L. ROBERT BAKER

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APPOINTMENTS

- **Baronov and Timashev Endowed Professor in Chemical Physics** (2026–present)
  The Ohio State University, Department of Chemistry and Biochemistry and Department of Physics
- **Phyllis and Richard Leet Endowed Chair in Chemistry** (2025–2026)
  The Ohio State University, Department of Chemistry and Biochemistry
- **Professor** (2022–present)
  The Ohio State University, Department of Chemistry and Biochemistry
- **Associate Professor** (2019–2022)
  The Ohio State University, Department of Chemistry and Biochemistry
- **Assistant Professor** (2014–2019)
  The Ohio State University, Department of Chemistry and Biochemistry
- **Postdoctoral Fellow** (2012–2014)
  University of California, Berkeley, Advisor: Stephen R. Leone

EDUCATION

- **Ph.D. Degree**, Physical Chemistry (2008–2012)
  University of California, Berkeley, Advisor: Gabor A. Somorjai
- **BS Degree**, Chemistry (2004–2007)
  Brigham Young University

HONORS AND AWARDS

- **John Von Neumann Distinguished Fulbright Scholar** (2023)
  Fulbright US Scholar Program (Hungary)
- **Coblentz Award in Molecular Spectroscopy** (2022)
  Coblentz Society
- **Mid-Career Faculty Excellence Award** (2022)
  College of Arts and Science, The Ohio State University
- **Emerging Leader in Atomic Spectroscopy** (2021)
  Spectroscopy Magazine
- **Camille Dreyfus Teacher-Scholar Award** (2020)
  The Camille and Henry Dreyfus Foundation
- **Journal of Physical Chemistry / PHYS Division Lectureship** (2020)
  American Chemical Society
- **Young Innovator Award in NanoEnergy** (2019)
  Highlighted in NR45 special issue of *Nano Research*
- **Early Career Award** (2015)
  Department of Energy, Condensed Phase and Interfacial Molecular Science
- **Young Investigator Award** (2015)
  Air Force Office of Scientific Research, Molecular Dynamics and Theoretical Chemistry

- **Benjamin Boussert Memorial Award** (2012)
  University of California, Berkeley, Department of Chemistry
  (For exemplifying commitment to social or environmental change)
- **Outstanding Graduate Student Instructor Award** (2012)
  University of California, Berkeley
- **Gerald K. Branch Fellowship** (2010–2011)
  University of California, Berkeley, Department of Chemistry
- **Nicholes-Maw Fellowship** (2007–2008)
  Brigham Young University, Department of Chemistry
- **Garth L. Lee Teaching Award** (2007)
  Brigham Young University, Department of Chemistry

PUBLICATION STATISTICS

Citations: 3,132 (1,831 since 2021)
h-index: 32 (23 since 2021)
i10-index: 48 (40 since 2021)
56 peer-reviewed publications

PUBLICATIONS

From The Ohio State University:
(† Corresponding author)

56. J.A. Rebstock, A. Rao, A. Samanta, A. Asthagiri, and **L.R. Baker**†, "Specifically Adsorbed Carbonate Ions and Copper Surface Reconstruction: The Effect of Double Layer Charging Revealed by Time-Resolved Sum Frequency Generation Spectroscopy," *Journal of the American Chemical Society*, **2025**, *147*, 41404–41412. **(Cover Article)**
55. J. Li, Q. Zhu, S. Cheon, Y. Gao, B. Shang, H. Li, C.L. Rooney, L. Ren, Z. Jiang, Y. Liang, S. Yang, **L.R. Baker**†, and H. Wang†, "Molecular-Scale CO Spillover on a Dual-Site Electrocatalyst Enhances Methanol Production from CO2 Reduction," *Nature Nanotechnology*, **2025**, *20*, 515–522.
54. **L.R. Baker**†, L.F. DiMauro, C. Turro, J.A. Gupta, R.K. Kawakami, T.K. Allison, T.J. Ronningen, T.D. Scarborough, V. Leshchenko, S.S. Shields, and J.E. Beetar, "NSF NeXUS: A New Model for Accessing the Frontiers of Ultrafast Science," *ACS Central Science*, **2025**, *11*, 12-18.
53. T. Neves-Garcia, M. Hasan, Q. Zhu, J. Li, Z. Jiang, Y. Liang, H. Wang†, L. M. Rossi†, R. E. Warburton†, and **L. R. Baker**†, "Integrated Carbon Dioxide Capture by Amines and Conversion to Methane on Single-Atom Nickel Catalysts," *Journal of the American Chemical Society*, **2024**, *146*, 31633–31646.
52. M. F. Kling†, C. Menoni, C. G. R. Geddes, A. Galvanauskas, F. Albert, L. Kiani, M. Chini, **L. R. Baker**, K. A. Nelson, L. Young, J. Moses, S. Carbajo, S. Demos, F. Dollar, D. W. Schumacher, J. Y-J. Tsai, A. Fry, and J. Zuegel, "Roadmap on Basic Research Needs for Laser Technology," *Journal of Optics*, **2024**, *27*, 013002.
51. S. Bandaranayake, A. Patnaik, E. Hruska, Q. Zhu, S. Das, and **L. R. Baker**†, "Effect of Surface Electron Trapping and Small Polaron Formation on the Photocatalytic Efficiency of Copper(I) and Copper(II) Oxides," *ACS Applied Materials & Interfaces*, **2024**, *16*, 41616–41625.
50. Q. Zhu, C. L. Rooney, H. Shema, C. Zheng, J. A. Panetier†, E. Gross†, H. Wang†, and **L. R. Baker**†, "The Solvation Environment of Molecularly Dispersed Cobalt Phthalocyanine Determines Methanol Selectivity During Electrocatalytic CO_2 Reduction," *Nature Catalysis*, **2024**, *7*, 987–999.

