Louise Antoinette Berben

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EDUCATION & TRAINING

The University of New South Wales, Australia	Chemistry & Applied Chemistry *double major*	B.Sc. (Hons 1)	2000
University of California Berkeley	Chemistry	Ph.D.	2005
California Institute of Technology & Massachusetts Institute of Technology	Postdoctoral Associate *postdoc advisor relocated*		2006 - 2007 2007 - 2009

PROFESSIONAL APPOINTMENTS

Professor: Department of Chemistry, University of California Davis	2019 - present
Associate Professor: Department of Chemistry, University of California Davis	2014 - 2019
Assistant Professor: Department of Chemistry, University of California Davis	2009 - 2014

SECONDARY APPOINTMENTS

Visiting Professorial Fellow: School of Chemistry, University of New South Wales, Aus	2023
Director: UC Office of the President Research Center, Direct Conversion of Captured CO_2	2022 - present
Associate Editor: *Chemical Society Reviews*, Royal Society of Chemistry	2017 - present

AWARDS & HONORS

- ACS Award in Organometallic Chemistry 2024
- Breakthrough Energy Explorer 2023
- France-Berkeley Fund Award 2018
- University of Sydney Partnership Award 2018
- Chancellors Fellow, UC Davis 2016
- Kavli Fellow, U. S. National Academy of Sciences 2015
- Fellow, The Royal Society of Chemistry 2014
- ACS *Organometallics* Young Investigator Fellow 2014
- ACS WCC Rising Star Award 2014
- Emerging Investigator Lectureship, Royal Society of Chemistry *Chemical Communications* 2013
- Fellow, Alfred P. Sloan Foundation 2012
- CAREER Award, National Science Foundation 2011
- Dow Chemical Company Postdoctoral Fellow 2006
- Outstanding Graduate Student Instructor, University of California Berkeley 2003
- Student Prize, Royal Australian Chemical Institute 1999
- Honors Fellow, University of New South Wales 1999
- Honors Fellow, University of New South Wales School of Chemistry 1999
- Chemical Society Prize, University of New South Wales 1998

PROFESSIONAL ACTIVITIES

Invited Workshops

- NAS Chemical Sciences Roundtable: Innovations in Catalysis to Address Modern Challenges, Online/Washington DC — October 2022
- NSF/ANR USA-France Workshop on Earth Abundant Catalysis — October 2022
- DOE ARPA-E Workshop on Carbon Neutral Fuels and Intermediates from Captured CO_2 Feedstocks, Online — February 2022
- NSF I-Corp Bay Area Workshop, UC Berkeley CA — August 2021
- Decarbonization Technology Workshop, UC San Diego CA, online — June 2021
- Maximizing the Environmental Utility of Battery Storage: Building a Life Cycle Assessment Framework, UC Los Angeles CA — May 2021
- Maximizing the Environmental Utility of Battery Storage: Building a Life Cycle Assessment Framework, UC Los Angeles CA — September 2020
- Reactive CO_2 Capture: Process Integration for the New CO_2 Economy, National Renewable Energy Laboratory, Golden CO — February 2020
- NSF/DOE/DFG Workshop on Synthetic Organic Electrochemistry, Washington DC — February 2020
- Maximizing the Environmental Utility of Battery Storage: Building a Life Cycle Assessment Framework, UC Davis CA — October 2019
- NAS Workshop: Status and Challenges in Science for Decarbonizing our Energy Landscape: Arthur M. Sackler Colloquia, Irvine CA — October 2018
- Session Chair, NSF Workshop on Sustainable Chemistry, Washington DC — April 2012

Professional Service

- Thrust Lead for DOE EFRC: Center for Closing the Carbon Cycle (C4), 2022-2023.
- Director: University of California Lab Fees Research Project: Direct Production of Renewable Fuels and Chemicals from Captured CO_2, 2022 – 2026.
- Chair-Elect & Chair: Sustainable Energy and Environment Subdivision, Division of Inorganic Chemistry, American Chemical Society, 2018 and 2019.
- Member and Chair: ACS National Award Selection Committee, 2019 - 2021.
- Site Reviewer for DOE-BES Catalysis Sciences program at PNNL, 2018.
- Advisory Board Member, DOE EFRC: Alliance for Molecular PhotoElectrode Design for Solar Fuels (AMPED), 2018 - 2020.
- Executive Committee, NSF CCI: Center for Sustainable Use of Renewable Feedstocks. 2013 - 2014.
- Reviewer for ACS, Wiley, Royal Society of Chemistry, Nature, and Elsevier journals.
- Reviewer for: NSF CHE, NSF ENG, NSF DMREF, NSF HBCU, NSF INTL, ACS PRF, Research Corporation, DOE GFP, DOE BES, Austrian Science Foundation, Netherlands Organization for Scientific Research, American Australian Association, LDRD grants, France-Berkeley Fund, Marie Curie Postdoc Fellowships, Sloan Foundation, Reaxys PhD Prize, Stanford Linear Accelerator Beamtime proposals, Beckman Foundation, and others.
- Panel reviewer for NSF CHE; and NSF CBET. On average 1.5 panels per year.

Conference Service

- Symposium Organizer: ACS Frederick M. Hawthorne Award in Main Group Chemistry, Symposium in honor of Philip P. Power, San Diego CA, March 2022.
- Discussion Leader: Metallocofactors GRC, Newport RI, June 2022.
- Symposium Organizer: Inaugural symposium for the new ACS-DIC subdivision Sustainable Energy and the Environment, American Chemical Society Meeting in San Diego, with CP Kubiak, August 2019.

- Organizing Committee: 4th Korean-American Kavli Frontiers of Science Meeting, Symposium on Artificial Metalloenzymes, Incheon, South Korea, June 2019.
- Symposium Organizer: Synthetic Chemistry Addressing Challenges in Energy and the Environment, American Chemical Society Meeting New Orleans, with A de Battencourt-Diaz, AL Prieto, March 2018.
- Organizing Committee: 3rd Korean-American Kavli Frontiers of Science Meeting, Symposium on Energy Storage, Irvine CA, June 2017.
- Symposium Organizer: Sustainability in Electrocatalytic Approaches to Chemical and Fuel Production American Chemical Society Meeting in San Francisco CA, with JL Dempsey, April 2017.

