith^, B. Peters*, S. Scott*, *Inorg. Chem.* 52, 13904 (2013). [doi]

4. Isolated catalyst sites on amorphous supports: a systematic algorithm for understanding heterogeneities in structure and reactivity, B. R. Goldsmith, E. D. Sanderson[#], D. Bean[#], B. Peters*, *J. Chem. Phys.* 138, 204105 (2013). [doi]

3. Synthesis and micropatterning of photocatalytically reactive self-assembled monolayers covalently linked to Si(100) surfaces via a Si-C bond, M. Lo, M. Gard, B. R. Goldsmith[#], M. Garcia-Garibay, H. Monbouquette*, *Langmuir* 28, 16156 (2012). [doi]

2. Solvent-free conversion of linalool to methylcyclopentadiene dimers: a new route to renewable high-density fuels, H. A. Meylemans, R. L. Quintana, B. R. Goldsmith[#], B. G. Harvey*, *ChemSusChem* 4, 465 (2011). [doi]

1. Synthesis and characterization of electrodeposited permalloy($Ni_{80}Fe_{20}$)/Cu multilayered nanowires, K. Y. Kok, C. M. Hangarter, B. R. Goldsmith[#], I. K. Ng, N. B. Saidin, N. V. Myung*, *J. Magn. Magn. Mater.* 322, 3876 (2010). [doi]

## BOOK CHAPTERS AND CONFERENCE PAPER PUBLICATIONS

2. InfluenceMax for deep active modeling, W. Yao[‡,&], B. Dumitrascu, B. R. Goldsmith, Y. Wang*, *40th Conference on Uncertainty in Artificial Intelligence* (2024). [Under Review]

1. Goldsmith, B. R., Fong, A., & Peters, B. (2013). Understanding reactivity with reduced potential energy landscapes: recent advances and new directions. In K. Han & T. Chu, *Reaction Rate Constant Computations: Theories and Applications* (pp. 213-232). Cambridge, U.K., Royal Society of Chemistry. [doi]

**INVITED PRESENTATIONS**

42. UC Santa Barbara, Dept. of Chemical Engineering; CA, USA; May 2023
Seminar: Atomistic modeling and data-driven approaches to understand catalysts for sustainable chemical conversion

41. Wilhelm und Else Heraeus-Stiftung, Physikzentrum Bad Honnef, Germany, April 2023
Lecture: Atomistic modeling of plasma-assisted catalysis: opportunities and challenges

40. American Chemical Society Spring National Meeting; Indianapolis, IN; March 2023
Talk: Single-atom vs. nanocluster catalysts on ceria and titania for thermocatalytic conversion of CO and $CO_2$
Talk: Electrocatalytic reduction of nitrate to benign or value-added products

39. COST Consortium; Brussels, Belgium (virtual); Feb. 2023
Talk: Interpretable "transparent box" machine learning to understand materials and catalytic properties

38. University of Science and Technology of China, Department of Chemical Physics; Hefei; Dec. 2022
Seminar: Atomistic modeling and data-driven approaches to understand heterogeneous catalysts for sustainable chemical conversion
Lecture: Introduction to machine learning in the chemical sciences

37. Clarkson University, Dept. of Chemical and Biomolecular Engineering, NY, USA; Sep. 2022
Seminar: Atomistic modeling and data-driven approaches to understand heterogeneous catalysts for sustainable chemical conversion

36. University of Illinois Urbana-Champaign, Dept. of Chemical and Biomolecular Engineering, Sep. 2022
Seminar: Atomistic modeling and data-driven approaches to understand heterogeneous catalysts for sustainable chemical conversion

35. 2nd International Symposium on Advanced Materials and Catalysis for Energy and Environmental Applications, August 2022, Virtual
Talk: Electrocatalytic nitrate reduction to ammonia on metals and binary alloys

34. 263rd ACS National Meeting; San Diego, CA; March 2022
Keynote: Interpretable "transparent box" machine learning to understand materials and catalytic properties

33. 61st Sanibel Symposium, St. Simons Island, GA; February 2022
Plenary: Interpretable machine learning to understand and predict catalysts and materials

32. Wayne State University, Department of Chemistry; February 2022
Seminar: First-principles modeling to understand catalysts for air and water pollution removal

31. Water Groups at Stanford and SLAC – Invited by Prof. William Tarpeh; December 2021
Talk: Carbon-neutral production of clean water and ammonia through electrocatalytic reduction of nitrate

30. University of South Carolina, Department of Chemistry and Biochemistry; November 2021
Seminar: Atomistic modeling to understand heterogeneous catalysts for water and air pollution reduction

30. American Institute of Chemical Engineers Virtual Webinar – CRE and YP Divisions; October 2021
Webinar: Producing clean water and ammonia through electrocatalytic reduction of nitrate

29. Department of Energy Low Temperature Plasma Centers 2021 Annual Meeting; College Park, MD; September 2021
Talk: Atomistic modeling of plasma-assisted catalysis: opportunities and challenges

28. 262nd ACS National Meeting's Symposium: Electrocatalysis for Sustainable Energy: Fundamentals, Applications, and Perspective; Atlanta, GA; August 2021
Keynote: Electrocatalytic nitrate reduction on metals, alloys, and metal sulfides

