

Long Luo

Associate Professor of Chemistry

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Education

- 2011 – 2014 **University of Utah**, Salt Lake City, UT
Ph.D. Analytical Chemistry, GPA: **3.99/4.0**
Thesis title: "Electrolyte negative differential resistance, nanoparticle dynamics in nanopores, and nanobubble generation at nanoelectrodes."
Advisor: Prof. Henry S. White
- 2005 – 2009 **Beijing University of Aeronautics and Astronautics (BUAA)**, China
B.S. Applied Chemistry, minor in English (GPA: **3.84/4.0**; **Rank 1st**)
Thesis title: "Electrochemical detection of parts-per-billion copper ion based on the self-cleavage of specific DNAs"
Advisor: Prof. Lidong Li

Professional Experience

- 2024 – Present **Associate Professor**, Department of Chemistry, University of Utah
- 2023 – 2024 **The Carl R. Johnson Associate Professor**, Department of Chemistry, Wayne State University
- 2022 – 2023 **The Carl R. Johnson Assistant Professor**, Department of Chemistry, Wayne State University
- 2017 – 2022 **Assistant Professor**, Department of Chemistry, Wayne State University
- 2014 – 2017 **Postdoctoral Research Fellow**, Department of Chemistry, the University of Texas at Austin (PI: Prof. Richard M. Crooks)

Honors and Awards

- Associate Editor, *ACS Electrochemistry*, **2026** – present
- Pittcon Achievement Award, **2025**
- Editorial Board Member, *ACS Electrochemistry*, **2024** – **2025**
- Editorial Board Member, *Journal of Electrochemistry*, **2024** – present
- Scialog Fellow, "Automating Chemical Laboratories", Research Corporation for Science Advancement, **2024, 2025**
- The Royce W. Murray Young Investigator Award, the Society of Electroanalytical Chemistry, **2024**
- Alfred P. Sloan Research Fellow in Chemistry, **2023**
- *Chem Comm* 2022 Emerging Investigators, **2022**
- *Anal. Bioanal. Chem.* 2023 Young Investigators in (Bio-)Analytical Chemistry, **2022**
- Inaugural Carl Johnson Early Career Professorship, **2022**
- *Nanoscale* 2022 Emerging Investigators, **2021**
- NIH Maximizing Investigators' Research Award (MIRA), **2021**
- Wayne State University Academy of Scholars Junior Faculty Award, **2020-21**
- NSF CAREER Award, **2020**
- The *Langmuir* inaugural Early Career Advisory Board Member
- Young Professional & Early Career Travel Award, The Electrochemical Society, **2019**
- Taylor Young Investigator Travel Award, the Midwestern Universities Analytical Chemistry Conference (MUACC), **2018, 2021**
- Ebbing Faculty Development Award, Wayne State University, **2017, 2021**

- Dow Chemical First-Year Scholarship, University of Utah, **2012**

Research Interests

Electrochemistry, Catalysis, Photocatalysis, Material and organic synthesis, Chemical and biosensing.

Publications († Undergraduate researcher, * Corresponding author)