Journal Service

- Associate Editor *Chemical Society Reviews*; Royal Society of Chemistry 2017 – present
- Advisory Editorial Board *Chemical Communications*; Royal Society of Chemistry 2012 – 2023
- Editorial Board *Chem*, Cell Press 2016 – 2023
- Outstanding Reviewer, *Chemical Science* 2021
- Outstanding Reviewer, *Inorganic Chemistry* 2020
- Editorial Board, *Coordination Chemistry Reviews* 2019 – 2021
- Guest Editor *Inorganic Chemistry* for Virtual issue "Synthetic Chemistry Addressing
- Challenges in Energy and the Environment" 2018
- Advisory Editorial Board *Inorganic Chemistry*; American Chemical Society 2015 – 2017

Professional Affiliations

- Member, American Chemical Society, ACS 2002 – present
- *Fellow*, Royal Society of Chemistry, RSC 2014 – present
- Member, Royal Australian Chemical Institute, RACI 2000 – present
- Member, American Association for the Advancement of Science, AAAS 2018 - present
- Member, Electrochemical Society, ECS 2018 – present
- Member, Society of Biological Inorganic Chemistry, SBIC 2021 – present
- Member, Canadian Society of Chemistry, CSC 2022 – present
- Member, International Society of Electrochemistry 2023 - present

PUBLICATIONS

77. Treece, T. R.; Pattanayak, S.; Matson, M. M.; Berben, L. A.; Atsumi, S. Electrical Biological Biohybrid System for Isobutanol Production. *Metab. Eng.* **2023**, *80*, in press

76. Parsons, L. W. T.; Berben, L. A. Metallated Dihydropyridinates: Prospects in Hydride Transfer and (Electro)catalysis. *Chem. Sci.* **2023**, 14, 8234 – 8248. *Hot Article*

    * *Perspective Article*

74. Parsons, L. W. T.; Fettinger, J. C.; Berben, L. A. Group 13 Ion Coordination to Pyridyl Models NAD^+ Reduction Potentials. *Chem. Commun.* **2023**, *59*, 9110 – 9113.

    * *RSC Fellows Collection*

73. Dongare, S.; Kagan Coskun, O.; Cagli, E.; Lee, K. Y.; Gao, R.; Britt, R. D; Berben, L. A.; Gurkan, B. A. Bifunctional Ionic Liquid for Capture and Electrochemical Conversion of CO_2 to CO Over Silver. *ACS Catal.* **2023**, *13*, 7812-7821.

72. Pattanayak, S.; Berben, L. A. Pre-equilibrium Reaction Mechanism as a Strategy to Enhance Rate and Lower Overpotential in Electrocatalysis. *J. Am. Chem. Soc.* **2023**, *145*, 3419–3426.

71. Siegel, R. E.; Pattanayak, S.; Berben, L. A. Reactive Capture of CO_2: Opportunities and Challenges. *ACS Catal.* **2023**, *13*, 766-784.

    * *Perspective Article*

70. Pattanayak, S.; Myers, T. W.; Loewen, N. D.; Berben, L. A. Using Substituted $[Fe_4N(CO)_{12}]^-$ as a Platform To Probe the Effect of Cation and Lewis Acid Location on Redox Potential. *Inorg. Chem.* **2023**, *62*, 1919-1925.

    * *Forum Issue on Discrete Coordination Cages and Metal Clusters*

69. Carr, C. R.; Xing, X. J.; Vesto, J. I.; Fettinger, J. C.; Berben, L. A. Aluminum-Ligand Cooperative Bond Activation Initiates Transfer Hydrogenation Catalysis. *ChemCatChem* **2022**, *14*, e20210186.

    * *Themed Issue on Main Group Catalysis*

68. Phan, N. A.; Sherbow, T. J.; Fettinger, J. C.; Berben, L. A. Syntheses of Unsupported Primary Phosphido Complexes of Aluminum(III). *Z. Anorg. Allg. Chem.* **2021**, 1824-1829.

    * *Special Issue Dedicated to Hansgeorg Schnökel on the Occasion of his 80th Birthday*

67. Cesari, C.; Shon, J.-H.; Zacchini, S.; Berben, L. A. Metal Carbonyl Clusters of Groups 8 - 10: Synthesis and Catalysis. *Chem. Soc. Rev.* **2021**, *50*, 9503-9539.

    * *Themed Issue on Multimetallic Clusters: Synthesis, Reactivity, and Properties*

66. Pattanayak, S.; Berben, L. A. Cobalt Carbonyl Clusters Enable Independent Control of Two Proton Transfer Rates in the Mechanism for Hydrogen Evolution. *ChemElectroChem.* **2021**, *8*, 2488-2494.

    * *Special Collection in Memoriam: Prof. JM Savéant*

65. Loewen, N. D.; Pattanayak, S.; Herber, R.; Fettinger, J. C.; Berben, L. A. Quantification of the Electrostatic Effect on Redox Potential of Positive Charges in a Catalyst Microenvironment. *J. Phys. Chem. Lett.* **2021**, *12*, 3066-3073.

64. Loewen, N. D.; Berben, L. A. Group 7 and 8 Catalysts for Electrocatalytic CO_2 Conversion, in *Comprehensive Coordination Chemistry III*. Constable, E. C.; Parkin, G.; Que, L. (Eds.), Elsevier, Amsterdam **2021**, 742-773.

63. Arnold, A.; Sherbow, T. J.; Bohanon, A. M.; Sayler, R. I.; Britt, R. D.; Smith, A.; Fettinger, J. C.; Berben, L. A. Delocalization Tunable by Ligand Substitution in $[L_2Al]^{n-}$ Complexes Highlights a Mechanism for Strong Electronic Coupling. *Chem. Sci.* **2021**, *12*, 675-682.

62. Sherbow, T. J.; Parsons, L. W. T.; Phan, N. A.; Fettinger, J. C.; Berben, L. A. Ligand Conjugation Directs the Formation of a 1,3-Dihydropyridinate Regioisomer. *Inorg. Chem.* **2020**, *59*, 17614–17619.