27. SIAM Conference on Mathematical Aspects of Materials Science (MS21); Virtual; May 2021
Talk: Glass-box machine learning to find descriptors of materials

26. Electronic Materials and Applications 2021; Virtual; January 2021
Talk: Finding insights in materials data using interpretable "transparent box" machine learning

25. University of Michigan, Department of Materials Science & Engineering; MI, USA; November 2020
Seminar: Finding descriptors in materials data using interpretable "transparent box" machine learning

24. The Dow Chemical Company; Virtual; September 2020
Seminar: First-principles modeling of heterogeneous catalysts for sustainable chemical conversion

23. Los Alamos National Lab; Los Alamos, NM; February 2020
Seminar: First-principles modeling of heterogeneous catalysts for air and water pollution reduction

22. Computational Electrocatalysis Symposium at the ACS National Meeting; Orlando, Fl; March 2019
Talk: Activity and selectivity trends in electrocatalytic nitrate reduction on transition metals

21. Dow Innovations Day; Ann Arbor, MI, USA; September 2018
Talk: Finding descriptors in materials data using compressed sensing

20. Machine Learning for Science and Engineering Symposium, Carnegie Mellon University; June 2018
Talk: Finding patterns, correlations, and descriptors in materials data using subgroup discovery and compressed sensing

19. 255th American Chemical Society National Meeting; New Orleans, LA, USA; March 2018
Talk: Finding patterns, correlations, and descriptors in materials data using subgroup discovery and compressed sensing

18. UC Riverside, Department of Chemical and Environmental Engineering; CA, USA; February 2018
Seminar: Understanding catalysts from first-principles: challenges and opportunities in chemical production and alternative energy

17. Pennsylvania State University, Department of Chemical Engineering; PA, USA; February 2017
Seminar: Understanding catalysts from first-principles: tackling challenges in modeling catalysts

16. University of Delaware, Department of Chemical and Biomolecular Engineering, DE, USA; February 2017
Seminar: Understanding catalysts from first-principles: tackling challenges in modeling catalysts

15. University of Michigan, Department of Chemical Engineering, MI, USA; February 2017
Seminar: Understanding catalysts from first-principles: tackling challenges in modeling catalysts

14. National University of Singapore, Department of Chemical Engineering, SG; January 2017
Seminar: Understanding catalysts from first-principles: tackling challenges in modeling catalysts

13. University of Virginia, Department of Chemical Engineering, VA, USA; January 2017
Seminar: Understanding catalysts from first-principles: tackling challenges in modeling catalysts

12. Novel Materials Discovery Laboratory Plenary Meeting; Barcelona, Spain; October 2016
Talk: Patterns, correlations, and discovery of descriptors in big data of materials

11. Bio-inspired Nanosystems for Energy Conversion; Berlin, Germany; July 2016

Talk: Influence of van der Waals interactions and entropy on cluster (meta)stability

10. Current Topics at the Fritz-Haber-Institut; Berlin, Germany; May 2016
Talk: Role of van der Waals and entropy on nanocluster (meta)stability

9. 251st American Chemical Society National Meeting; San Diego, CA, USA; March 2016
Talk: Systematic framework for modeling isolated catalyst sites on amorphous supports

8. University of Science and Technology China: Group of Xinguo Ren, Hefei, China; March 2015
Seminar: First-principles modeling of nanoparticle disintegration and amorphous catalyst site activity

7. Peking University, Department of Chemistry: Group of Hong Jiang, Beijing, China; March 2015
Seminar: Predicting the activity of amorphous catalyst sites and supported nanoparticle stability

6. Fudan University, Department of Chemistry: Group of Zhi-Pan Liu, Shanghai, China; November 2014
Seminar: Ab initio framework for uncovering structure-property relationships of amorphous catalysts

5. 7th Annual Clorox-Amgen Symposium; Santa Barbara, CA, USA; October 2014
Schlinger Lecture: Framework to find structure-property relationships of catalyst sites on amorphous supports

4. National Science Foundation PIRE-ECCI Principal Investigators Meeting; Arlington, VA, USA; May 2014
Talk: International collaborations in catalysis: science knows no boundaries

3. Partnership in International Research and Education in Electron Chemistry and Catalysis at Interfaces Annual Conference; Santa Barbara, CA, USA; December 2013
Talk: CO and NO-induced disintegration of Rh, Pd, and Pt nanoparticles on $TiO_2$(110) support

2. Hamburg University of Technology: Group of Frerich J. Keil; Hamburg, Germany; August 2013
Seminar: Framework for finding structure-property relationships of amorphous catalysts… and a DFT primer

1. PIRE Summer School on Sustainable Catalysis; Shanghai, China; September 2012
Talk: DFT study of the low temperature water gas shift reaction on transition metal doped ZnO surface

**CONTRIBUTED CONFERENCE PRESENTATIONS** [link to selected presentation slides]
*Personally presented 22 talks and 16 poster contributions at 25 conferences (in six countries)*
*Students presented >55 talks and posters at conferences worldwide (since 2017)*