49. A. Dodin, G-H. Deng, J. A. Rebstock, Q. Zhu, D. T. Limmer†, and **L. R. Baker**†, "Sodium Carbonate Ion Complexes Modify Water Structure at Electrode Interfaces," *Applied Surface Science*, **2024**, *667*, 160345.
48. E. Hruska, Q. Zhu, S. Biswas, M. T. Fortunato, D. R. Broderick, C. M. Morales, J. M. Herbert, C. Turro, **L.R. Baker**†, "Water Mediated Charge Transfer and Electron Localization in a Co_3Fe_2 Cyanide-Bridged Trigonal Bipyramidal Complex," *Journal of the American Chemical Society*, **2024**, *146*, 8031–8042.
47. H. Gajapathy, S. Bandaranayake, E. Hruska, A. Vadakkayil, B. P. Bloom, S. Londo, J. McClellan, J. Guo, D. Russel, F. M. F. de Groot, F. Yang, D. H. Waldeck, M. Schultze, and **L. R. Baker**†, "Spin Polarized Electron Dynamics Enhance Water Splitting Efficiency by Yttrium Iron Garnet Photoanodes: A New Platform for Spin Selective Photocatalysis," *Chemical Science*, **2024**, *15*, 3300–3310.
46. J. Rebstock, Q. Zhu, and **L. R. Baker**†, "Exploring the Influence of Interfacial Solvation on Electrochemical CO_2 Reduction Using Plasmon-Enhanced Vibrational Sum Frequency Generation Spectroscopy," *ChemCatChem*, **2024**, *16*, e202301301. **(Cover Article)**
45. S. Bandaranayake, A. Patnaik, E. Hruska, Q. Zhu, and **L. R. Baker**†, "Electronic Structure and Ultrafast Electron Dynamics in CuO Photocatalysts Probed by Surface Sensitive Femtosecond X-ray Absorption Near-Edge Structure Spectroscopy," *Journal of Physical Chemistry Letters*, **2023**, *14*, 3643–3650.
44. G-H. Deng, Q. Zhu, J. Rebstock, T. Neves-Garcia, and **L. R. Baker**†, "Direct Observation of Bicarbonate and Water Reduction on Gold: Understanding the Potential Dependent Proton Source During Hydrogen Evolution," *Chemical Science*, **2023**, *14*, 4523–4531.
43. E. Hruska, J. Husek, S. Bandaranayake, and **L. R. Baker**†, "Visible Light Absorption and Hot Carrier Trapping in Anatase TiO_2: The Role of Surface Oxygen Vacancies," *Journal of Physical Chemistry C*, **2022**, *126*, 10752–10761.
42. J. Rebstock, Q. Zhu, and **L. R. Baker**†, "Comparing Interfacial Cation Hydration at Catalytic Active Sites and Spectator Sites on Gold Electrodes: Understanding Structure Sensitive CO_2 Reduction Kinetics," *Chemical Science*, **2022**, *13*, 7634–7643.
41. S. Biswas†, and **L. R. Baker**†, "Extreme Ultraviolet Reflection-Absorption Spectroscopy: Probing Dynamics at Surfaces from a Molecular Perspective," *Accounts of Chemical Research*, **2022**, *55*, 893–903.
40. Z. Zhu, C. J. Murphy, and **L. R. Baker**†, "Opportunities for Electrocatalytic CO_2 Reduction Enabled by Surface Ligands," *Journal of the American Chemical Society*, **2022**, 144, 2829–2840. **(Invited Perspective, JACS Spotlight)**
39. Q. Zhu, S. Wallentine, G-H. Deng, J. Rebstock, and **L. R. Baker**†, "Solvation-Induced Onsager Reaction Field Rather than Double Layer Field Controls CO_2 Reduction Kinetics on Gold," *JACS Au*, **2022**, *2*, 472–482.
38. S. Londo, S. Biswas, I. V. Pinchuk, A. Boyadzhiev. R. K. Kawakami, and **L. R. Baker**†, "Ultrafast Optical Switching in Ferrimagnetic Nickel Ferrite ($NiFe_2O_4$) Studied by XUV Reflection-Absorption Spectroscopy," *Journal of Physical Chemistry C*, **2022**, *126*, 2669–2678.
37. H. Shang, M. Kim, S. Wallentine, D. Kim, D. M. Hofmann, R. Dasgupta, C. J. Murphy†, A. Asthagiri†, and **L. R. Baker**†, "Understanding the Branching Point for C1 Selectivity During CO_2 Electroreduction: Role of Ensemble Effects in Cu/Au Ultrasmall Nanoparticles," *Chemical Science*, **2021**, *12*, 9146–9152.
36. Y. Mueanngern, C. H. Li, M. Spelic, J. Graham, N. Pimental, Y. Khalifa, J. R. Jinscheck, and **L. R. Baker**†, "Deactivation-Free Ethanol Steam Reforming at Nickel-Tipped Carbon Filaments," *Physical Chemistry Chemical* Physics, **2021**, *23*, 11764–11773.