61. Arnold, A.; Dougherty, R. J.; Carr, C. R.; Reynolds, L. C.; Fettinger, J. C.; Augustin, A.; Berben, L. A. A Stable Organo-Aluminum Analyte Enables Multielectron Storage for a Nonaqueous Redox Flow Battery. *J. Phys. Chem. Lett.* **2020**, *11*, 8202–8207.

60. Bass, T. M.; Carr, C. R.; Sherbow, T. J.; Fettinger, J. C.; Berben, L. A. Syntheses of Square Planar Gallium Complexes and a Proton NMR Correlation Probing Metalloaromaticity. *Inorg. Chem.* **2020**, *59*, 13517–13523.

59. Carr, C. R.; Taheri, A.; Berben, L. A. Fast Proton Transfer and Hydrogen Evolution Mediated by $[Co_{13}C_2(CO)_{24}]^{4-}$. *J. Am. Chem. Soc.* **2020**, *142*, 12299–12305.

58. Carr, C. R.; Cluff, D. B.; Berben, L. A. Breaking Scaling Relationships in CO_2 Electroreduction with Isoelectronic Analogs $[Fe_4N(CO)_{12}]^-$ and $[Fe_3MnO(CO)_{12}]^-$. *Organometallics* **2020**, *39*, 1659-1653.

    * *Special Issue on Organometallic Chemistry for Enabling Carbon Dioxide Utilization*

57. Carr, C. R.; Berben, L. A. Homogeneous Electroreduction of CO_2, in *CO_2 Hydrogenation Catalysis* Himeda, Y. (Ed.) Wiley-VCH, Hoboken **2020**, 237-258.

56. Loewen, N. D.; Berben, L. A. Secondary Coordination Sphere Design to Modify Transport of Protons and CO_2. *Inorg. Chem.* **2019**, *58*, 16849-16857.

55. Arnold, A.; Sherbow, T. J.; Sayler, R. I.; Britt, R. D.; Thompson, E. J.; Munoz, M. T.; Fettinger, J. C.; Berben, L. A. Organic Electron Delocalization Modulated by Ligand Charge State in $[L_2M]^{n-}$ Complexes of Group 13 Ions. *J. Am. Chem. Soc.* **2019**, *141*, 15792−15803.

54. Wagner, C. L.; Phan, N. A.; Fettinger, J. C.; Berben, L. A.; Power, P. P. New Characterization of $V\{N(SiMe_3)_2\}_3$: Reductions of Tris[bis(trimethylsilyl)amido]vanadium(III) and -chromium(III) To Afford the Reduced Metal(II) Anions $[M\{N(SiMe_3)_2\}_3]^-$ (M = V and Cr). *Inorg. Chem.* **2019**, *58*, 6095-6101.

53. Sherbow, T. J.; Thompson, E. J.; Arnold, A.; Sayler, R. I.; Britt, R. D.; Berben, L. A. Electrochemical Reduction of N_2 to NH_3 at Low Potential by a Molecular Aluminum Complex. *Chem. Eur. J.* **2019**, *25*, 454-458. *Invited Cover Art.*

* *Article Highlighted by the Editor in Chemistry Views, Wiley-VCH.*

52. Cluff, D. B.; Arnold, A.; Fettinger, J. C.; Berben, L. A. Electrocatalytic Reduction of CO_2 into Formate by Glassy Carbon Modified with $[Fe_4N(CO)_{11}(PPh_2Ph\text{-linker})]^-$. *Organometallics* **2019**, *38*, 1230-1235.

* *Special Issue on Organometallic Electrochemistry: Redox Catalysis Going the Smart Way*

51. Phan, N. A.; Fettinger, J. C.; Berben, L. A. A Ligand Protonation Series in Aluminum(III) Complexes of Tridentate Bis(enol)amine Ligand. *Organometallics* **2018**, *37*, 4527-4533.

* *Special Issue on Organometallic Complexes of Electropositive Elements for Selective Synthesis*

50. Taheri, A.; Carr, C. R.; Berben, L. A. Electrochemical Methods to Assess Kinetic Factors in CO_2 Reduction to Formate: Implications for Improving Electrocatalyst Design. *ACS Catal.* **2018**, *8*, 5787-5793.

49. Taheri, A.; Loewen, N. D.; Cluff, D. B.; Fettinger, J. C.; Berben, L. A. Considering a Role for $[H\text{-}Fe_4N(CO)_{12}]^{2-}$ in the Electrocatalytic Reduction of CO_2 to Formate. *Organometallics*, **2018**, *37*, 1087-1091. *Invited Cover Art*

48. Jang, H.; Qiu, Y.; Hutchings, M. E.; Nguyen, M.; Berben, L. A.; Wang, L.-P.* Quantum Chemical Studies of Redox Properties and Conformational Changes of a Four-Center Iron CO_2 Reduction Electrocatalyst. *Chem. Sci.*, **2018**, *9*, 2645-2654. *Cover Art*

47. Wang, S.; Sherbow, T. J.; Berben, L. A.; Power, P. P.* Reversible Coordination of H_2 by a Distannyne. *J. Am. Chem. Soc.* **2018**, *140*, 590-593. *Cover Art*

46. Loewen, N. D.; Neelakantan, T.; Berben, L. A. Renewable Formate from C-H Bond Formation with CO_2: Using Iron Carbonyl Clusters as Electrocatalysts. *Acc. Chem. Res.* **2017**, *50*, 2362-2370.

45. Johnson, B. M.; Franke, R.; Little, R. D. Berben, L. A. High Turnover in Electro-oxidation of Alcohols and Ethers with a Glassy Carbon-Supported Phenanthroimidazole Mediator. *Chem. Sci.*, **2017**, *8*, 6493-6498.

44. Sherbow, T. J.; Berben, L. A. Control of Ligand pK_a Values Tunes Electrocatalytic H_2 Evolution Mechanism in a Redox Active Al(III) Complex. *Inorg. Chem.* **2017**, *56*, 8651-8660.