Recent Selected Contributions
10. Catalysis Gordon Research Conference, Colby-Sawyer College in New London, NH, USA; June 2022
Poster: Electrocatalytic nitrate reduction on metals and bimetallic alloys

9. 2022 North American Catalysis Society Meeting, Manhattan, NY, USA; May 2022
Talk: Electrocatalytic nitrate reduction to ammonia on metals and binary alloys
Talk: Unsupervised machine learning to extract the electronic and chemical properties of alloy and metal oxide surfaces

8. AIChE 2021 Annual Meeting; Boston, MA; November 2021
Talk: Tips and pitfalls to avoid when teaching machine learning with python to chemical engineers
Talk: Unsupervised machine learning to extract electronic and chemical properties of surfaces
Talk: The influence of plasma-induced surface charging on single-atom catalysis for $CO_2$ reduction

7. 42nd Michigan Catalysis Society Spring Symposium, Virtual, MI, USA; September 2021
Talk: Electrocatalytic nitrate reduction on metals and alloys

6. ACS Spring 2021 Meeting (virtual); April 2021
Talk: Platinum-ruthenium alloys as electrocatalysts for efficient aqueous nitrate reduction
Talk: Rhodium single-atom catalysts on titania for reverse water gas shift reaction explored by first principles

mechanistic analysis and compared to nanoclusters
Talk: Intelligible machine learning models for chemisorption on alloys: Finding predictive geometric structure-property relationships

5. AIChE 2020 Annual Meeting (virtual); November 2020
Talk: Understanding $V^{2+}/V^{3+}$ complexation and reaction on glassy carbon in acidic electrolytes
Talk: Rhodium single-atoms vs. nanoclusters on titania for reverse water gas shift reaction
Talk: Understanding adsorption of model bio-oil compounds in aqueous-phase from first-principles

4. AIChE 2019 Annual Meeting; Orlando, FL, USA; November 2019
Talk: Activity and selectivity trends in electrocatalytic nitrate reduction on transition metals
Talk: Low-temperature CO oxidation by Pt single atoms and $Pt_nO_m$ clusters on ceria

3. 2019 North American Catalysis Society Meeting, Chicago, IL, USA; June 2019
Talk: Low-temperature CO oxidation by $Pt_1$ single atoms and $Pt_xO_y$ clusters on ceria

2. 40th Michigan Catalysis Society Spring Symposium, Dearborn, MI, USA; May 2019
Talk: Low-temperature CO oxidation by Pt single atoms and $Pt_nO_m$ clusters on ceria

1. Gordon Research Conference on Catalysis, New London, NH, USA; June 2018
Poster: Finding patterns, correlations, and descriptors in materials data using subgroup discovery and compressed sensing

## TEACHING

*University of Michigan, Ann Arbor*
- W23, ENGIN 100-320 Practical Data Science for Engineers (48 students, Q1 = 3.90, Q2 = 4.50)
- W22, ENGIN 100-320 Practical Data Science for Engineers (48 students, Q1 = 3.70, Q2 = 4.00)
- F21, CHE 696/MSE 593 Data Science for Engineers (27 students, Q1 = 4.80, Q2 = 4.90)
- W21, ENGIN 100-320 Practical Data Science for Engineers (47 students, Q1 = 4.10, Q2 = 4.40)
- F20, CHE 230 Intro to Material and Energy Balances, (115 students, non-lead co-instructor)
- W20, CHE 696 Data Science for Engineers (18 students, Q1 = 4.80; Q2 = 4.90)
- F19, CHE 230 Intro to Material and Energy Balances, (83 students, Q1 = 4.60; Q2 = 4.70)
- W19, CHE 696/MSE 593 Data Science for Engineers (39 students, Q1 = 4.70; Q2 = 4.80)
- F18, CHE 230 Intro to Material and Energy Balances, (137 students, Q1 = 4.50; Q2 = 4.60)
- F17, CHE 230 Intro to Material and Energy Balances (130 students, Q1 = 4.70; Q2 = 4.85; student nominated for UofM Golden Apple Teaching Award)

Scores out of 5.0: Q1: Overall, this is an excellent course, Q2: Overall, the teacher is excellent.

## RESEARCH ADVISING

*University of Michigan, Ann Arbor*
- Mentored 7 postdocs, 12 PhD candidates, 4 MS student, and 21 undergraduate researchers since 9/2017

Student Name (major, duration; last known position)

***Postdoctoral Scholars (5 current, 2 alumni)***
1. Rocky Ye (Chemistry, 10/2022 – Current; advised with Profs. Linic, Singh and Nikolla)
2. Alyssa Schubert (Environmental Engineering; 9/2023 – Current; Schmidt AI in Science Fellow)
3. Weichi Yao (Statistics and Machine Learning; 9/2023 – Current; Schmidt AI in Science Fellow)
4. Bolton Tran (Chemical Engineering; 9/2023 – Current)
5. Riley Vickers (Environmental Engineering; 9/2023 – Current; advised with Prof. Kamcev)

*Alumni*
1. Jin-Xun Liu (Chemical Physics, 2/2018 – 9/2019; Professor at USTC in Hefei, China)
2. Sam Young (Chemical Engineering; 9/2023 – 5/2024; Army Research Laboratory, MD)