35. H. Shang, S. Wallentine, D. M. Hofmann, Q. Zhu, C. J. Murphy, and **L. R. Baker**†, "Effect of Surface Ligands on Gold Nanocatalysts for CO_2 Reduction," *Chemical Science*, **2020**, *11*, 12298–12306. **(Cover Article)**
34. S. Bandaranayake, E. Hruska, S. Biswas, and **L. R. Baker**†, "Small Polarons and Surface Defects in Metal Oxide Photocatalysts Studied Using XUV Reflection-Absorption Spectroscopy," *Journal of Physical Chemistry C*, **2020**, *124*, 22853–22870. **(Invited Feature Article)**
33. S. Wallentine, S. Bandaranayake, S. Biswas, and **L. R. Baker**†, "Direct Observation of CO_2 Electroreduction on Gold by Sum Frequency Generation: Site Blocking by the Stern Layer Controls CO_2 Adsorption Kinetics," *Journal of Physical Chemistry Letters*, **2020**, *11*, 8307–8313.
32. S. Wallentine, S. Bandaranayake, S. Biswas, and **L. R. Baker**†, "Plasmon-Resonant Vibrational Sum Frequency Generation of Electrochemical Interfaces: Direct Observation of Carbon Dioxide Electroreduction on Gold," *Journal of Physical Chemistry A*, **2020**, *124*, 8057–8064. **(Cover Article)**
31. **L. R. Baker**†, U. Diebold, J. Y. Park, A. Selloni, "Oxide Chemistry and Catalysis," *Journal of Chemical Physics*, **2020**, *153*, 050401. **(Guest Editorial)**
30. S. Londo, S. Biswas, J. Husek, I. V. Pinchuk, M. J. Newburger, A. Boyadzhiev, A. H. Trout, D. W. McComb, R. Kawakami, and **L. R. Baker**†, "Ultrafast Spin Crossover in a Room Temperature Ferrimagnet: Element-Specific Spin Dynamics in Photoexcited Cobalt Ferrite," *Journal of Physical Chemistry C*, **2020**, *124*, 11368–11375.
29. S. Biswas, S. Wallentine, S. Bandaranayake, **L. R. Baker**†, "Controlling Polaron Formation at Hematite Surfaces by Molecular Functionalization Probed by XUV Reflection-Absorption Spectroscopy," *Journal of Chemical Physics*, **2019**, *151*, 104701. **(Editor's Choice Feature Article)**
28. E. Fugate, S. Biswas, M. Clement, M. Kim, D. Kim, A. Asthagiri†, **L. R. Baker**†, "The Role of Phase Impurities and Lattice Defects on the Electron Dynamics and Photochemistry of $CuFeO_2$ Solar Photocathodes," *Nano Research*, **2019**, *12*, 2390–2399. **(NR45 Special Issue highlighting L. R. Baker as Young Innovator in NanoEnergy)**
27. L. Lin, J. Husek, S. Biswas, S. M. Baumler, T. Adel, K. Ng, **L. R. Baker**, H. C. Allen†, "Iron (III) Speciation Observed at Aqueous and Glycerol Surfaces: Vibrational Sum Frequency and X-Ray," *Journal of the American Chemical Society*, **2019**, *141*, 13525–13535.
26. S. Biswas, J. Husek, S. Londo, E.A. Fugate, **L. R. Baker**†, "Identifying the Acceptor State in NiO Hole Collection Layers: Direct Observation of Exciton Dissociation and Interfacial Hole Transfer Across a Fe_2O_3/NiO Heterojunction," *Physical Chemistry Chemical Physics*, **2018**, *20*, 24545–24552. **(Cover Article, Featured in 2018 Hot Articles Collection)**
25. S. Biswas, J. Husek, S. Londo, **L. R. Baker**†, "Ultrafast Electron Trapping and Defect-Mediated Recombination in NiO Probed by Femtosecond Extreme Ultraviolet (XUV) Reflection-Absorption Spectroscopy," *Journal of Physical Chemistry Letters*, **2018**, *9*, 5047–5054.
24. J. Husek, A. Cirri, S. Biswas, A. Asthagiri, **L. R. Baker**†, "Hole Thermalization Dynamics Facilitate Ultrafast Spatial Charge Separation in $CuFeO_2$ Solar Photocathodes," *Journal of Physical Chemistry C*, **2018**, *122*, 11300–11304.
23. S. Biswas, J. Husek, **L. R. Baker**†, "Elucidating Ultrafast Electron Dynamics at Surfaces Using Extreme Ultraviolet (XUV) Reflection-Absorption Spectroscopy," *Chemical Communications*, **2018**, *54*, 4216–4230. **(Invited Feature Article)**
22. S. Biswas, J. Husek, S. Londo, **L. R. Baker**†, "Highly Localized Charge Transfer Excitons in Metal Oxide Semiconductors," *Nano Letters*, **2018**, *18*, 1228–1233. **(Highlighted by Advances in Engineering)**
21 J. Husek, A. Cirri, S. Biswas, **L. R. Baker**†, "Surface Electron Dynamics in Hematite (α-Fe_2O_3): Correlation Between Ultrafast Surface Electron Trapping and Small Polaron Formation," *Chemical Science*, **2017**, *8*, 8170–8178.

20. A. Cirri, J. Husek, S. Biswas, and **L. R. Baker**†, "Achieving Surface Sensitivity in Ultrafast XUV Spectroscopy: $M_{2,3}$-Edge Reflection–Absorption of Transition Metal Oxides," *Journal of Physical Chemistry C*, **2017**, *121*, 15861–15869.
19. Y. Mueanngern, X. Yang, Y. Tang, F. Tao, and **L. R. Baker**†, "Catalysis at Multiple Length Scales: Crotonaldehyde Hydrogenation at Nanoscale and Mesoscale Interfaces in Platinum–Cerium Oxide Catalysts," *Journal of Physical Chemistry C*, **2017**, *121*, 13765–13776.
18. X. Yang, E. A. Fugate, Y. Mueanngern, **L. R. Baker**†, "Photo-Electrochemical CO_2 Reduction to Acetate on Iron–Copper Oxide Catalysts," *ACS Catalysis,* **2017**, *7*, 177–180.
17. X. Yang, Y. Mueanngern, Q. A. Baker, **L. R. Baker**†, "Crotonaldehyde Hydrogenation on Platinum–Titanium Oxide and Platinum–Cerium Oxide Catalysts: Selective C=O Bond Hydrogenation Requires Platinum Sites Beyond the Oxide–Metal Interface," *Catalysis Science & Technology*, **2016**, *6*, 6824–6835. **(Themed issue on Nanocatalysis)**