1. El Housseini, W.; Gerulskis, R.; Behara, N.; Nguyen, Z.; Pence, M.; Guan, H.; Jadhav, R.; Baierashov, E.; Larkin, T.; Luo, L.*; Minter, S. D.* Orchestrating AC and DC Electrolysis to Modulate Electroenzymatic Pathways for Efficient and Stereoselective H–D Exchange in Drug-Like Molecules, **2026**, in preparation.
2. Poh, Y. R.; Sreekumar, S.; Luo, L.*; Yuen-Zhou, J.* Floquet States of Chemoselective AC Electrosynthesis, **2026**, submitted.
3. Yang, B.; Bhattacharya, S.; Liu, H.; Pence, M. A.; Madhushani, K. A. U.; Duersch, B. G.; Park, H.; Mal, D. D.; Li, D.; Li, H.;* Sushko, P. V.;* Luo, L.* Grain-Boundary-Facilitated Palladium Hydride Formation Enables Humidity-Tolerant Catalytic Hydrogen Sensing, **2026**, submitted.
4. Liu, H.; Yang, B.; Lu, Y.; Wang, Y.; Jia, X.; Luo, L.*; Li, H.* How Is a Gas Sensor Poisoned by Volatile Methylsiloxanes? **2026**, submitted.
5. Behera, N.; Quach, N.; Maity, R.; Lehnher, D.; Ren, S.; Li, J.;* Neurock, M.;* Luo, L.* Electrochemical Hydrogen Isotope Labeling of Pharmaceuticals via In Situ Generated Mercaptothiyl Radical as A Potent Hydrogen Atom Transfer Agent, *J. Am. Chem. Soc.*, **2026**, under revision.
6. Maity, R.; Liu, D.; Luo, L.* Heterogeneous Direct Hydrogen Atom Transfer Photocatalysis for Organic Synthesis, *ChemPhotoChem*, **2026**, under review. (*Invited Review*).
7. Rodrigo, S.; Sanford, M. S.*; Luo, L.* Electrochemical Trifluoromethylchlorosulfonylation of Alkenes via Copper-Mediated SO₂Cl Radical Transfer, *Adv. Synth. Catal.* **2025**, just accepted. (*ChemRxiv Preprint*. DOI: 10.26434/chemrxiv-2025-k60hb)
8. Mal, D. D.; Redkar, N.; Liu, K.; Park, H.; Graaf, M. D.; Qi, Y.*; Neurock, M.*; Luo, L.* Electrosynthesis of Agrochemicals via Alternating Current-Driven Selective Continuous Dehalogenation, *J. Am. Chem. Soc.*, **2025**, just accepted. (*ChemRxiv Preprint*. DOI: 10.26434/chemrxiv-2025-cwpvz).
9. Madhushani, K. A. U.; Park, H.; Zhou, H.; Mal, D. D.; Pang, Q.; Li, D.*; Sushko, P. V.*; Luo, L.* Σ^3 (111) Grain Boundaries Accelerate Hydrogen Insertion into Palladium Nanostructures, *Nano Lett.*, **2025**, just accepted. (*ChemRxiv Preprint*. DOI: 10.26434/chemrxiv-2025-zfksr)
10. Hazra, A.; Organiscak, M.; Luo, L.* Deciphering the Synchronization of Alternating Current Frequency with the Nickel Catalytic Cycle in Selective C–N Cross-Coupling, *J. Am. Chem. Soc.*, **2025**, 147, 38, 35139–35148 (*ChemRxiv Preprint*. DOI:10.26434/chemrxiv-2025-37fbl)
11. Padavala, S.; Nimasha, S.; Madhushani, K. A. U.; Luo, L.; Chen, N.; Pang, Q.; Sushko, P. V.; Stoerzinger, K. A.* Subsurface Hydrogen, Curvature, and Strain: Lessons from Electro-Reduction of Benzaldehyde on Nano-Structured Pd Catalysts, *J. Mater. Chem. A*, **2025**, 13, 31770-31780.
12. Sreekumar, S.; Beeler, J. A.; Mal, D. D.; White, H. S.; Luo, L.* Origin of Selectivity in Alternating Current-Enabled Partial Reduction of (Hetero)Arenes: A Case Study of Two Consecutive Irreversible Electrochemical Steps, *J. Am. Chem. Soc.*, **2025**, 147, 30, 26917–26925. (*ChemRxiv Preprint*. DOI: 10.26434/chemrxiv-2024-h23bd)
13. Wijesinghe, S. D.; Weerathna, U.; Kovaci, C.; Wang, B.; Ranaweera, R.; Allen, M. J.; Luo, L.* Electrochemical Filtration of Gadolinium from Patient Urine after Magnetic Resonance Imaging, *ACS Appl. Mater. Interfaces*. **2025**, 17, 4, 6441–6449
14. Liu, E.; Reich, S. M.; Tanwar, M.; Neurock, M.*; Luo, L.*; Sanford, M. S.* Electrooxidative Deoxyfluorination of Arenes with NEt₃•3HF, *J. Org. Chem.*, **2025**, 90, 5, 1889–1894
15. Gao, J.;* Zhang, L.; Luo, L.*; Wang, N.* Reductive Amidation of Polylactic Acid with Nitro Compounds Using Nickel-based Nanocatalysts, *Green Chem*, **2025**, 27, 1723-1728.
16. Navarathna, C.*; Boateng, R. A.; Luo, L.* Challenges in PFAS Post-Degradation Analysis: Insights from the PFAS-CTAB Model System, *ACS Meas. Sci. Au*, **2025**, 5, 1, 135–144.
17. Maity, R.; Dungan, O.; Liu, D.; Li*, J.; Perras, F.; Ren, S.; Lehnher, D.; Huang, Z.; Phillips, E. M.; Liu, Z.; Luo, L.* Hydrogen Isotope Labelling of Pharmaceuticals via Dual Hydrogen Isotope Exchange Pathways, *J. Am. Chem. Soc.* **2024**, 146, 49, 34141–34151.