***PhD Students (7 current, 5 alumni)***
*Current*

1. Cameron Gruich (ChE, 9/2021 – Current)
2. Ankit Mathanker (ChE, 9/2021 – Current)
3. Oluwatosin Ohiro (ChE, 9/2021 – Current)
4. Chenggong Jiang (ChE, 9/2022 – Current; Co-advised with Prof. S. Linic)
5. Dean Sweeney (ChE, 10/2023 – Current)
6. Maurycy Krzyzanowski (ChE, 10/2023 – Current)
7. Roshini Dantuluri (ChE, 10/2023 – Current)

*Alumni*

1. Zixuan Wang (ChE, Co-advised with Prof. N. Singh, 9/2018 – 6/2021; Boston Consulting Group)
   - Thesis title: "Sustainable Catalytic Systems for Ammonia Synthesis"
2. Jacques Esterhuizen (ChE, 9/2017 – 8/2022; Co-advised with Prof. S. Linic; ML Scientist at Amazon)
   - Thesis title: "Accelerating the Design and Discovery of Heterogeneous Catalysts using Machine Learning"
3. Francis Doherty (ChE, 9/2017 – 9/2022, Scientist at Remora)
   - Thesis title: "Atomistic Modeling for $CO_2$ Reduction using Thermal, Plasma, and Electrocatalysis"
4. Samuel Young (ChE, 9/2018 – 8/2023)
   - Thesis title: "Heterogeneous Electrocatalysts for Aqueous Nitrate Reduction and Nitrogen Chemistry"
5. Isaiah Barth (ChE, 9/2018 – 8/2023)
   - Thesis title: "Understanding the Aqueous-phase Adsorption and Hydrogenation of Model Bio-oil Molecules on Metals and Alloys"

***Masters Students (0 current, 4 alumni)***

*Alumni*

1. Eunbyeol Ko (MS, ChE, 9/2018 – 6/2020; LGChem)
2. Dapeng Zhang (MS, ChE, 9/2020 – 5/2021)
3. Rucha Railkar (MS, ChE, 6/2021 – 8/2021; Visiting Summer Researcher)
4. Alireza Golkarieh (MS, CSE, 9/2020 – 12/2020, 04/2021 – 03/2022)

***Undergraduate Students (4 current, 17 alumni)***

*Current*

1. Jayden Elliot (ChE, MRSEC Summer Research Fellow, 4/2022 – Current)
2. Varun Madhavan (ChE, IIT Kharagpur Visiting Scholar, 5/2022 – Current)
3. Yifei Liu (ChE, 9/2023 – Current)
4. Katelyn Spress (ChE, 9/2023 – Current)

*Alumni*

1. Erich Shan (CSE, 10/2017 – 5/2018)
2. Jonathan Altes (ChE, 5/2018 – 2/2019)
3. Connor Broussard (ChE, 9/2018 – 5/2019)
4. Andres Fernandez Trevino (ChE, 4/2019 – 2/2020)
5. Ved Bhagwat (ChE, 1/2019 – 5/2019)
6. Hani Elhasan (ChE, 1/2019 – 1/2020)
7. Alexandra Tomlinson (ChE, 6/2019 – 3/2020)
8. Alex King (ChE, 8/2019 – 6/2020; UC Berkeley PhD)
9. Abhimanyu Swaroop (Materials, 4/2020 – 8/2020, visiting from IIT Madras)
10. Jacob Florian (ChE, 11/2017 – 8/2021; Cambridge for MS and PhD at Stanford)
11. Eric Musa (ChE, 12/2018 – 12/2021; IBM Cloud Engineer)
12. Jonathan Lee (ChE, 12/2019 – 12/2021; PhD at Yale)
13. Jane Burnett (ChE, 1/2021 – 1/2022)
14. Dylan Herrera (ChE, Upper Division Honors Program, 9/2019 – 9/2022)
15. Mariam Fahmy (ChE, 4/2022 – 12/2022)
16. Longbang Liu (Chemistry, USTC Visitor Scholar, 6/2022 – 3/2023)
17. Daniel Pert (ChE, Upper Division Honors Program, 11/2020 – 9/2023; PhD at Carnegie Mellon)