Prior to Ohio State University:

16. J. Y. Park, **L. R. Baker**, and G. A. Somorjai, "The Role of Hot Electrons and Metal-Oxide Interfaces in Surface Chemistry and Catalytic Reactions," *Chemical Reviews*, **2015**, *115*, 2781–2817.
15. **L. R. Baker**, C. M. Jiang, S. T. Kelly, J. M. Lucas, J. Vura-Weis, M. K. Gilles, A. P. Alivisatos, and S. R. Leone, "Charge Carrier Dynamics of Photoexcited Co_3O_4 in Methanol: Extending High Harmonic Transient Absorption Spectroscopy to Liquid Environments," *Nano Letters*, **2014**, *14*, 5883–5890. **(Highlighted by IOP Institute of Physics in *NanotechWeb*)**
14. C. M. Jiang, **L. R. Baker**, J. M. Lucas, J. Vura-Weis, A. P. Alivisatos, and S. R. Leone, "Characterization of Photo-Induced Charge Transfer and Hot Carrier Relaxation Pathways in Spinel Cobalt Oxide (Co_3O_4)," *Journal of Physical Chemistry C*, **2014**, *118*, 22774–22784.
13. G. Kennedy, **L. R. Baker**, and G. A. Somorjai, "Selective Amplification of C=O Bond Hydrogenation on Pt by an Active TiO_2 Support: Catalytic Reaction and Sum Frequency Generation Vibrational Spectroscopy Studies of Crotonaldehyde Hydrogenation," *Angewandte Chemie International Edition*, **2014**, *53*, 3405**–**3408.
12. F. Shi, **L. R. Baker**, A. Hervier, G. A. Somorjai, and K. Komvopoulos, "Tuning the Electronic Structure of Titanium Oxide Support to Enhance the Electrochemical Activity of Platinum Nanoparticles," *Nano Letters*, **2013**, *13*, 4469–4474.
11. K. An, N. Musselwhite, G. Kennedy, V. Pushkarev, **L. R. Baker**, and G. A. Somorjai, "Preparation of Mesoporous Oxides and Their Support Effects on Pt Nanoparticle Catalysis in Catalytic Hydrogenation of Furfural," *Journal of Colloid and Interface Science*, **2013**, *392*, 122–128.
10. **L. R. Baker**, G. Kennedy, J. M. Krier, M. Van Spronsen, R. M. Onorato, and G. A. Somorjai, "The Role of an Organic Cap in Nanoparticle Catalysis: Reversible Restructuring of Carbonaceous Material Controls Catalytic Activity of Platinum Nanoparticles for Ethylene Hydrogenation and Methanol Oxidation," *Catalysis Letters*, **2012**, *142*, 1286–1294.
9. **L. R. Baker**, G. Kennedy, M. Van Spronsen, A. Hervier, X. Cai, S. Chen, L. Wang, and G. A. Somorjai, "Furfuraldehyde Hydrogenation on Titanium Oxide-Supported Platinum Nanoparticles Studied by Sum Frequency Generation Vibrational Spectroscopy: Acid–Base Catalysis Explains the Molecular Origin of Strong Metal–Support Interactions," *Journal of the American Chemical Society*, **2012**, *134*, 14208–14216.
8. J. M. Krier, W. Michalak, **L. R. Baker**, K. An, K. Komvopooulos, and G. A. Somorjai, "Sum Frequency Generation Vibrational Spectroscopy of Colloidal Platinum Nanoparticle Catalysts: Disordering versus Removal of Organic Capping," *Journal of Physical Chemistry C*, **2012**, *116*, 17540–17546.
7. **L. R. Baker**, A. Hervier, G. Kennedy, and G. A. Somorjai, "Solid-State Charge-Based Device for Control of Catalytic Carbon Monoxide Oxidation on Platinum Nanofilms Using External Bias and Light," *Nano Letters*, **2012**, *12*, 2554–2558.

6. A. Hervier, **L. R. Baker**, H. Seo, K. Komvopoulos, and G. A. Somorjai, "Titanium Oxide/Platinum Catalysis: Charge Transfer from Titanium Oxide Support Controls Activity and Selectivity in Methanol Oxidation on Platinum," *Journal of Physical Chemistry C*, **2011**, *115*, 22960–22964.
5. **L. R. Baker**, A. Hervier, H. Seo, G. Kennedy, K. Komvopoulos, and G. A. Somorjai, "Highly n-Type Titanium Oxide as an Electronically Active Support for Platinum in the Catalytic Oxidation of Carbon Monoxide," *Journal of Physical Chemistry C*, **2011**, *115*, 16006–16011.
4. H. Seo*, **L. R. Baker***, A. Hervier, J. Kim, J. L. Whitten, and G. A. Somorjai, "Generation of Highly n-Type Titanium Oxide Using Plasma Fluorine Insertion," *Nano Letters* **2011**, *11*, 751–756. (* Co-first author)
3. **L. R. Baker**, A. W. Orton, M. A. Stark, and S. A. Goates, "Density gradients in packed columns: II. Effects of density gradients on efficiency in supercritical fluid separations," *Journal of Chromatography A* **2009**, *1216*, 5594–559.
2. **L. R. Baker**, M. A. Stark, A. W. Orton, B. A. Horn, and S. A. Goates, "Density gradients in packed columns: I. Effects of density gradients on retention and separation speed," *Journal of Chromatography A* **2009**, *1216*, 5588–5593.
1. **L. R. Baker**, A. W. Orton, S. R. Goates, and B. A. Horn, "Characterization of Carbon Dioxide Mobile Phase Density Profiles in Packed Capillary Columns by Raman Microscopy," *Applied Spectroscopy* **2009**, *63*, 108–111. **(Cover Article)**