18. Kempler, P.; * Coridan, R. H.; Luo, L. Gas Evolution in Water Electrolysis, *Chem. Rev.* **2024**, *124*, 19, 10964–11007. (*Invited Review in the special issue “Green Hydrogen”*)
19. Liu, D.; Hazra, A.; Liu, X.; Maity, R.; Tan, T.*; Luo, L.* CdS Quantum Dot Gels as a Direct Hydrogen Atom Transfer Photocatalyst for C-H Functionalization, *Angew. Chem. Int. Ed.*, **2024**, e20240318. (ChemRxiv Preprint. DOI: 10.26434/chemrxiv-2024-z2dlj).
20. Stringer, B.; Schmeltzer, A.; Ryu, C. H.; Ren, H.; Luo, L.* Resistive pulse analysis of chiral amino acids utilizing the metal-amino acid crystal crystallization differences, *Analyst*, **2024**, *149*, 3108–3114. (*Invited contribution to the 150th-anniversary collection and selected as Analyst HOT Articles 2024*)
21. Carneiro, S. N.; Laffoon, J. D.; Luo, L.*; Sanford, M. S.* Benchmarking Trisaminocyclo-propeniums as Mediators for Anodic Oxidation Reactions, *J. Org. Chem.*, **2024**, *89*, 9, 6389–6394.
22. Streater, D.; Kennehan, E.; Wang, D.; Fiankor, C.; Hu, W.; Liu, D.; Kohlstedt, K.; Luo, L.; Zhang, J.; Huang, J.* Control Over Charge Separation by Imine Structural Isomerization in Covalent Organic Frameworks with Implications on CO₂ Photoreduction, *J. Am. Chem. Soc.* **2024**, *146*, 7, 4489–4499.
23. Behera, N.; Rodrigo, S.; Hazra, A.; Maity, R.; Luo, L.* Revisiting Alternating Current Electrolysis for Organic Synthesis, *Curr. Opin. Electrochem.* **2023**, *43*, 101439. (*Invited Review Article*)
24. Avanthay, M.; Batanero, B.; Boucher, D. G.; Bondue, C.; Broersen, P.; Brown, R. C. D.; Francke, R.; Fuchigami, T.; Kuhn, A.; Lam, K.; Lin, C.-Y.; Liu, T. L.; Luo, L.; Minter, S. D.; Moeller, K.; Nokami, T.; Price, R.; Rasul, S.; Sokalu, E., Selective organic electrosynthesis: general discussion. *Faraday Discuss.* **2023**, *247* (0), 70–78.
25. Avanthay, M.; Beeler, J. A.; Batanero, B.; Boucher, D. G.; Brown, R. C. D.; Flexer, V.; Francke, R.; Frontana-Urbe, B. A.; Hosseini, S.; Luo, L.; Minter, S. D.; Price, R.; Shida, N.; Ramos-Villaseñor, J. M.; Wirth, T., New strategies in organic electrosynthesis: general discussion. *Faraday Discuss.* **2023**, *247* (0), 125–131.
26. Ranaweera, R.; Wijesinghe, S.; Weeraratna, U.; Chowdhury, A.;[†] Kajjam, A. B.; Wang, B.; Dittrich, T. M.; Allen, M. J.; Luo, L.* Recycling Gadolinium from Hospital Effluent via Electrochemical Aerosol Formation, *ACS ES&T Engineering* **2023**, *4*, 3, 540–549. (*Featured on the front journal cover*).
27. Rodrigo, S.; Hazra, A.; Mahajan, J. P.; Nguyen, H. M.; * Luo, L.* Overcoming the Potential Window-Limited Functional Group Compatibility by Alternating Current Electrolysis, *J. Am. Chem. Soc.* **2023**, *145*, 40, 21851–21859.
28. Geng, X.; Liu, D.; Hewa-Rahinduwage, C. C.; Brock, S. L.*; Luo, L.* Electrochemical Gelation of Metal Chalcogenide Quantum Dots: Applications in Gas Sensing and Photocatalysis, *Acc. Chem. Res.*, **2023**, *56*, 9, 1087–1096
29. Behera, N.; Gunasekera, D.; Mahajan, J. P.; Frimpong, J.; Liu, Z.; Luo, L.* Electrochemical Hydrogen Isotope Exchange of Amines Controlled by Alternating Current Frequency, *Faraday Discuss.*, **2023**, *247*, 45 - 58
30. Geng, X.; Li, S.; Mei, Z.; Li, D.; Zhang, L.*; Luo, L.* Ultrafast Metal Oxide Reduction Kinetics at the Pd/PdO₂ Interface Enables One-Second Detection of Hydrogen Gas Under Ambient Conditions, *Nano Research*, **2023**, *16*, 1149–1157.

Before tenure at Wayne State University

31. Liu, D.; Nyakuchena, J.; Maity, R.; Geng, X.; Mahajan, J.; Hewa-Rahinduwage, C.C.; Peng, Y.; Huang, J.*; Luo, L.* Quantum dot gels as efficient and unique photocatalysts for organic synthesis, *Chem. Comm.* **2022**, *58*, 11260–11263 (*Invited contribution to the 2022 Emerging Investigators collection*).
32. Ranaweera, R.; An, S.; Cao, Y.; Luo, L.* Highly Efficient Preconcentration Using Anodically Generated Shrinking Gas Bubbles for Per- and Polyfluoroalkyl Substances (PFAS) Detection, *Anal. Bioanal. Chem.*, **2022**, *415*, 4153–4162. (*Invited contribution to the 2023 Young Investigators collection, selected as a Paper in Forefront by Editors*)
33. Geng, X.; Li, S.; Heo, J.; Peng, Y.; Hu, W.; Liu, Y.; Huang, J.; Ren, Y.; Li, D.*; Zhang, L.*; Luo, L.* Grain-Boundary-Rich Noble Metal Nanoparticle Assemblies: Synthesis, Characterization, and Reactivity, *Adv. Funct. Mater.*, **2022**, *32*, 2204169.
34. Gunasekara, D.; Mahajan, J. P.; Wanzi, Y.; Rodrigo, S.; Liu, W.; Tan, T.; Luo, L.* Controlling One- or