***Student Awards or Honors***

$^{\delta}$ = advisor nominated; * = undergraduate

29. A.D. Moore Award (Jayden Elliot*), 2023

28. Distinguished Achievement Undergraduate Award in Chemical Engineering (Jayden Elliot*), 2023
27. 1st place poster prize at the 43rd Michigan Catalysis Society Fall Symposium (Cameron Gruich), 2022
26. δJ. Robert Beyster Computational Innovation Graduate Fellow (Samuel Young), 2022
25. 1st place poster prize in the UofM Chemical Engineering Research Symposium (Dylan Herrera*), 2022
24. δACS CATL-ChemCatBio Graduate Student Award (Isaiah Barth and Frank Doherty), 2022
23. δKokes Award for the 27th North American Catalysis Society (Jacques Esterhuizen), 2022
22. δRichard F. and Eleanor A. Towner Prize for Distinguished Academic Achievement, College of Engineering, University of Michigan (Jacques Esterhuizen), 2022
    → Given to one ChE student per year who demonstrated outstanding academic achievement
21. NSF Graduate Research Fellowship (Cameron Gruich), 2021
20. 1st place in the 2021 AIChE Undergraduate Student Poster Competition in the "Chemical and Reaction Engineering" Section (Dylan Herrera*), 2021
19. δNSF Graduate Research Fellowship (Jacob Florian*), 2021
18. δDepartment of Chemical Engineering Award for Research Excellence (Jacques Esterhuizen), 2021
    → Given to one ChE student per year who demonstrated research excellence
17. δChurchill Scholarship (Jacob Florian*), 2021
    → Full ride for masters at Cambridge. 15th student to ever be awarded at the University of Michigan.
16. Distinguished Achievement Undergraduate Award in Chemical Engineering (Jacob Florian*), 2021
15. δHertz Foundation Fellowship Finalist (Jacob Florian*), 2021
14. 1st place in the 2020 AIChE Undergraduate Virtual Student Poster Competition in the "Chemical and Reaction Engineering" Section (Eric Musa*), 2020
13. δMIT MRL Summer Scholar (Jonathan Lee*), 2020
12. δWomen in Chemical Engineering Travel Award to AIChE National Conference (Zixuan Wang), 2020
11. δAIChE Catalysis and Reaction Engineering Division Travel Award (Jacques Esterhuizen), 2020
10. δHenry Ford II Prize (Jacob Florian*), 2020
9. δGoldwater Scholar (Jacob Florian*), 2020
8. δAstronaut Scholar (Jacob Florian*), 2020
7. δJ. Robert Beyster Computational Innovation Graduate Fellow (Jacques Esterhuizen), 2020
6. 2nd place in the National AIChE undergraduate poster competition for the "Catalysis and Reaction Engineering II" Section (Eric Musa*), 2019
5. δMichigan Energy Institute Summer Fellow (Eric Musa*), 2019
4. δHarvard Amgen Scholar (Jacob Florian*), 2019
3. Chemical Engineering Doctoral Candidacy Exam Excellence Award (Jacques Esterhuizen), 2018
2. δMichigan Institute for Computational Discovery and Engineering Fellowship (Samuel Young), 2018
1. NDSEG Fellow (Zixuan Wang), 2017

***Dissertation Committees***

*Serving/served on 51 PhD committees; *Goldsmith Lab students*

*Current*

1. *Cameron Gruich (PhD Chemical Engineering, Goldsmith lab)
2. *Ankit Mathanker (PhD Chemical Engineering, Goldsmith lab)
3. *Chenggong Jiang (PhD Chemical Engineering, co-advised with Prof. Suljo Linic)
4. *Oluwatosin Ohiro (PhD Chemical Engineering, Goldsmith lab)
5. *Dean Sweeny (PhD Chemical Engineering, Goldsmith Lab)
6. *Maurycy Krzyzanowski (PhD Chemical Engineering, Goldsmith Lab)
7. *Roshini Dantuluri (PhD Chemical Engineering, Goldsmith Lab)
8. Hsin-Ting Chen (PhD Chemical Engineering, PI: Pete Tessier)
9. James Proctor (PhD Chemical Engineering, PI: Sharon Glotzer)
10. Kevin Enrique Rivera Cruz (PhD Chemistry, PIs: Charles McCrory and Paul Zimmerman)
11. Benjamin Farris (PhD Chemistry, PI: Nate Szymczak)
12. Rahul Jha (PhD Chemistry, PI: Anne McNeil)

13. Wendy Yu (PhD Chemical Engineering; PI: Nirala Singh)

*Defended 2024*

1. Florian Krüger (PhD Electrical Engineering and CS, PI: Mark Kushner)

*Defended 2023*

2. *Samuel D. Young (PhD Chemical Engineering, Goldsmith lab)
3. *Isaiah Barth (PhD Chemical Engineering, Goldsmith lab)
4. Troy Zehnder (PhD Chemistry, PI: Corrina Schindler)
5. James Akinola (PhD Chemical Engineering, PI: Nirala Singh)
6. Tanner Robinson (PhD Biomedical Engineering, PI: Gary Luker)
7. Futianyi Wang (PhD Chemical Engineering, PI: Ron Larson)
8. Emily Makowski (PhD Pharmaceutical Sciences, PI: Pete Tessier)
9. Rawan Almallahi (PhD Chemical Engineering, PI: Suljo Linic)

*Defended 2022*

10. *Francis Doherty (PhD Chemical Engineering, Goldsmith lab)
11. *Jacques Esterhuizen (PhD Chemical Engineering, co-advised with Prof. Suljo Linic, Goldsmith lab)
12. Steven Lanham (PhD Chemical Engineering, PI: Mark Kushner)
13. Matthew Hannigan (PhD Chemistry, PIs: McNeil & Zimmerman)
14. Jiaxuan Wang (PhD Computer Science, PI: Jenna Wiens)
15. Mohsen Ghasemi (PhD Chemical Engineering, PI: Ron Larson)
16. Harsh Agarwal (PhD Chemical Engineering, PI: Nirala Singh)
17. Steven Kiyabu (PhD Mechanical Engineering, PI: Donald Siegel)
18. Cailin Buchanan (PhD Chemical Engineering, PI: Nirala Singh)
19. Danielle Richards (PhD Chemical Engineering, PI: Nirala Singh)