* *Forum on Advances in Main-Group Inorganic Chemistry*

43. Loewen, N. D.; Thompson, E. J.; Kagan, M.; Banales, C. L.; Myers, T. W.; Fettinger, J. C.; Berben, L. A. A Pendant Proton Shuttle on $[Fe_4N(CO)_{12}]^-$ Alters Product Selectivity in Formate *vs.* H_2 Production *via* the Hydride $[H\text{–}Fe_4N(CO)_{12}]^-$. *Chem. Sci.* **2016**, *7*, 2728-2735.

42. Sherbow, T. J.; Carr, C. R.; Saisu, T. Y.; Berben, L. A. Insight into Varied Reaction Pathways for O-H and N-H Bond Activation by Bis(imino)pyridine Complexes of Al(III). *Organometallics* **2016**, *35*, 9-14.

41. Taheri, A.; Berben, L. A.: Making C-H Bonds with CO_2: Production of Formate by Molecular Electrocatalysts. *Chem. Commun.* **2016**, *52*, 1768-1777.

* *Feature Article for Chemical Communications Emerging Investigator Lectureship Award*

40. Wagner, C. L.; Tao, L.; Thompson, E. J.; Stich, T. A.; Guo, J.; Fettinger, J. C.; Berben, L. A.; Britt, R. D.; Nagase, S.; Power, P. P.* Dispersion Force Assisted Disproportionation: A Stable Two-Coordinate Copper(II) Complex. *Angew. Chem. Intl. Ed.* **2016**, *55*, 10444–10447.

39. Taheri, A.; Berben, L. A. Tailoring Electrocatalysts for Selective CO_2 or H^+ Reduction: Iron Carbonyl Clusters as a Case Study. *Inorg. Chem.* **2016**, *55*, 378-385.

    * *Forum on Small Molecule Activation from Biological Principles to Energy Applications: Part 3*.

    * *Highlighted in ACS Virtual Issue: The Way Forward in Molecular Electrocatalysis*

38. Myers, T. W.; Sherbow, T. J. Fettinger, J. C.; Berben, L. A. Synthesis and Structural Characterization Bis(imino)pyridine Ligand Complexes of Divalent Mg and Zn. *Dalton Trans.* **2016**, 45, 5989-5998.

    * *Special Issue on Main Group Transformations*

37. Taheri, A.; Berben, L. A.: A Molecular Iron Electrocatalyst for Reduction of CO_2 to Formate in Water: Selective Catalysis and Thermochemical Insights. *ACS Catal.* **2015**, 5, 7140-7515.

36. Thompson, E. J.; Berben, L. A. Ligand-Based Proton and Electron Transfer Mediates Electrocatalytic Reduction of Protons to H_2. *Angew. Chem. Intl. Ed.* **2015**, *54*, 11642-11646. *Invited Cover Art*

    * *Highlighted by Editor as Hot Article*

35. Ghiassi, K. B.; Walters, D. T.; Aristov, M. N.; Loewen, N. D.; Berben, L. A.; Rivera, M.; Olmstead, M. M.; Balch A. L. Formation of a Stable Complex, $RuCl_2(S_2CPPh_3)(PPh_3)_2$, Containing an Unstable Zwitterion from the Reaction of $RuCl_2(PPh_3)_3$ with Carbon Disulfide. *Inorg. Chem.* **2015**, *54*, 4565-4573.

34. Moulé, A. J.; Jung, M. C.; Rochester, C. W.; Tress, W.; LaGrange, D.; Jacobs, I. E.; Li, J.; Mauger, S. M.; Rail, M. D.; Lin, O.; Bilsky, D.; Allard, S.; Qi, Y.; Stroeve, P.; Reide, M.; Berben, L. A.; Scherfe, U.: Mixed interlayers at the interface between PEDOT:PSS and conjugated polymers provide charge transport control. *J. Mater. Chem. C.* **2015**, *3*, 2644-2676.

33. Berben, L. A.: Catalysis by Aluminum(III) Complexes of Non-Innocent Ligands. *Chem. Eur. J.* **2015**, *23*, 2734-2742.

32. Thompson, E. J.; Myers, T. W.; Berben, L. A.: Synthesis of Square Planar Aluminum(III) Complexes. *Angew. Chem. Intl. Ed.* **2014**, *53*, 14132-14134.

31. 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*, 5429-5437.

30. Myers, T. W.; Berben, L. A.: Aluminum-Ligand Cooperation Promotes Selective Dehydrogenation of Formic Acid to H_2 and CO_2. *Chem. Sci.* **2014**, *5*, 2771-2777.

29. Mauger, S. A.; Li, J.; Özmen, O. T.; Yang, A. Y.; Friedrich, S.; Rail, M. D.; Berben, L. A.; Moulé, A. J. High Work-Function Hole Transport Layers by Self-Assembly Using a Fluorinated Additive. *J. Mater. Chem. C.* **2014**, *2*, 115-123.

28. Nguyen, A. D.; Rail, M. D.; Shanmugam, M.; Fettinger, J. C.; Berben, L. A. Electrocatalytic Hydrogen Evolution from Aqueous Solution by a Series of Iron Carbonyl Clusters. *Inorg*. *Chem*. **2013**, *52*, 12847-12854.

27. Myers, T. W.; Berben, L. A. Aluminum-Amido Mediated Heterolytic Addition of Water Affords an Alumoxane. *Organometallics* **2013**, *32*, 6647-6649.

    * *Special Issue on Applications of Electrophilic Main Group Molecules*

26. Myers, T. W.; Berben, L. A. Aluminum-Ligand Cooperative N-H Bond Activation and an Example of Dehydrogenative Coupling. *J. Am. Chem. Soc.* **2013**, *135*, 9988-9990.

25. Myers, T. W.; Yee, G. M.; Berben, L. A. Redox Induced Carbon-Carbon Bond Formation Using Non-Innocent Ligands. *Eur. J. Inorg. Chem.* **2013**, 3831-3835.

    * *Special Issue on Small Molecule Activation*

24. Myers, T. W.; Berben, L. A. Redox Active Aluminum(III) Complexes Convert CO_2 into $MgCO_3$ or $CaCO_3$ in a Synthetic Cycle Using Mg or Ca Metal. *Chem. Commun.* **2013**, *49*, 4175 - 4177.