PATENTS

4. **L. R. Baker**, "Systems and Methods for Tandem Hydrogen Production and Carbon Dioxide Capture," International Patent Application WO 2025/090834 A1 (2025).
3. **L. R. Baker**, "Systems and Methods for Tandem Hydrogen Production and Carbon Dioxide Capture," US Patent Application 63/593,589 (2023).
2. **L. R. Baker**, X. Yang, "Catalytic Materials and Methods of Making and Using Thereof," US Patent 10,626,508 (2020).
1. **L. R. Baker**, H. Seo, A. Herier, G. A. Somorjai, "Generation of Highly n-Type, Defect Passivated Transition Metal Oxides Using Plasma Fluorine Insertion," US Patent 9,312,342 (2016).

ORAL PRESENTATIONS

128 talks, including 106 invited talks

International

25. Workshop on Electron Spin in Chiral Matter, Sigtuna, Sweden, June 2026. **(Invited)**
24. 9th KVIS International Science Fair, Rayong, Thailand, February 2026. **(Keynote Speaker)**

23. Vidyasirimedhi Institute of Science and Technology, Rayong, Thailand, January 2026. **(Invited)**
22. Kamnoetvidya Science Academy, Rayong, Thailand, January 2026. **(Invited)**
21. 5th International Solar Fuels Conference, Newcastle, United Kingdom, September 2025.
20. Modern Trends in Molecular Magnetism and Spins in Molecular Systems, Indian Institute of Science, Bangalore, India, November 2024. **(Keynote Speaker)**
19. 4th AttoChem Annual Meeting, Szeged, Hungary, September 2023. **(Invited)**
18. Max Planck Institute for Nuclear Physics, Bothe Colloquium, Heidelberg, Germany, May 2023. **(Invited)**
17. Technical University of Munich, Garching, Germany, May 2023. **(Invited)**
16. Hebrew University of Jerusalem, Jerusalem, Israel, April 2023. **(Invited)**
15. Wigner Research Center, Budapest, Hungary, April 2023. **(Invited)**
14. Hungarian Catalysis Working Association Meeting, Szeged, Hungary, March 2023. **(Invited)**

13. Graz University of Technology, Graz, Austria, March 2023. **(Invited)**
12. University of Szeged, Institute of Chemistry, Szeged, Hungary, February 2023. **(Invited)**
11. Extreme Light Infrastructure Attosecond Light Pulse Source (ELI-ALPS), Szeged, Hungary, February 2023. **(Invited)**
10. Surface Chemistry of Catalytic Systems, Rehovot, Israel, February 2022. **(Invited)**
9. International Workshop on Oxides XIII, Pyeongchang, South Korea, January 2022. **(Invited)**
8. Pacifichem, December 2021. **(Invited)**
7. Kamnoetvidya Science Academy and Vidyasirimedhi Institute of Science and Technology, Rayong, Thailand, Virtual, August 2021. **(Invited)**
6. Atomic Spectroscopy Symposium, Ljubijana, Slovenia, March 2021. **(Emerging Leader in Atomic Spectroscopy Award Lecture)** – *presented virtually due to COVID-19*
5. NanoGE Spring Meeting, Virtual, March 2021. **(Keynote Speaker)**
4. 14th Femtochemistry Conference, Shanghai, China, August 2019. **(Invited)**
3. International School on the Frontiers of Attosecond and Ultrafast X-Ray Science, Erice, Sicily, Italy, March 2019. **(Invited)**
2. Fritz Haber Institute, Department of Physical Chemistry, Berlin, Germany, December 2018. **(Invited)**
1. Max Planck Institute of Quantum Optics, Garching, Germany, December 2018. **(Invited)**

National

60. Vibrational Spectroscopy, Gordon Research Conference, Manchester, NH, August 2026. **(Invited)**
59. Molecular Interactions and Dynamics, Gordon Research Conference, Easton, MA, June 2026. **(Invited)**
58. American Chemical Society Meeting, Kinetics and Mechanistic Insights to Catalysis Symposium, Washington DC, March 2026. **(Invited)**
57. Electrochemical Society Meeting, Chicago, IL, October 2026. **(Invited)**
56. American Chemical Society Meeting, Molecular Level Understanding of Structure and Dynamics at Electrochemical Interfaces Symposium, Washington DC, August 2025. **(Invited)**
55. Chiral Induced Spin Selectivity AFOSR MURI Program Meeting, Raleigh, NC, November 2024.
54. American Physical Society Division of Atomic, Molecular, and Optical Physics, Fort Worth, TX, June 2024. **(Invited)**
53. Electrochemical Society Meeting, San Francisco, CA, May 2024. **(Invited)**
52. American Chemical Society Meeting, Kinetics and Mechanistic Insights into Heterogeneous Catalysis Symposium, New Orleans, LA, March 2024. **(Invited)**
51. Chiral Induced Spin Selectivity AFOSR MURI Program Meeting, Pittsburgh, PA, November 2023.
50. Electron Spin Interactions with Chiral Molecules and Materials Gordon Research Conference, Manchester, NH, August 2023. **(Invited)**
49. International Symposium on Molecular Spectroscopy, Champaign, IL, June 2023 **(Coblentz Award Lecture)**
48. Molecular Dynamics and Theoretical Chemistry AFOSR Program Meeting, Washington DC, May 2023.
47. American Chemical Society Meeting, Bridging Surface Science to Catalysis Symposium, Indianapolis, IN, March 2023 **(Invited)** – *Declined due to Fulbright Fellowship*
46. American Chemical Society Meeting, Oxide Catalysis Symposium, Indianapolis, IN, March 2023 **(Invited)** – *Declined due to Fulbright Fellowship*
45. Electrochemical Society Meeting, Atlanta, GA, October 2022. **(Invited)**
44. American Chemical Society Meeting, San Diego, CA, March 2022 **(Invited)**
43. American Chemical Society Meeting, San Diego, CA, March 2022 **(Invited)**
42. American Physical Society Meeting, Chicago, IL, March 2022 **(Invited)**