- Two-Electron Oxidation for Selective Amine Functionalization by Alternating Current Frequency, *J. Am. Chem. Soc.* **2022**, *144*, 22, 9874–9882.
35. Hewa-Rahinduwage, C.; Silva, K. L.; Geng, X.; Brock, S. L.*; Luo, L.* Electrochemical Gelation of Quantum Dots Using Non-Noble Metal Electrodes at High Oxidation Potentials, *Nanoscale*, **2021**, *13*, 20625 - 20636. (*Invited contribution to the 2022 Emerging Investigators collection*)
36. Geng, X.; Liu, X.; Mawella-Vithanage, L.; Hewa-Rahinduwage, C.; Zhang, L.; Brock, S. L.; Tan, T.*; Luo, L.* Photoexcited NO₂ Enables Accelerated Response and Recovery in Light-activated NO₂ Gas Sensing, *ACS Sens.* **2021**, *6*, 12, 4389–4397 (*Featured on the supplementary cover, Special Virtual Collection: Quantum Dots in Analysis*)
37. Yang, Z.; Zhang, S.; Zhao, H.; Li, A.; Luo, L.*; Guo, L.* Sub-Nano FeO_x Clusters Anchored in an Ultrathin Amorphous Al₂O₃ Nanosheet for Styrene Epoxidation, *ACS Catal.* **2021**, *11*, 11542–11550.
38. Geng, X.; Li, S.; Mawella-Vithanage, L.; Ma, T.; Kilani, M.; Wang, B.; Ma, L.; Hewa-Rahinduwage, C.; Shafikova, A.; Nikolla, E.; Mao, G.; Brock, S. L.*; Zhang, L.*; Luo, L.* Atomically dispersed Pb ionic sites in PbCdSe quantum dot gels enhance room-temperature NO₂ sensing, *Nat. Commun.* **2021**, *12*, 4895.
39. Zheng, H.; Li, H.; Luo, L.; Zhao, Z.; Henkelman, G.* Factors that Influence Hydrogen Binding at Metal-Atop Sites, *J. Chem. Phys.* **2021**, *155* (2), 024703. (*Selected as an Editor's Pick*)
40. Hewa-Rahinduwage, C.; Silva, K. L.; Brock, S. L.*; Luo, L.* Quantum Dot Gelation Driven by Electrochemically Generated Metal-ion Crosslinkers, *Chem. Mater.* **2021**, *33*, 12, 4522–4528
41. Rodrigo, S.; Gunasekera, D.; Mahajan, J. P.; Luo, L.* Alternating Current Electrolysis for Organic Synthesis, *Curr. Opin. Electrochem.* **2021**, *28*, 100712. (*Invited Review Article*)
42. An, S.; Ranaweera, R.; Luo, L.* Harnessing Bubble Behaviors for New Analytical Strategies. *Analyst* **2020**, *145*, 7782–7795. (*Invited Minireview Article*)
43. Isuri Weeraratne, A. D. K.; Hewa-Rahinduwage, C. C.; Luo, L.*; Verani, C. N.* Electrochemical Quantification of Corrosion Mitigation on Iron Surfaces with Gallium (III) and Zinc (II) Metallosurfactants, *Langmuir* **2020**, *36*, 47, 14173–14180.
44. Rodrigo, S.; Um, C.; Gunasekera, D.; Mixdorf, J.; Nguyen, H. M.*; Luo, L.* Alternating Current Electrolysis for Organic Electrosynthesis: Trifluoromethylation of (Hetero)arenes. *Org. Lett.* **2020**, *22*, 17, 6719–6723. (*Featured on the supplementary cover.*)
45. Hewa-Rahinduwage, C.; Geng, X.; Silva, K. L.; Niu, X.; Zhang, L.*; Brock, S. L.*; Luo, L.* Reversible Electrochemical Gelation of Metal Chalcogenide Quantum Dots, *J. Am. Chem. Soc.* **2020**, *142*, 28, 12207–12215 (*Highlighted by X-MOL; Featured on the supplementary cover.*)
46. Yu, F.; Dickson, J. L.; Loka, R. S.; Xu, H.; Schauggaard, R. N.; Schlegel, H. B.; Luo, L.*; Nguyen, H. M.* Diastereoselective sp³ C-O Bond Formation via Visible Light-Induced, Copper-Catalyzed Cross Couplings of Anomeric Alkyl Bromides with Aliphatic Alcohols. *ACS Catal.* **2020**, *10* (11), 5990–6001.
47. Ranaweera, R.; Luo, L.* Electrochemistry of Nanobubbles, *Curr. Opin. Electrochem.* **2020**, *22*, 102–109. (*Invited Review Article*)
48. Zhao, X.; Ranaweera, R.; Mixdorf, J. C.; Nguyen, H. M.; Luo, L.* Lowering Interfacial Dissolved Gas Concentration for Highly Efficient Hydrazine Oxidation at Platinum by Fluorosurfactant Modulation, *ChemElectroChem* **2020**, *7*, 55–58. (*Featured on the cover picture; Invited contribution to Richard M. Crooks Festschrift*)
49. Isuri Weeraratne, A. D. K.; Hewa-Rahinduwage, C. C.; Gonawala, S.; Luo, L.*; Verani, C. N.* Molecular Films of Zn^{II}- and Ga^{III}-based Metallosurfactants for Mitigation of Aluminum Pitting Corrosion, *Chem.: Eur. J.* **2019**, *25*, 14048–14053.
50. Cao, Y.; Lee, C.; Davis, E. T. J.; Si, W.; Wang, F.; Trimpin, S.; Luo, L.* 1000-Fold Preconcentration of Per- and Polyfluorinated Alkyl Substances (PFAS) within 10 min via Electrochemical Aerosol Formation. *Anal. Chem.* **2019**, *91*, 14352–14358. (*Featured on the supplementary cover*)
51. Ranaweera, R.; Ghafari, C.; † Luo, L.* Bubble-Nucleation-Based Method for the Selective and Sensitive Electrochemical Detection of Surfactants. *Anal. Chem.* **2019**, *91*, 7744–7748. (*Highlighted by C&EN News, Nature Nanotechnology, and X-MOL; Featured on the supplementary cover*)
52. Zhao, X.; Ren, H.; Luo, L.* Gas Bubbles in Electrochemical Gas Evolving Reactions, *Langmuir* **2019**, *35*, 16, 5392–5408. (*Invited Feature Article*)