* *Emerging Investigators Special Issue*

23. Subramaniam, K.; Powers, T.; Johnson, B. M.; Bezpalko, M.; Brozek, C.; Foxman, B.; Berben, L. A.; Thomas, C. M.* Metal-Metal Interactions in C_3-Symmetric Diiron Imido Complexes Linked by Phosphinoamide Ligands. *Inorg. Chem.* **2012**, *51*, 4802-4811.
22. Cates, C. D.; Myers, T. W.; Berben, L. A. $(IP)_2Ga^{III}$ Complexes Facilitate Net Two-Electron Redox Transformations (IP = α-Iminopyridine). *Inorg. Chem.* **2012**, *51*, 11891-11897.
21. Myers, T. W.; Holmes, A. L.; Berben, L. A. Redox Routes to Substitution of Aluminum(III): Synthesis and Characterization of $(IP^-)_2AlX$ (IP = a-Iminopyridine, X = Cl, Me, SMe, S_2CNMe_2, CCPh, N_3, SPh, NHPh). *Inorg. Chem.* **2012**, *51*, 8997-9004.
20. Summerscales, O. T.; Myers, T. W.; Berben, L. A. Mild Reduction Route to a Redox-Active Silicon Complex: Structure and Properties of $(IP^{2-})_2Si$ and $(IP^-)_2Mg(THF)$ (IP = α-Iminopyridine). *Organometallics* **2012**, *31*, 3463-3465.
19. Kowolik, K.; Shanmugam, M.; Myers, T. W.; Cates, C. D.; Berben, L. A. A Redox Series of Gallium(III) Complexes: Two-Electron Oxidation Affords a Gallium-Thiolate Complex. *Dalton Trans.* **2012**, *41*, 7969-7976. * *New Talent North America Special Issue*
18. Myers, T. W.; Berben, L. A. A Sterically Demanding Iminopyridine Ligand Affords Redox-Active Complexes of Aluminum(III) and Gallium(III). *Inorg. Chem.* **2012**, *51*, 1480-1488.

    * *Highlighted in ACS Virtual Issue: Synthetic Inorganic Chemistry*
17. Rail, M. D.; Berben, L. A. Directing the Reactivity of $[HFe_4(N)(CO)_{12}]^-$ Toward H^+ or CO_2 Reduction by Understanding the Electrocatalytic Mechanism. *J. Am. Chem. Soc.* **2011**, *133*, 18577-18579.
16. Yee, G. M.; Kowolik, K.; Manabe, S.; Fettinger, J. C.; Berben, L. A. Simple Routes to Bulky, Silyl-Substituted Phenylacetylide Ligands and Examples of V(III), Fe(II), and Mn(II) Complexes. *Chem. Commun.* **2011**, *47*, 11690-11682.
15. Myers, T. W.; Berben, L. A. Countercations Direct One- or Two-Electron Oxidation of an Al(III) Complex and Al(III)-oxo Intermediates Activate C-H Bonds. *J. Am. Chem. Soc.* **2011**, *133*, 11865-11867.

    * *Highlighted in ACS Virtual Issue: Synthetic Inorganic Chemistry*
14. Myers, T. W.; Kazem, N.; Stoll, S.; Britt, R. D.; Shanmugam, M.; Berben, L. A. A Redox Series of Aluminum Complexes: Characterization of Four Oxidation States Including Stabilization of a Triplet, Ligand Biradical State via Exchange Coupling. *J. Am. Chem. Soc.* **2011**, *133*, 8662-8672.

    * *Highlighted in ACS Virtual Issue: Synthetic Inorganic Chemistry*

13 publications from undergraduate, graduate and postdoctoral work.

Editorials, Essays and Commentaries

5. Berben, L. A.; D'Alessandro, D. M.; Dutta, A. Reactive Capture of CO_2. *Chem. Soc. Rev.* **2023**, submitted. *Viewpoint Article*

4. Berben, L. A.; Loewen, N. D. Control of Substrates Beyond the Active Site. *ACS Cent. Sci.* **2019**, *5*, 1485-1487. *First Reactions Commentary*

3. de Bettencourt-Diaz, A.; Berben, L. A.; Prieto, A. L. Synthetic Chemistry Addressing Challenges in Energy and the Environment. *Inorg. Chem.* **2018**, *57*, 3656-3657. *Guest Editorial.*

2. Berben, L. A.; de Bruin, B.; Heyduk, A. L.: Non-Innocent Ligands. *Chem. Commun.* **2015**, *51*, 1552-1554. *Guest Editorial.*

1. Berben, L. A.; Love, J. B.: Metal-Mediated Transformations of Small Molecules. *Chem. Commun.* **2014**, *50*, 7221-7222. *Guest Editorial.*