41. SSRL/LCLS Users Meeting, Workshop on Current and Future Opportunities in Time-Resolved X-Ray Science: Materials and Interfaces, Virtual, September 2021. **(Invited)**
40. American Chemical Society Meeting, Atlanta, GA, August 2021 **(Invited)**
39. Electrochemical Society Meeting, Chicago, IL, May 2021. **(Invited)** – *Cancelled due to COVID-19*
38. Molecular Dynamics and Theoretical Chemistry AFOSR Program Meeting, Virtual, May 2021.
37. American Chemical Society Meeting, Virtual, April 2020.
36. #ChemistsLive, ACS CATL/BIOL Divisions, Virtual, September 2020. **(Invited)**
35. American Chemical Society Meeting, Virtual, August 2020. **(Journal of Physical Chemistry / PHYS Division Award Lecture)**
34. American Chemical Society Meeting, Virtual, August 2020.
33. American Chemical Society Meeting, Philadelphia, PA, March 2020 **(Invited)** – *Cancelled due to COVID-19*
32. American Chemical Society Meeting, Philadelphia, PA, March 2020 **(Invited)** – *Cancelled due to COVID-19*
31. American Chemical Society Meeting, Philadelphia, PA, March 2020 – *Cancelled due to COVID-19*
30. Condensed Phase and Interfacial Molecular Sciences DOE Program Meeting, Washington DC, November 2019.
29. Electrochemical Society Meeting, Atlanta, GA, October 2019. **(Invited)**
28. SSRL/LCLS Users Meeting, Workshop on Current and Future Opportunities in Time-Resolved X-Ray Science: Materials and Interfaces, Menlo Park, CA, September 2019. **(Invited)**
27. American Chemical Society Meeting, San Diego, CA, August 2019. **(Invited)**
26. International Symposium on Molecular Spectroscopy, Champaign, IL, June 2019.
25. American Chemical Society Meeting, Orlando, FL, April 2019. **(Invited)**
24. American Chemical Society Meeting, Orlando, FL, April 2019.
23. American Chemical Society Meeting, Boston, MA, August 2018. **(Invited)**
22. American Chemical Society Meeting, Boston, MA, August 2018. **(Invited)**
21. American Chemical Society Meeting, Boston, MA, August 2018. **(Invited)**
20. Molecular Interactions and Dynamics Gordon Research Conference, Easton, MA, July 2018. **(Invited)**
19. American Chemical Society Meeting, New Orleans, LA, March 2018.
18. American Chemical Society Meeting, New Orleans, LA, March 2018.
17. Condensed Phase and Interfacial Molecular Sciences DOE Program Meeting, Washington DC, October 2017.
16. Materials Science & Technology, Pittsburg, PA, October 2017. **(Invited)**
15. American Physical Society Laser Science Meeting, Washington DC, September 2017.
14. American Chemical Society Meeting, Washington DC, August 2017. **(Invited)**
13. American Chemical Society Meeting, Washington DC, August 2017. **(Invited)**
12. Photochemistry Gordon Research Conference, Lewiston, ME, July 2017. **(Invited)**
11. Molecular Dynamics and Theoretical Chemistry AFOSR Program Meeting, Albuquerque, NM, May 2017.
10. American Chemical Society Meeting, San Francisco, CA, April 2017. **(Invited)**
9. American Chemical Society Meeting, San Francisco, CA, April 2017.
8. American Physical Society Meeting, New Orleans, LA, March 2017.
7. Materials Research Society Meeting, Boston, MA, November 2016.
6. New Laser Scientist Meeting, APS Laser Science Division, Rochester, NY, October 2016. **(Invited)**
5. American Chemical Society Meeting, Philadelphia, PA, August 2016.
4. American Chemical Society Colloid and Surface Science Symposium, Boston, MA, June 2016. **(Keynote Speaker)**
3. Materials Science & Technology, Columbus, OH, October 2015. **(Invited)**

2. Colloid and Surface Science Symposium, Pittsburgh, PA, June 2015.
1. American Chemical Society Meeting, Denver, CO, March 2015.