53. Gunasekara, D.; Kilani, M.; Yu, X.; Chen, Q.; Mao, G.; Luo, L.* A Simple Mass Transfer-Based Method for Electrosynthesis of Uniform Tetrathiafulvalene Bromide Micro/Nanowires with High Aspect Ratio and Controlled Density. *J. Electrochem. Soc.*, **2019**, *166*, H63-H69.
54. Zhao, X.; Ranaweera, R.; Luo, L.* Highly Efficient Hydrogen Evolution of Platinum via Tuning Interfacial Dissolved-Gas Concentration, *Chem. Commun.*, **2019**, *55*, 1378-1381. (*Featured on the back cover*)
55. Chen, Q.; Ranaweera, T.R.; Luo, L.* Hydrogen Bubble Formation at Hydrogen-Insertion Electrodes, *J. Phys. Chem. C*, **2018**, *122*, 15421–15426.
56. Chen, Q.; Luo, L.* Correlation between Gas Bubble Formation and Hydrogen Evolution Reaction Kinetics at Nanoelectrodes, *Langmuir*, **2018**, *34*, 4554–4559.

Before joining Wayne State University

57. Lapp, A.S.; Duan, Z.; Marcella, N.; Luo, L.; Genc, A.; Ringnalda, J.; Frenkel, A. I.; Henkelman, G.; Crooks, R.M. Experimental and Theoretical Structural Investigation of AuPt Nanoparticles Synthesized using a Direct Electrochemical Method, *J. Am. Chem. Soc.*, **2018**, *140*, 6249–6259.
58. Huang, K.; Clausmeyer, J.; Luo, L.; Jarvis, K.; Crooks, R. M. Shape-Controlled Electrodeposition of Single Pt Nanocrystals onto Carbon Nanoelectrodes, *Faraday Discuss.*, **2018**, *210*, 267–280.
59. He, W.; Luo, L.; Liu, Q.; Chen, Z. Colorimetric Sensor Array for Discrimination of Heavy Metal Ions in Aqueous Solution Based on Three Kinds of Thiols as Receptors, *Anal. Chem.* **2018**, *90*, 4770–4775.
60. Li, H.; Luo, L.; Kunal, P.; Bonifacio, C. S.; Duan, Z.; Yang, J. C.; Humphrey, S. M.; Crooks, R.M.; Henkelman, G. Oxygen Reduction Reaction on Classically Immiscible Bimetallics: A Case Study of RhAu, *J. Phys. Chem. C*, **2018**, *122*, 5, 2712–2716.
61. Luo, L.; Timoshenko, J.; Lapp, A.; Frenkel, A.; Crooks, R. M. Structural characterization of Rh and RhAu dendrimer-encapsulated nanoparticles, *Langmuir*, **2017**, *33*, 12434–12442.
62. Luo, L.; Duan, Z.; Li, H.; Kim, J.; Henkelman, G.; Crooks, R. M. Tunability of the Adsorbate Binding on Bimetallic Alloy Nanoparticles for the Optimization of Catalytic Hydrogenation, *J. Am. Chem. Soc.*, **2017**, *139*, 5538–5546.
63. Li, X.; Luo, L.; Crooks, R. M. Faradaic Ion Concentration Polarization on a Paper Fluidic Platform. *Anal. Chem.*, **2017**, *89*, 4294–4300
64. Lan, W.; Martin, E.; Luo, L.; Perera, R.; Wu, X.; Martin, C.; White, H.S. Voltage Rectified Current and Fluid Flow in Conical Nanopores, *Acc. Chem. Res.*, **2016**, *49*, 2605–2613.
65. Luo, L.; Zhang, L.; Duan, Z.; Henkelman, G.; Crooks, R. M. Efficient CO Oxidation using Dendrimer-Encapsulated Pt Nanoparticles Activated with <2% Cu Surface Atoms, *ACS Nano*, **2016**, *10*, 8760–8769.
66. German, S.R.; Edwards, M. A.; Chen, Q.; Luo, L.; White, H. S. Electrochemistry of Single Nanobubbles. Estimating the Critical Size of Bubble-Forming Nuclei for Gas-Evolving Electrode Reactions, *Faraday Discuss.*, **2016**, *193*, 223–240.
67. Cunningham, J. C.; Kogan, M. R.; Tsai, Y. J.; Luo, L.; Richards, I.; Crooks, R. M. Paper-based Electrochemical Detection of Silver Nanoparticle Labels by Galvanic Exchange, *ACS Sens.*, **2016**, *1*, 40–47. (*Featured on the front cover, Top 10 most read paper in 2016*)
68. Li, X.; Luo, L.; Crooks, R. M. Low-Voltage Paper Isotachophoresis Device for DNA Focusing, *Lab Chip*, **2015**, *15*, 4090–4098. (*The first two authors contributed equally.*)
69. Luo, L.; Zhang, L.; Henkelman, G.; Crooks, R. M. Unusual Activity Trend for CO Oxidation on Pd_xAu_{140-x}@Pt Core@Shell Nanoparticle Electrocatalysts, *J. Phys. Chem. Lett.*, **2015**, *6*, 2562–2568.
70. Chen, Q.; Luo, L.; White, H. S. Electrochemical Generation of a Hydrogen Bubble at a Recessed Platinum Nanopore Electrode, *Langmuir*, **2015**, *31*, 4573–4581.
71. Luo, L.; Li, X.; Crooks, R. M. Low-Voltage Origami-Paper-Based Electrophoretic Device for Rapid Protein Separation, *Anal. Chem.*, **2014**, *86*, 12390–12397.
72. Luo, L.; German, S.; Lan, W. J.; Mega, T. L.; White, H. S. Resistive Pulse Analysis of Nanoparticles, invited review by *Annu. Rev. Anal. Chem.*, **2014**, *7*, 513–535.
73. Chen, Q.; Luo, L.; Faraji, H.;[†] Feldberg, S.W.; White, H.S. Electrochemical Measurements of Single