*Defended 2021*

20. *Zixuan Wang (PhD Chemical Engineering, Co-advised with Prof. Nirala Singh)
21. Sean Dix (PhD Chemical Engineering, PI: Suljo Linic)
22. Yulei Zhang (PhD Chemical Engineering, PI: Pete Tessier)
23. John Hemmerling (PhD Chemical Engineering, PI: Suljo Linic)
24. Bradley Dice (PhD Physics, PI: Sharon Glotzer)
25. Benjamin Silcox (PhD Chemical Engineering, PI: L. Thompson and N. Singh)
26. Juliusz Kruszelnicki (PhD Nuclear Engineering, PI: Mark Kushner)
27. Ramin Ansari (PhD Chemical Engineering, PI: John Kieffer)

*Defended 2020*

28. Mark Mantell (PhD Chemistry, PI: Melanie Stanford)
29. Suhak Lee (PhD Mechanical Engineering, PI: Anna G. Stefanopoulou)
30. Grayson Ritch (PhD Chemistry; left with masters, PI: N. Szymczak)
31. Pengji Zhou (PhD Chemical Engineering, PI: Sharon C. Glotzer)
32. Joseph Cicchese (PhD Chemical Engineering, PI: Jennifer Linderman)

*Defended 2019*

33. Aaron Proctor (PhD Chemistry, PI: Bart M. Bartlett)
34. Joseph Quinn (PhD Chemical Engineering, PI: Suljo Linic)
35. Chengyu Dai (PhD Physics, PI: Sharon Glotzer)
36. Carl Simon Adorf (PhD Chemical Engineering, PI: Sharon Glotzer)

*Defended 2018*

37. Matthew Spelling (PhD Chemical Engineering, PI: Sharon Glotzer)
38. Yina Geng (PhD Physics, PI: Sharon Glotzer)

## PROFESSIONAL SERVICE AND EDUCATIONAL ACTIVITIES

*Professional Memberships*

American Institute of Chemical Engineers (AIChE), American Chemical Society (ACS), North American Catalysis Society (NACS), American Society for Engineering Education (ASEE), American Association for the Advancement of Science (AAAS), Tau Beta Pi, Humboldt Foundation

*Leadership in Organizations*

| | |
|---|---|
| 9/2023 – on going | Past-President of the Michigan Catalysis Society of the NACS |
| 10/2022 – 9/2023 | President of the Michigan Catalysis Society of the NACS |
| 1/2022 – on going | Advisory Board Member of Department of Petrochemical Engineering of the Federal |

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| | University of Petroleum Resources, Effurun, Nigeria |
| 9/2021 – 09/2022 | Vice President of the Michigan Catalysis Society of the NACS |
| 5/2019 – 8/2021 | Executive Secretary of the Michigan Catalysis Society of the NACS |
| 12/2019 – 9/2023 | AIChE Student Chapter Advisor at University of Michigan, Ann Arbor |

- *3× AIChE Outstanding Student Chapter Award (2020–2022)*

*Advisory Boards of Journals and Journal Editing*

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|---|---|
| 2023 – on going | Early Career Advisory Board Member of *Journal of Catalysis* |
| 2020 – on going | Advisory Board Member of *Chem Catalysis* |
| 2020 – 2022 | Guest co-editor for special issue in *J. Materials Science* on "Recent Advances in Computational Design of Materials" |

*Journal Review*

Refereed over 160 articles for journals such as: ACS Catalysis · Nature Catalysis · Nature Chemistry · Nature Communications · J. Catalysis · ACS Energy Letters · Chem · Chem Catalysis · Energy and Environmental Sciences ·ACS Nano · ChemCatChem · Chemical Sciences · Journal of Chemical Physics · Journal of Physical Chemistry · Physical Chemistry Chemical Physics · Journal of Computational Chemistry · AIChE Journal · Catalysis Science & Technology · Chemical Reviews · Applied Catalysis B: Environmental

*Service at University of Michigan (UofM)*

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|---|---|
| 1/2024 – on going | Representative, Management and Education Committee for MICDE |
| 1/2021 – on going | CoE Representative for Faculty Hiring (MechE (×1), CSE (×1), EnvironE (×1)) |
| 11/2021 – 3/2022 | Search Committee Member for CRLT-Engin Instructional Consultant |
| 6/2021 – 6/2022 | Project TableSaw: Refactoring Computer Science Education for Non-CS Majors |
| 7/2021 – 1/2022 | Planning Committee for Reproducibility Challenge by MIDAS |
| 9/2020 – 9/2023 | Elected Representative on Department of Chemical Engineering Advisory Committee |
| 11/2020 – 4/2022 | Committee member of ChE Department Composition and Culture on DEI |
| 9/2018 – 6/2023 | Graduate Curriculum Committee (Co-chair), Chemical Engineering |
| 9/2017 – 9/2022 | Graduate Admissions Committee (Member), Chemical Engineering |

*Conference Organization and Proposal Review*

Chaired/co-chaired 15 sessions at national conferences, organized 3 local conferences/symposia, and reviewer for > 18 different funding programs.