Regional

7. Extreme Light Workshop, organized by US Department of Defense and OSU Institute for Optical Science, Columbus, OH, July 2024 **(Plenary Speaker)**
6. American Chemical Society Northeastern Regional Meeting, Boston, MA, June 2023. **(Invited)** – *Declined due to Fulbright Fellowship*
5. Zettawatt Equivalent Ultrashort Pulse Laser System (ZEUS) User Workshop, University of Michigan, Virtual, June 2020. **(Invited)**
4. Dow Chemicals Company, Discussion Group on Interface Science, Midland, MI, February 2020 **(Invited)**
3. Ohio Photochemical Society Meeting, Maumee Bay, OH, May 2019. **(Invited)**
2. American Chemical Society Central Regional Meeting, Dearborn, MI, June 2017. **(Invited)**
1. American Vacuum Society Florida Chapter Meeting, Orlando, FL, March 2017. **(Invited)**

Invited Seminars and Colloquia

36. California Institute of Technology, Pasadena, CA, October 2026
35. University of Utah, Salt Lake City, UT, December 2025
34. Utah State University, Logan, UT, November 2025
33. Stony Brook University, Stony Brook, NY, February 2025
32. University of Minnesota, Minneapolis, MN, February 2025
31. Denison University, Granville, OH, October 2024
30. Los Alamos National Laboratory, Los Alamos, NM, June 2024
29. University of California, Los Angeles, Los Angeles, CA, November 2023
28. University of Pennsylvania, Philadelphia, PA, October 2023
27. Pittsburgh Quantum Institute Distinguished Seminar, University of Pittsburgh, Pittsburgh, PA, October 2023
26. Air Force Research Laboratory, Dayton, Ohio, August 2022
25. Missouri State University, Virtual, March 2021
24. University of Pittsburgh, Virtual, February 2021.
23. Ohio State University, Virtual, October 2020.
22. Ohio University, Athens, OH, April 2020. – *Cancelled due to COVID-19*
21. Kansas State University, Manhattan, KA, March 2020
20. Brigham Young University, Provo, UT, October 2019.
19. University of Rochester, Rochester, NY, September 2019.
18. University of Kansas, Lawrence, KS, February 2019.
17. University of Michigan, Ann Arbor, MI, January 2019.
16. Michigan State University, East Lansing, MI, November 2018.
15. University of Texas at Austin, Austin, TX, November 2018.
14. Argonne National Laboratory, Lemont, IL, November 2018.
13. Pennsylvania State University, University Park, PA, November 2018.
12. University of Washington, Seattle, WA, October 2018.
11. University of California, Los Angeles, Los Angeles, CA, October 2018.
10. University of California, Irvine, Irvine, CA, October 2018.
9. University of Illinois Urbana-Champaign, Urbana, IL, September 2018.
8. University of Houston, Houston, TX, September 2018.
7. Iowa State University, Ames, IA, September 2018.
6. University of Southern California, Los Angeles, CA, September 2018.

5. University of Colorado Boulder, Boulder, CO, September 2018.
4. Colorado State University, Fort Collins, CO, September 2018.
3. Case Western Reserve University, Cleveland, OH, November 2016.
2. Wright State University, Dayton, OH, October 2016.
1. Cleveland State University, Cleveland, OH, April 2016.

TEACHING EXPERIENCE

- **Analytical Spectroscopy (Chem 7140)** 2015, 2017, 2019, 2021, 2022, 2025
  (Most recent student evaluation: 4.7/5.0)
- **Quantitative Chemical Analysis (Chem 2210)** 2016, 2018, 2021, 2023, 2025
  (Most recent student evaluation: 4.1/5.0)
- **Analytical Data Treatment (Chem 6120)** 2017, 2019, 2020
  (Most recent student evaluation: 4.9/5.0)

MENTORING AND SUPERVISION

- **PhD Students (14 graduated and 11 current)**
  Jakub Husek (2015–2019, Intel); Yutichai Mueanngern (2015–2019, Kamnoetvidya Science Academy Faculty); Elizabeth Fugate (2015–2019, First Solar); Somnath Biswas (2016–2020, Tata Institute of Fundamental Research Faculty), Spencer Wallentine (2017–2021, STAR Dynamics); Hongyu Shang (2017–2021, Renmin University of China Secondary School); Stephen Londo (2017–2021, INRS Quebec Postdoc); Savini Bandaranayake (2018–2022, Sandia National Lab Postdoc); Emily Hruska (2019–2023, TU Graz Postdoc); Quansong Zhu (2020–2024, Advanced Micro-Fabrication Equipment); Ananya Patnaik (2020–2024, Intel); Harshad Gajapathy (2020–2024, Los Alamos National Laboratory Postdoc); Tomaz Neves-Garcia (2022–2024, Dual degree with University of São Paulo, Ohio State Postdoc); Jaclyn Rebstock (2021–2025, University of Washington Postdoc)
- **MS Students (1 graduated)**
  Samuel Johnson (2021–2022, EPA Office of Transportation and Air Quality)
- **Undergraduate Students (14 prior and 4 current)**
  Skylar Ware (2016–2018, Caltech PhD); Kyle Mincheff (2016); Joshua Graham (2017–2018, Ohio State MS in Education); Scott Garner (2017–2018, UC Berkeley PhD); Matthew Clement (2018); Nathan Pimental (2018); Emma Montgomery (2018, Ohio State PhD); Runiya Dasgupta (2019 REU); Meiling Spelic (2019–2022, Georgetown PhD); Jackson McClellan (2021–2022, UC Berkeley PhD); Emily Baschab (2022 REU); Ethane Crane (2023); Mallaki Dishmon (2024); Katrina Sumarli (2024 REU); Corrado Maschiocchi (2025 REU)
- **Postdoctoral Scholars (5 prior and 2 current)**
  Anthony Cirri (2016–2017, University of Pennsylvania Undergraduate Lecturer); Xin Yang (2014–2018, Ohio State Postdoc); Ganghua Deng (2022, Beijing University of Posts and Telecommunications Faculty); Adam Jenkins (2023–2024, Stony Brook University Research Scientists); Conner Dykstra (2024, NSF NeXUS Research Scientist)

PROFESSIONAL ACTIVITIES

Editorial Service and Advisory Boards:

- Executive Committee Member-At-Large, APS Division of Chemical Physics
  January 2026 – December 2028
- National Advisory Committee, ATTO XI Conference
  December 2025 – June 2026

- National Award Selection Committee, American Chemical Society
  May 2025 – December 2028
- Facility Advisory Board, Compact X-Ray Free Electron Laser (CXFEL)
  NSF Midscale RI-2 Facility, Arizona State University, $90.8 M implementation budget
  January 2023 – December 2028
- Editorial Advisory Board, Journal of Physical Chemistry A/B/C
  January 2021 – December 2026
- Editorial Advisory Board, Spectroscopy Magazine
  January 2022 – Present
- Guest Editor, Journal of Chemical Physics
  Special issue: Oxide Chemistry and Catalysis, July 2020

Organized Symposia:

- "Symposium in Honor of the Life and Accomplishments of Gabor Somorjai"
  American Chemical Society National Meeting, Chicago, IL, August 2026
- "Addressing Challenges and Opportunities in Ultrafast Photochemistry and Photocatalysis: Opportunities for Experiment and Theory"
  NSF Workshop, Washington DC, October 2025
- "Probing Structure and Dynamics with XUV and X-Ray Light"
  American Physical Society National Meeting, Minneapolis, MN, March 2024
- "Elucidation of Mechanisms and Kinetics on Surfaces"
  American Chemical Society National Meeting, San Diego, CA, March 2022
- "Elucidation of Mechanisms and Kinetics on Surfaces"
  American Chemical Society National Meeting, Virtual, March 2021
- "Probing Dynamics in Molecules, Materials, and Interfaces" – *Cancelled due to COVID-19*
  American Chemical Society Central Regional Meeting, Columbus, OH, May 2020
- "Elucidation of Mechanisms and Kinetics on Surfaces" – *Cancelled due to COVID-19*
  American Chemical Society National Meeting, Philadelphia, PA, April 2020
- "High Harmonic Generation and XUV Spectroscopy"
  International Symposium on Molecular Spectroscopy, Champaign, IL, June 2019
- "Elucidation of Mechanisms and Kinetics on Surfaces"
  American Chemical Society National Meeting, Orlando, FL, April 2019
- "Applications of Ambient Pressure XPS to Catalysis Studies"
  American Chemical Society National Meeting, Boston, MA, August 2018
- "Elucidation of Mechanisms and Kinetics on Surfaces"
  American Chemical Society National Meeting, New Orleans, LA, April 2018
- "Frontiers at Interfaces: Probing the Mechanisms of Interfacial Carrier Dynamics and Surface Reactions"
  American Physical Society National Meeting, New Orleans, LA, March 2017
- "Chemistry & Energy Conversion at Interfaces"
  American Chemical Society Central Regional Meeting, Cincinnati, OH, May 2016

Workshop Participation:

- Organizer, Host, and Plenary Speaker
  NSF National Extreme Ultrafast Science (NeXUS) User Workshop
  Columbus, OH, July 2024
  (>100 participants from 36 institutions and 8 countries)

- Ultrafast Science Co-Chair
  DOE Basic Research Needs Workshop on Laser Technology
  Washington DC, August 2023
- Organizer, Host, and Plenary Speaker
  NSF National Extreme Ultrafast Science (NeXUS) User Workshop
  Columbus, OH, July 2022
  (>100 participants from 47 institutions and 12 countries)
- Organizer, Host, and Plenary Speaker
  NSF National Extreme Ultrafast Science (NeXUS) User Workshop
  Virtual, July 2020
  (>200 participants from 75 institutions and 13 countries)
- Panel Writer
  Next Generation Electrical Energy Storage
  Panel 2: Structure, Interphases, and Charge Transfer at Electrochemical Interfaces
  DOE Basic Research Needs Workshop, Washington DC, March 2017

Proposal Review:

- **Air Force Office of Scientific Research**
  Molecular Dynamics and Theoretical Chemistry Program
- **Department of Energy**
  Microelectronics Co-Design Research Program; EPSCoR Program; Condensed Phase and Interfacial Molecular Sciences Program
- **National Science Foundation**
  Centers for Chemical Innovation; Major Research Instrumentation; Materials Innovation Platforms; Chemical Catalysis; *CAREER Program*
- **American Chemical Society**
  Petroleum Research Fund
- **National Synchrotron Light Source II**
  X-ray spectroscopy proposal review panel
- **Stanford Synchrotron Radiation Light Source**
  Review of beam line user proposals
- **European Research Council**
  ERC Synergy Grants Program
- **Netherlands Organisation for Scientific Research**
  Innovation Research Incentives Scheme Veni
- **Swiss National Science Foundation**
  Ambizione First Independent Project Grants

Peer Reviewer for Following Journals:
(Total of 183 articles reviewed since July 2014)

- ACS Applied Materials & Interfaces
- ACS Catalysis
- ACS Energy Letters
- ACS Nano
- Angewandte Chemie International Edition
- Applied Spectroscopy
- Catalysis Letters
- Catalysis Today
- Catalysts
- Chem
- Chemical Communications
- Chemical Science
- ChemCatChem
- ChemElectroChem
- ChemSusChem
- Dalton Transactions

- Journal of Applied Physics
- Journal of Catalysis
- Journal of Molecular Spectroscopy
- Journal of the Optical Society of America B
- Journal of Physical Chemistry
- Journal of Synchrotron Radiation
- Journal of the American Chemical Society
- Nature Nanotechnology
- Nano Letters
- Nanoscale
- Physical Chemistry Chemical Physics
- Physical Review B
- Physical Review X
- Review of Scientific Instruments
- Science
- Science Advances
- Scientific Reports
- Surface Science
- Topics in Catalysis