- H₂ Nanobubble Nucleation and Stability at Pt Nanoelectrodes, *J. Phys. Chem. Lett.*, **2014**, 5, 3539–3544.
74. Luo, L.; Holden, D. A.; White, H. S. Negative Differential Electrolyte Resistance in a Solid-State Nanopore Resulting from Electroosmotic Flow Bistability, *ACS Nano*, **2014**, 8, 3023–3030. *(Featured on the book cover of Nanoelectrochemistry edited by Michael Mirkin and Shigeru Amemiya.)*
 75. Luo, L.; Johnson, R. P.; White, H. S. Numerical Modeling of the Bistability of Electrolyte Transport in Conical Nanopores. *Proceeding of the 2013 COMSOL Conference*, **2013**. *(Top 10 Abstracts recommended by the Program Committee)*
 76. Luo, L.; White, H. S. Electrogenation of Single Nanobubbles at Sub-50-nm-Radius Platinum Nanodisk Electrodes. *Langmuir*, **2013**, 29, 11169–11175.
 77. German, S.R.; Luo, L.; White, H. S.; Mega, T. L. Controlling Nanoparticle Dynamics in Conical Nanopores, *J. Phys. Chem. C*, **2013**, 117, 703–711.
 78. Luo, L.; Holden, D.A.; Lan, W. J.; White, H. S. Tunable Negative Differential Electrolyte Resistance in a Conical Nanopore in Glass. *ACS Nano*, **2012**, 6, 6507–6514.
 79. Li, L.; Luo, L.; [†] Mu, X.; [†] Sun, T.; Guo, L. A Reagentless Signal-on Architecture for Electronic, Real-time Copper Sensors Based on Self-cleavage of DNAzymes, *Anal. Methods*, **2010**, 2, 627–630.

Patents

1. **L., Luo**; B. Yang, Humidity-Tolerant Flammable Gas Sensors, **2025** U.S. Provisional Patent Application. 63/930,226, filed December 3rd. 2025.
2. **L., Luo**; D. Mal, Aminopyralid Production Through Alternating Current Electrochemical Reduction of Picloram, **2025** U.S. Provisional Patent Application. No. 63/765,826, filed March 4th, 2025.
3. **L., Luo**; X. Geng, Nanoparticle Assembly for Catalytic Hydrogen Sensing, **2021** U.S. Provisional Patent Application No. 63/278,451, filed Nov.11, 2021
4. **L., Luo**; R. Ranaweera, Bubble-Nucleation Based Electrochemical Methods for the Enrichment and Detection of Surfactants in Aqueous Solutions. **2020** U.S. Provisional Patent Application No. 62/960,523, filed Jan 13, 2020, Pub. No. US20210215631A1 published Jul 15, 2021, Pending.
5. **L. Luo**; H. M. Nguyen; Alternating Current Electrochemistry for Use in Organic Synthesis. **2020** U.S. Provisional Patent Application No. 62/957,092, filed Jan 3, 2020, Pub. No. US20210207274A1 published Jul 8, 2021, Patent No. US 11,499,238 B2, Date of Patent: Nov 15, 2022

Research Grants and External Support

External (total: \$6,272,620)

1. **[Active]** Army Research Office: Electrochemical behaviors of explosives in the Li-ion battery cell environment
Total Award: \$60,000 Role: Lead PI Period: 02/01/2026-11/30/2026
(\$30,000 to Luo, co-PI: Tao Gao)
2. **[Active]** Scialog (SA-AUT-2025-038b): An Open-Source Modular Automated Laboratory System for Real-Time Monitoring of Continuous Electrosynthesis.
Total Award: \$66,000 (direct: \$60,000) Role: PI Period: 07/01/2025-06/30/2026
3. **[Active]** Department of Energy (Award # 78705): Design of Structural Inhomogeneities to Control Functional Properties.
Total Award: \$3,600,000 Role: co-PI (Thrust Leader) Period: 09/01/2024-8/31/2027
(\$501,000 to Luo, co-PIs: Peter Sushko, Yingge Du, Dongsheng Li, Micah Prange, and Kelsey Stoerzinger)
4. **[Active]** National Institute of Health, the Maximizing Investigators' Research Award (MIRA-1R35