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|---|---|
| 2023 | 2023 AIChE Annual Meeting Session Co-Chair, "Data Science and Machine Learning Approaches to Catalysis III: Data Workflows and Automation", CRE Division |
| 2023 | Lead Organizer; 44$^{th}$ Symposium of MCS of the North American Catalysis Society |
| 2022 | 28th North American Catalysis Society Meeting Reviewer |
| 2022 | 2022 AIChE Annual Meeting Session Chair, "Data Science & Machine Learning Approaches to Catalysis", CRE Division |
| 2022 | Session Chair (x 2) at North American Catalysis Society (NAM27), New York, NY |
| 2022 | ACS 263$^{rd}$ National Meeting Symposium Presider, Gen. Catalysis, San Diego, CA |
| 2021 | Organizer; 42$^{nd}$ Symposium of MCS of the North American Catalysis Society |
| 2021 | ACS 262$^{nd}$ National Meeting Symposium Organizer, "Accelerating Catalysis Research with Machine Learning" in Atlanta, GA |
| 2021 | 2021 AIChE Annual Meeting Session Co-Chair, "Applications of Data Science in Catalysis and Reaction Engineering I-III" in Boston, MA |
| 2020 | 2020 AIChE Annual Meeting Session Co-Chair, "Applications of Data Science in Catalysis and Reaction Engineering I-III", Virtual |
| 2019 | Co-chair for Chemical Engineering Track at the 2$^{nd}$ annual Machine Learning in Science and Engineering Conference, Atlanta, GA |
| 2019 | Moderator for session at North American Catalysis Society, 26$^{th}$ National Meeting. "Modeling and Simulation of Catalysis: Machine Learning Approaches", Chicago, IL |
| 2019 | 2019 AIChE Annual Meeting Session Chair, "Fundamentals of Catalysis and Surface Science" in Orlando, FL |
| 2019 | ACS 257$^{th}$ National Meeting Symposium Organizer, "Data Science for Catalysis Research" in Orlando, FL |

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|---|---|
| 2018 | ACS 256th National Meeting Symposium Organizer "Understanding Catalytic Sites on Amorphous and Disordered Materials" in Boston, MA |
| 2018 | 2018 AIChE Annual Meeting Session Co-Chair, "New Developments in Computational Catalysis I" in Pittsburgh, PA |
| 2018 – | Regular proposal reviewer/panelist for NSF CBET, NSF CISE, NSF CMMT, NSF MRI, DOE BES Catalysis, DOE BES Phys Behav, DOE CPIMS, DOE FES, ACS PRF, DOD DTRA, ARO, NDSEG, ARPA-E, European Research Council, Dutch Research Council, KAUST Research Grants, Los Alamos National Lab, NRF of Singapore, etc. |

*Educational Activities*

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|---|---|
| 10/2023 | Speaker at NextProf Pathfinder on "How to Pick a Research Topic" |
| 10/2023 | Panelist at Che Graduate Chat on "Embarking on your Research Journey" (UofM) |
| 10/2023 | Poster Judge for LatinXChemEng2023 |
| 9/2023 | Talk on AI in the Physical Sciences for Schmidt AI in Science Fellows |
| 6/2022 | Poster Judge at Gordon Research Conference in Catalysis |
| 3/2022 | 1st Gen Engineering Mix & Mingle Mentorship Event |
| 3/2022 | Speaker on energy and catalysis research for OXE Honors Society (UofM) |
| 9/2021 | Poster Judge for LatinXChem2021 |
| 7/2021 | Harvard-Amgen Round Table Discussion Leader on Research in Chemical Engineering. |
| 1/2021 – 4/2021 | CoE Teaching Circle on Inclusivity in Online and Hybrid Contexts (UofM) |
| 11/2020 | Speaker on Undergraduate Research and Graduate School for AIChE Chapter (UofM) |
| 11/2020 | Speaker on Sustainability for Engineering Student Government (UofM) |
| 7/2020 | Harvard-Amgen Scholar Moderator for a panel on Life as a PhD Student |
| 5/2019 | Panelist for Rackham-CRLT Preparing Future Faculty Program |
| 11/2018 – on going | 1st Generation Engineering Student Faculty Mentor (UofM) |
| 10/2018 | Poster Judge for UofM-MSU Blue-Green Seminar |
| 10/2018 | Poster Judge for UofM MIDAS Data Science Symposium |
| 9/2018 | Poster Judge for UofM Chemical Engineering Graduate Symposium |
| 4/2018 – on going | Chemical Engineering Process Safety Curriculum Initiative, Member [link] |
| 3/2018 | Panelist: Dealing with Imposter Syndrome (UofM) |
| 2/2018 | Outreach Seminar "Engineering an Impactful Career" (UC Riverside) |
| 9/2017 – 9/2019 | Chemical Engineering in Everyday Life (Middle Schooler Outreach, UofM) [link] |
| 10/2017 – 10/2019 | Data Science for Chemical Engineers Student Group, Faculty Advisor (UofM) |
| 10/2017 | Panelist: Academic Careers in Chemical Engineering (UofM) |
| 10/2017 – on going | Undergraduate Research Opportunity Program Research Mentor (UofM) |
| 5/2016 – 1/2021 | Quora writer on science and education (> 1,400,000 views, published Forbes) |

## RESEARCH FUNDING AND SUPPORT

- $3.35M toward Goldsmith lab — $3.11M in externally supported research.
- >30.3M core hrs and >10K GPU hrs awarded from supercomputing centers (e.g., NERSC and ACCESS).