INVITED PRESENTATIONS

162. XLII GEQO Congress Organometallic Chemistry Group, *Plenary Speaker*, Seville Spain September 2024
161. International Conference on Coordination Chemistry, ICCC2024, *Keynote Speaker*, Fort Collins, CO July 2024
160. DOE-BES Solar Photochemistry PI Meeting, Gaithersburg MD June 2024
159. 267th Meeting of the ACS, Award address for ACS Award in Organometallic Chemistry, New Orleans LA March 2024
158. Whitman College, Walla Walla WA February 2024
157. 3rd South Asian Biological Inorganic Chemistry (SABIC), Kolkata, India January 2024
156. Molecular Magnetism in North America Workshop (MAGNA-2023), Lake Tahoe CA December 2023
155. Office of Naval Research NEPTUNE PI meeting, Davis CA November 2023
154. LEAF Seminar, Lawrence Livermore National Laboratory, Livermore CA October 2023
153. 2023 Workshop on Bidirectional Catalysis, from Molecular Machines to Enzymes, University Paris Cité, Paris, France September 2023
152. 74th Annual Meeting of the International Society of Electrochemistry, Symposium on Molecular Electrochemistry – Mechanisms and Models, *Keynote Speaker*, Lyon France September 2023
151. 74th Annual Meeting of the International Society of Electrochemistry, Symposium on Alternative Electrolytes, Lyon France September 2023
150. Carl von Ossietzky University, Oldenburg Germany August 2023
149. 266th Meeting of the ACS, Energy Summit: Finding Solutions for Sustainable Energy Transition, San Francisco CA August 2023
148. 266th Meeting of the ACS, Symposium in Honor of Etsuko Fujita: Advances in Photo- and Electrochemical Reduction of Carbon Dioxide, San Francisco CA August 2023
147. Chevron Technical Center, Richmond CA August 2023
146. Molecule Transformation through Proton-Coupled Electron Transfer for Energy Storage and Conversion, Telluride CO July 2023
145. International Conference on Biological Inorganic Chemistry, with Inorganic Division Meeting of the Royal Australian Chemical Institute (ICBIC20 & IC23), *Keynote Speaker*, Adelaide Australia July 2023
144. 13th International Conference on Hydrogenases and Other Redox (Bio)catalysts for Energy Conversion, *Keynote Speaker*, Walla Walla WA June 2023
143. 54th Heyrovský Discussion: Molecular Photo-spectro-electrochemistry, Mechanism, and Electrosynthesis, Třešť Czech Republic *declined* June 2023
142. DOE-BES Solar Photochemistry PI Meeting, Gaithersburg MD May 2023
141. The University of New South Wales, Kensington Australia April 2023
140. 265th Meeting of the ACS, M. Frederick Hawthorne Award in Main Group Chemistry Symposium in honor of Christopher C. Cummins, Indianapolis IN March 2023
139. Office of Naval Research 2023 Undersea Power and Energy Program Review March 2023
137. Royal Society of Chemistry International Conference on Main Group Synthesis and Catalysis (ICMGSC-2023) IISER Thiruvananthapuram, India February 2023
136. Metals in Biology GRC, Ventura CA January 2023
135. *Dow Lecture*, University of Minnesota, Minneapolis MN December 2022
134. Office of Naval Research NEPTUNE PI meeting, Carnegie Mellon University, PA November 2022
133. Innovations in Catalysis to Address Modern Challenges, National Academy of Science, Chemical Sciences Roundtable, Washington DC October 2022
132. Southeast Regional Meeting of the ACS (SERMACS22), The Chemistry of Solar Fuels Symposium, San Juan, PR October 2022
131. National Science Foundation - ANR: France-USA Joint Virtual Symposium:

Catalysis with Earth Abundant Elements — October 2022
130. University of California, Merced CA — September 2022
129. 264th Meeting of the ACS, WCC Celebrating 10 Years of the Rising Star Award, Chicago IL — August 2022
128. Organometallic Chemistry GRC, Newport RI — July 2022
127. 3rd International Conference on Hydrogen Atom Transfer, Rome Italy — June 2022
126. Canadian Chemistry Conference and Exhibition, Symposium on Ligand Design in Metal Coordination Chemistry and Catalysis, Calgary Canada — June 2022
125. DOE-BES Solar Photochemistry PI Meeting — June 2022
124. DOE-ARPA-E PI Meeting for EcoSynBio Kickoff, San Francisco CA — April 2022
123. Symposium on Element-Ligand Cooperativity: Unifying the concepts from *d*-block and *p*-block chemistry. Heidelberg, Germany — April 2022
122. 263rd Meeting of the ACS, M. Frederick Hawthorne Award in Main Group Chemistry Symposium in honor of Philip P. Power, San Diego CA — March 2022
121. 263rd Meeting of the ACS, Symposium on Multimetallic Molecular and Extended Platforms for Energy Applications, San Diego CA — March 2022
120. BASF California Research Alliance (CARA), UC Davis CA — January 2022
119. PacificChem. Symposium on Photocatalytic Carbon Dioxide Reduction — December 2021
118. Wuhan University of Technology, State Key Laboratory of Advanced Technology for Material Synthesis and Processing, Wuhan China — December 2021
117. Office of Naval Research NEPTUNE PI Meeting — November 2021
116. 262nd Meeting of the ACS, *Inorganic Chemistry* Lectureship Award Symposium in honor of Jenny Yang, Atlanta GA — August 2021
115. RSC Dalton Division Meeting for Scotland and North England, *Plenary Speaker*, University of St. Andrews, Scotland — August 2021
114. International Meeting on Porphyrins and Phthalocyanines, Symposium on Bio-Inspired Electrocatalysis for Energy and Environment: Heme vs Non-heme, Buffalo NY — June 2021
113. DOE-BES Solar Photochemistry PI Meeting — June 2021
112. University of Cincinnati, Cincinnati OH — April 2021
111. California Section, American Chemical Society — January 2021
110. Office of Naval Research NEPTUNE PI meeting — November 2020
109. 104th Canadian Chemistry Conference & Exhibition. Symposium on Ligand Design in Metal Coordination Chemistry and Catalysis, Winnipeg Canada — May 2020
108. 259th Meeting of the ACS, Symposium on Multimetallic Molecular and Extended Platforms for Energy Applications, Philadelphia PA — March 2020
107. Quantum Science Workshop, Eddleman Quantum Institute, Westwood CA — March 2020
106. Pittcon, Symposium on Molecules and Materials for Solar Fuels, Chicago IL — March 2020
105. Emory University, Atlanta GA — March 2020
104. University of California, Davis CA — February 2020
103. Office of Naval Research NEPTUNE PI meeting, Arizona State University, Tempe AZ — October 2019
102. Molecules and Mechanisms for Quantum Information Processing, Telluride CO — September 2019
101. 258th Meeting of the ACS, ACS Award in Pure Chemistry Symposium in honor of Danna Freedman, San Diego CA — August 2019
100. 258th Meeting of the ACS, Symposium on Inorganic Chemistry for Sustainable Energy and the Environment, San Diego CA — August 2019
99. 258th Meeting of the ACS, Symposium on Emerging Research in Synthesis and Catalysis, San Diego CA — August 2019
98. 39th International Conference on Photochemistry, ICP2019, Boulder CO — July 2019
97. Solar Solutions to Energy and Environmental Problems, Telluride CO — July 2019