- GM142590): Alternating Current Electrolysis for Organic Synthesis
Total Award: \$1,786,344 Role: Sole PI Period: 07/01/2021-06/30/2026
5. **[Active]** National Science Foundation (CHE-1943737) CAREER: CAS: Developing Gas Bubbles as a New Tool for Surface-Active Agent Analysis
Total Award: \$650,000 Role: Sole PI Period: 02/01/2020-04/30/2026
 6. **[Active]** Alfred P. Sloan Foundation (FH-2023-20829), Sloan Research Fellowship: Exploring New Interdisciplinary Frontiers in Electrochemistry
Total Award: \$75,000 Role: Sole PI Period: 09/2023-08/2026
 7. **[Active]** National Science Foundation (CHE- 2247057), GOALI: Developing New Hydrogen Isotope Exchange Strategies for Isotope Labelling of Pharmaceuticals
Total Award: \$ 400,008 Role: Lead PI Period: 08/01/2023-02/28/2027
(\$400,008 to Luo, co-PI: Jingwei Li, Merck & Co)
 8. **[Active]** National Science Foundation (CHE-2002158) NSF Center for Synthetic Organic Electrochemistry Phase IIB
Total Award: \$19,800,000 Role: Investigator Period: 09/01/2025-08/31/2030
(\$1,076,091 to Luo, Lead PI: Shelley Minteer, *recommended for funding*)
 9. **[Active]** National Science Foundation (CHE-2002158) NSF Center for Synthetic Organic Electrochemistry Phase IIA
Total Award: \$20,000,000 Role: Investigator Period: 09/01/2023-08/31/2025
(\$400,000 to Luo, Lead PI: Shelley Minteer)
 10. **[Equipment]** National Science Foundation (CHE- 2303622) MRI: Helium Recovery Equipment for a Regional NMR and EPR Laboratory at Wayne State University
Total Award: \$219,353 Role: co-PI Period: 04/2023-03/2026
 11. **[Equipment]** National Institute of Health, Administrative Supplement Request for An Ultra-High Performance Liquid Chromatography-Mass Spectrometer (3R35GM142590-03W1)
Total Award: \$ 203,690 Role: Sole PI Period: 09/01/2023-08/30/2024
 12. **[Completed]** United States Army Corps of Engineers (W912HZ-23-2-0038): Developing a Low-Cost Device for On-Site Detection of Per - and Polyfluoroalkyl Substances (PFAS) in Drinking Water
Total Award: \$ 259,825.79 Role: Lead PI Period: 09/13/2023-09/12/2024
(\$129,913 to Luo, co-PI: Yong Xu)
 13. **[Completed]** Department of Energy (Award # 78705): Design of Structural Inhomogeneities to Control Functional Properties.
Total Award: \$3,600,000 Role: co-PI (Thrust Leader) Period: 12/01/2021-8/31/2024
(\$501,178 to Luo, co-PIs: Peter Sushko, Yingge Du, Dongsheng Li, Micah Prange, and Kelsey Stoerzinger)
 14. **[Completed]** United States Army Corps of Engineers (W912HZ-22-2-0002): Developing a Low-Cost Device for On-Site Detection of Per - and Polyfluoroalkyl Substances (PFAS) in Drinking Water
Total Award: \$ 229,405 Role: Lead PI Period: 12/03/2021-12/02/2022
(\$118,636 to Luo, co-PI: Yong Xu)
 15. **[Completed]** United States Army Corps of Engineers (W912HZ-21-2-0048): Rare-Earths from US Extractions (REUSE).
Total Award: \$3,130,353 Role: Senior collaborator Period: 09/30/2021-09/29/2023
(\$ 169,807 to Luo, PIs: Matthew Allen and Timothy Dittrich)
 16. **[Completed]** A. O. Smith Corp., Research Seed Funds
Total Award: \$5,000 Role: Sole PI Period: 03/01/2021-05/31/2021

Internal (total:\$233,500)

17. Wayne State University, Faculty Competition for Postdoctoral Fellows
Total Award: \$60,000 Role: PI Period: 09/01/2023-08/31/2025
18. Wayne State University, the Carl R. Johnson Early Career Professorship
Total Award: \$100,000 Role: Professorship holder Period: 2022-2025
19. Wayne State University, Ebbing Faculty Development Award, A Metal-Free and Catalyst-Free Approach to Achieving the Chemical Reactivity of Photoredox Catalysis
Total Award: \$2,300 Role: PI Period: 2021
20. Wayne State University, Faculty Competition for Postdoctoral Fellows
Total Award: \$60,000 Role: PI Period: 01/04/2021-01/03/2023
21. Wayne State University, University Research Grant, Bubble Nucleation-based Electrochemical Detection (BED) Method for Determination of Per- and Polyfluoroalkyl Substances (PFAS) in Water
Total Award: \$10,000 Role: PI Period: 07/01/2019-06/30/2020
22. Wayne State University, Ebbing Faculty Development Award, Development of Low-Cost High-Sensitivity Paper-Based Biosensors for Point-of-Care Testing
Total Award: \$1,200 Role: PI Period: 2017