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|---|---|---|
| W. M. Keck Foundation | PI: Goldsmith, Co-PI: McCrory, Kamcev, Bala Chandran, Singh, Linic | Goldsmith: $338K, Total: $2.0M [1.3 M direct from W.M. Keck] (2023–26) |
| NSF CAREER CBET | PI: Goldsmith | Goldsmith: $575K (2023–28) |
| Office of Naval Research | PI: Goldsmith, Co-PI: Singh | Goldsmith: $386K, Total: $750K (2023–26) |
| NSF Chem Catalysis | PI: Singh, Co-PI: Goldsmith and Linic | Goldsmith: $222K, Total: $750K (2023–26) |
| ARL URAP | PI: Goldsmith, Co-PI: Singh | Goldsmith: $7K, Total: $14K (2022–23) |
| NSF ADAPT EAGER | PI: Goldsmith, Co-PI: Linic and Wang | Goldsmith: $110K, Total: $300K (2022–24) |
| ARL OSD SSRT | PI: Goldsmith, Co-PI: Singh | Goldsmith: $45K, Total: $90K (2022–23) |
| Microsoft CRI | PI: Kwabi, Co-PI: Goldsmith, McNeil | Goldsmith: $92K, Total: $288K (2022–23) |
| Michigan START | PIs: Goldsmith and Linic | Goldsmith: $15K, Total: $30K (2022–23) |
| MICDE Catalyst Grant | PI: Goldsmith, Co-PI: Linic | Goldsmith: $25K, Total: $50K (2022–23) |

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| Carbon Neutrality Accelerator | PI: Singh, Co-PI: Goldsmith | Goldsmith: $21K, Total: $50K (2021–23) |
| NSF DMREF | PI: Linic, Co-PI: Goldsmith, Singh, Nikolla | Goldsmith: $432K, Total: $1.8M (2021–24) |
| Army Research Office | PI: Goldsmith, Co-PI: Singh | Goldsmith: $187K, Total: $374K (2021–23) |
| ACS Petroleum Research Fund | PI: Goldsmith | Goldsmith: $110K (2021–23) |
| Carbon Neutrality Accelerator Program | PI: Linic Co-PI: Goldsmith, Singh, McCrory, Bala Chandran | Goldsmith: $60K, Total: $300K (2021–23) |
| DOE FES | PI: Kushner, Co-PI: Adamovich, Barnat, Bhan, Bruggeman, Graves, Mesbah, Goldsmith, Mededovic, Oehrlein, Shannon | Goldsmith: $270K, Total: $5.1M (2019–24) |
| NSF CBET Echem | PI: Singh, Co-PI: Goldsmith | Goldsmith: $262K, Total: $530K (2019–22) |
| MIDAS Pods Grant | PI: Goldsmith, Co-PI: Linic | Goldsmith: $35K, Total: $70K (2021–22) |
| Michigan ChE | PI: Goldsmith | Goldsmith: $50K (2019–23) |
| Michigan UMOR | PI: Singh, Co-PI: Goldsmith | Goldsmith: $15K, Total: $30K (2019–20) |
| Michigan Mcubed | PI: Goldsmith, Co-PI: Singh, McCrory, Bala Chandran | Goldsmith: $15K, Total: $60K (2019–20) |

**RESEARCH HIGHLIGHTS IN MEDIA**

- "$1.3M to improve urea fertilizer production and reduce $CO_2$ emissions" 6/2023
UofM CoE

- "Bryan Goldsmith receives NSF CAREER Award" 1/2023
UofM

- "NREIP alum drives attempts for discovering new chemistries for sustainable fuels" 11/2022
Naval STEM Interns

- "Improving long duration energy storage with cerium chemistry" 11/2022
UofM ChE, UofM CoE, Materials Today, Science Daily, Innovation News Network, DOE Office of Science

- "Mitigating carbon dioxide and nitrate emissions using renewable energy" 9/2022
Michigan Sustainability Institute

- "Microsoft Climate Research Initiative" 8/2022
Global $CO_2$ initiative, Microsoft Climate Research Initiative

- "Interpretable machine learning in catalysis" 4/2022
UofM

- "Machine learning links material composition and performance in catalysts" 8/2021
ScienceDaily, Phys.org

- "Electron transfer discovery is a step toward viable grid-scale batteries" 1/2021
EurekAlert!, UofM, TechXplore

- "Chemistry and energy: Machine learning to understand catalyst interactions" 9/2020
ScienceDaily, Phys.org, UofM

- "Coupling single platinum atoms to form clusters improves catalytic activity" 3/2020
Advanced Photon Source

- "New approach to assess stability in perovskites" 3/2019