96. Biological and Bioinspired Redox Catalysis, Telluride CO July 2019
95. DOE-BES Solar Photochemistry PI Meeting, Gaithersburg MD June 2019
94. Université de Paris Sud Campus Scientifique D′orsay April 2019
93. Collège de France, Paris April 2019
92. Lavoisier Institut, Versailles April 2019
91. Université de Paris Diderot, Paris VII April 2019
90. 257th Meeting of the ACS, Harry Gray Award for Creative Work in Inorganic Chemistry Symposium in honor of Jillian Dempsey, Orlando FL April 2019
89. 257th Meeting of the ACS, Cotton Award for Synthetic Inorganic Chemistry Symposium in honor of Jeffrey Long, Orlando FL April 2019
88. 257th Meeting of the ACS, Through the Lens of Inorganic Chemistry: Understanding Heterogeneous Processes in Energy Conversion and Storage, Orlando FL April 2019
87. 257th Meeting of the ACS, Symposium on Small Molecule Activation for Oxidative and Reductive Catalysis, Orlando FL April 2019
86. University of Sydney, Australia March 2019
85. Monash University, Australia March 2019
84. University of Melbourne, Australia March 2019
83. Foster Colloquium Lecture, University at Buffalo, Buffalo NY November 2018
82. Lawrence Berkeley National Lab/Joint Center for Artificial Photosynthesis, Berkeley CA November 2018
81. Office of Naval Research NEPTUNE PI meeting, Davis CA October 2018
80. Fall Conference, University of California, *Keynote Speaker*, Santa Cruz CA September 2018
79. International Conference on Coordination Chemistry, ICCC2018, Sendai Japan August 2018
78. NSF CCI Solar Fuels Capstone Meeting, Ventura CA July 2018
77. 3rd International Conference on Proton-Coupled Electron Transfer, Blowing Rock NC June 2018
76. DOE-BES Solar Photochemistry Meeting, Gaithersburg MD June 2018
75. University of Chicago, Chicago IL May 2018
74. MIT/Harvard Inorganic Seminar Series Speaker, Cambridge MA April 2018
73. University of California San Diego CA February 2018
72. Southeast Regional Meeting of the ACS, SERC Symposium: From Photons, Protons, and Electrons to Fuel, Charlotte NC November 2017
71. University of North Carolina, Chapel Hill NC November 2017
70. Control of Electron and Proton Transfers in Redox Catalysis, Telluride CO August 2017
69. Royal Australian Chemical Institute Centenary Congress, Melbourne, Australia July 2017
68. Organometallic Chemistry GRC, Newport RI July 2017
67. 3rd Korean-American Kavli Frontiers of Science Symposium: poster, Irvine CA June 2017
66. DOE-BES Solar Photochemistry Meeting, Gaithersburg MD June 2017
65. 253rd National Meeting of the ACS, Sustainability in Electrocatalytic Chemical and Fuel Production Symposium, San Francisco CA April 2017

some of the declined invitations are listed for 2016/early 2017 during an extended family leave period

64. University of Virginia, Charlottesville VA, declined Spring 2017
63. NSF-CCI Powering the Planet Annual Meeting, Newport Beach CA, declined January 2017
62. 5th Symposium on Advanced Biological Inorganic Chemistry, Kolkata, India, declined January 2017
61. Main Group Chemistry Symposium, UCLA, Los Angeles CA, *Keynote Speaker* declined January 2017
60. University of Amsterdam, Amsterdam NL, declined September 2016
59. Mellichamp Symposium, University of California Santa Barbara CA, declined September 2016
58. Monash Center for Catalysis Inaugural Symposium, Melbourne, Australia, declined July 2016
57. International Conference on Organometallic Chemistry, ICOMC, Melbourne, Aus, declined July 2016
56. 42nd International Conference on Coordination Chemistry, Brest, France, declined July 2016
55. Western Washington University Student Symposium, *Keynote Speaker*, Tacoma WA July 2016

54. Small Molecule Activation, Telluride CO, declined — June 2016
53. 10 + 10 Workshop on Sustainable Chemistry, UC Davis – Peking University — May 2016
52. PacificChem. Symposium on Accessing the Full Potential of Redox-Active Ligands: Reactivity and Applications. Honolulu HI — December 2015
51. PacificChem. Symposium on Metal Coordination Sphere Design for Challenging Molecular Transformations. Honolulu HI — December 2015
50. University of Notre Dame, Notre Dame IN — November 2015
49. California State University, San Jose CA — October 2015
48. 250th National Meeting of the ACS, ACS Catalysis Lectureship Award Symposium to honor the Molecular Electrocatalysis Group at PNNL, Boston MA — August 2015
47. International Symposium on Inorganic Ring Systems, IRIS14, *Keynote Speaker* Regensburg, Germany — July 2015
46. 2nd Korean-American Kavli Frontiers of Science Symposium, Jeju Island, South Korea — June 2015
45. 249th National Meeting of the ACS, Symposium on Natural Resource Capture, Storage and Energy Conversion, Denver CO — March 2015
44. University of Washington, Seattle WA — February 2015
43. Stanford University, Palo Alto CA — November 2014
42. University of California, Davis CA — October 2014
41. Colorado State University, Fort Collins CO — September 2014
40. 248th National Meeting of the ACS, Symposium for *Organometallics* Young Investigator Fellowship, San Francisco CA — August 2014
39. ISACS, Challenges in Inorganic and Materials Chemistry, *Plenary Speaker*, Dublin, Ireland — July 2014
38. Bristol University, Bristol, United Kingdom — June 2014
37. Imperial College, London, United Kingdom — June 2014
36. Inorganic Chemistry GRC, Biddeford ME — June 2014
35. University of California Los Angeles CA — June 2014
34. University of California Irvine CA — June 2014
33. Texas A&M University, College Station TX — April 2014
32. Indiana University, Bloomington IN — April 2014
31. Purdue University, La Fayette IN — April 2014
30. 247th National Meeting of the ACS, Symposium for Rising Star Award of the Women Chemists Committee, Dallas TX — March 2014
29. 247th National Meeting of the ACS, Symposium on Molecular Inorganic Chemistry at the Frontiers of Energy Research, Dallas TX — March 2014
28. University of California Berkeley CA — February 2014
27. California Institute of Technology, Pasadena CA — November 2013
26. ACS WRM, Symposium on Small-Molecule Activation and Redox Catalysis with Metal Complexes and Surfaces, Santa Clara CA — October 2013
25. Organometallic Chemistry GRC, Newport RI — July 2013
24. 10 + 10 Workshop, University of California Davis-Peking University — April 2013
23. Inorganic Reaction Mechanisms GRC, Galveston TX — March 2013
22. University of California Santa Barbara CA — October 2012
21. Sonoma State University, Sonoma CA — September 2012
20. University of California Davis - Sungkyunkwan University Workshop — August 2012
19. Inorganic Chemistry GRC, Poster Talk, Biddeford ME — June 2012
18. University of the Pacific, Stockton CA — April 2012
17. 243rd National Meeting of the ACS, Pure Chemistry Award Symposium to honor Oleg Ozerov, San Diego CA — March 2012
16. 243rd National Meeting of the ACS, Award in Organometallic Chemistry

Symposium to honor Philip Power, San Diego CA — March 2012
15. Sixteenth Mesilla Chemistry Workshop on Ligand-Based Control of Spin and Reactivity in Metal Complexes, Mesilla NM — February 2012
14. California Solar Energy Collaborative Symposium — October 2011
13. Organometallics GRC Poster Talk, Newport RI — July 2011
12. University of California Nanomaterials in Energy and Environment Seminar — May 2011
11. University of Sydney, Australia — July 2010
10. DOE-BES Catalysis Sciences Meeting, Annapolis MD — June 2010
9. University of California Davis Energy Week Symposium, Davis CA — May 2010
8. PARSEC meeting, University of California, Davis CA — November 2009
7. Monash University, Melbourne, Australia — February 2009
6. University of Adelaide, Adelaide, Australia — February 2009
5. Renewable Energy: Solar Fuels GRC, Poster Talk, Ventura CA — January 2009
4. University of California, Davis CA — January 2009
3. University of Rochester, Rochester NY — December 2008
2. Pennsylvania State University, State College PA — December 2008
1. Organometallic Chemistry GRS Talk, Newport RI — July 2008

Contributed Presentations

9. Metals in Biology GRC, Ventura CA — January 2024
8. Royal Australian Chemical Institute Inorganic Division Meeting, Wollongong, Australia — December 2019
7. Renewable Energy: Solar Fuels GRC, Ventura CA — January 2014
6. Organometallic Chemistry GRC, Newport RI — July 2012
5. Renewable Energy: Solar Fuels GRC, Ventura CA — January 2012
4. 40th International Conference on Coordination Chemistry, Adelaide, Australia — July 2010
2. Organometallic Chemistry GRC, Newport RI — July 2010
1. Organometallic Chemistry GRC, Newport RI — July 2009

SERVICE ACTIVITY

(a) Department of Chemistry Service Activities

- Chair, Mentoring Committee for Assistant Professor, 2023 – present
- Chair, Faculty Search Committee, Inorganic Chemistry, 2022 - 2023
- Chair, UC Davis Inorganic Chemistry Symposium, 2018 - present
- Budget Committee, 2022 - 2023
- Graduate Admissions Committee, 2010 - 2021
- Ad-hoc Stockroom Organization Committee, 2019 - 2020
- CHE4 Curriculum Committee, 2018 - 2021
- Space Committee, 2012 - 2015, 2017 - 2019, 2022 - 2023
- Faculty Search Committee, Inorganic Chemistry, 2016 - 2017
- Faculty Search Committee, Theoretical Chemistry, 2014 - 2015
- Undergraduate Affairs Committee, 2016 - 2018
- Department of Chemistry Vision Committee, 2013 - 2014
- Larock Undergraduate Research Conference Committee, 2014 - 2015
- Faculty Mentor for Undergraduate Chemistry Club, 2009 - 2011
- Departmental Instrument Facilities Committee, 2009 - 2014
- Seminar Committee, 2009 - 2013, 2016 - present
- Safety Committee, 2012 - 2014, 2017 - 2018

(b) College of Letters and Sciences Service Activities

- College of Letters and Sciences Graduate Studies Support Committee, 2021 – 2024.
- Chemistry Department Representative to College of Letters and Sciences Assembly; 2013-2014.
- Reviewer for Limited Submissions proposals, 2015 – 2021.

(c) University Service Activities

- Chair, Graduate Council Academic Planning and Development Subcommittee, 2023 - 2024.
- Graduate Council Academic Planning and Development Subcommittee, 2021 - 2023.
- UC Davis Early Career Faculty Award for Creativity & Innovation Review Committee, 2021-2022.
- Chancellors Fellow Review Committee, 2021-2022.
- Graduate Council Program Review Subcommittee, 2017-2018.
- Graduate Council Student Support Subcommittee, 2014-2015, 2020-2021.
- Current Space Conditions in Chemistry Working Group, 2014.
- Chemistry Department Representative to UC Davis Academic Senate, 2012-2013, 2016-2017.
- Faculty Advisory Committee for Provost Undergraduate Fellowship, 2012-2014.
- Faculty Judge, Interdisciplinary Graduate Participation in Sciences Conference, 2012.
- Seminar Series Chair for UC Davis Energy Institute Spring Public Seminar Series, 2011.

(d) University of California Systemwide Service Activities

- Director: University of California Lab Fees Research Center: Direct Production of Renewable Fuels and Chemicals from Captured CO_2, 2022 – 2025.

OUTREACH ACTIVITY

- Faculty Panelist, UC Davis Department of Chemistry Undergraduate Research, 2009 – present
- Faculty Mentor, ONR Veterans to Energy Careers program, Cal State San Marcos, 2019 – present
- Faculty Mentor, First Generation Initiative, UC Davis, 2016-present
- Research mentor and senior participant for NSF-REU program at UC Davis, 2011-present
- Research mentor for high school students from ACS SEED program at UC Davis, 2013-present
- Faculty Mentor, Prytanean Women's Honor Society, 2018
- Faculty Mentor, Women in Mathematical & Physical Sciences UC Davis, 2014 – 2019
- Faculty Mentor, ChemWMN National Chemistry Mentoring Network, 2015 – present
- Faculty Mentor, Dept. of Education GAANN program, 2012 – 2016
- Research mentor to undergraduate students from MURPPS program (minority undergraduate research participation in the physical sciences); 2010-2012
- Research mentor to undergraduate students from the UC LEADS program (UC Leadership Excellence through Advanced Degrees), for students from disadvantaged backgrounds; 2011-2014