Invited Seminars at Universities and Research Institutes

1. Department of Chemistry and Biochemistry, University of Nevada, Las Vegas, NV, April 10, **2026**. (postponed).
2. Department of Chemistry, Georgia State University, Atlanta, GA, March 27, **2026**.
3. Department of Chemistry, Utah Valley University, Orem, UT, Nov. 12, **2025**.
4. Department of Chemistry, University of Utah, Salt Lake City, UT, Sep 8, **2025**.
5. Allen J. Bard Center for Electrochemistry, The University of Texas at Austin, April 29, **2025**.
6. Department of Chemical Engineering, University of Utah, Salt Lake City, Jan. 17, **2025**.
7. National Innovation Center for Excellence, Shanghai, Dec 11, **2024** (Virtual).
8. Department of Chemistry, University of Florida, Gainesville, FL, Nov. 13, **2024**.
9. Department of Chemistry, Utah Valley University, Orem, UT, Nov. 4, **2024**.
10. 13th Annual MORE Programs Research Retreat, California State University, Los Angeles, CA, Sep. 7, **2024**
11. The PREM-CSOE Workshop, the University of Texas at El Paso, El Paso, TX, July 1, **2024**.
12. Department of Chemistry, Kyung Hee University, Seoul, Republic of Korea, Jun. 26, **2024**.
13. The CET-CSOE Joint Workshop, Department of Chemistry, Seoul National University, Seoul, Korea, Jun. 25, **2024**.
14. Department of Chemistry, Colorado State University, Fort Collins, CO, Jan 31, **2024**.
15. Department of Chemistry, University of Utah, Salt Lake City, UT, Jan 4, **2024**.
16. Department of Chemistry and Biochemistry, George Mason University, Fairfax, VA, Sep 29, **2023**.
17. All-Hands Meeting, The Center for Synthetic Organic Electrochemistry, Wayne State University, Detroit, MI, Aug 21, **2023**.
18. Department of Chemistry and Biochemistry, University of Arizona, Tucson, AZ, Apr 6, **2023**.
19. The NSF Center for Integrated Catalysis, University of California, Los Angeles, Mar 7, **2023**.

20. Brewing Chemistry Lecture series, ACS Detroit local section, Feb 21, **2023**.
21. The Center for Advanced Toward Sustainable Urban Systems (CATSUS), California State University, Los Angeles, CA, Feb 10, **2023**.
22. Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, Feb 6, **2023**.
23. Department of Chemistry, University of Virginia, Charlottesville, VA, Feb 3, **2023**.
24. Department of Chemistry, Capital Normal University, Beijing, China, Nov 17, **2022** (postponed).
25. Department of Chemistry, University of Utah, Salt Lake City, UT, Nov 14, **2022**.
26. Department of Chemistry, Washington University in St. Louis, MO, Oct 20, **2022** (postponed).
27. Department of Chemistry, University of Michigan, Ann Arbor, MI, Oct 6, **2022**.
28. Department of Chemistry, University of California, Davis, CA, May 3, **2022**
29. Department of Chemistry and Biochemistry, Utah State University, Logan, UT, Apr 22, **2022**
30. Department of Chemistry and Biochemistry, University of Alabama, Tuscaloosa, AL, Apr.14. **2022**.
31. Department of Chemistry, University at Albany - State University of New York, NY, Apr 12, **2022**.
32. Department of Chemistry, **Frontiers Seminar Series**, Wayne State University, Detroit, Apr 11, **2022**.
33. Department of Chemical and Biomolecular Engineering, Rice University, Houston, TX, Apr 5, **2022**.
34. Department of Chemistry, the University of Texas at Austin, Austin, TX, Mar 31, **2022**.
35. Department of Chemistry, Texas A&M University, College Station, TX, Mar 29, **2022**.
36. Department of Chemistry, University of Houston, Houston, TX, Mar 1, **2022**.
37. Department of Chemistry, University of Virginia, Charlottesville, VA, Feb 18, **2022**.
38. Department of Chemistry, University of Washington, Seattle, WA, Feb 7, **2022**.
39. Department of Chemistry, The Ohio State University, Columbus, OH, Jan 31, **2022**.
40. Department of Chemistry and Biochemistry, University of California Santa Barbara, CA, Jan 11, **2022**
41. Department of Chemistry, the University of Illinois at Urbana-Champaign, IL, Dec 10, **2021**.
42. National Science Foundation, Center for Synthetic Organic Electrochemistry, University of Utah, Salt Lake City, UT, Dec 9, **2021**.
43. Department of Chemical Engineering, University of California, Santa Barbara, CA, Dec 6, **2021**.
44. Institute of Chemistry, Chinese Academy of Sciences, Beijing, China, Nov 23, **2021**
45. Department of Chemistry, Indiana University Bloomington, IN, Nov 18, **2021**.
46. Department of Chemistry, Iowa State University, Ames, IA, Nov 5, **2021**.
47. Department of Chemistry, Michigan State University, East Lansing, MI, Oct 22, **2021**.
48. Department of Chemistry and Biochemistry, the University of Arkansas, Fayetteville, AR, Oct 8, **2021**.
49. Department of Chemistry, University of the Pacific, Stockton, CA, Oct 5, **2021**.
50. Department of Chemistry, University of Cincinnati, Cincinnati, OH, Sep 17, **2021**.
51. Department of Chemistry & Biochemistry, University of California, Los Angeles, CA, Mar. **2021**.
52. Department of Chemistry and Biochemistry, Florida State University, Tallahassee, FL, Feb. **2021**
53. Department of Chemistry, University of California, Irvine, CA, Oct. **2020**
54. Department of Chemistry and Biochemistry, California State University, Fullerton, CA, Oct. **2020**.
55. Department of Chemistry and Biochemistry, California State University, Long Beach, CA, Sep. **2020**.
56. Department of Chemistry and Biochemistry, San Diego State University, San Diego, CA Sep. **2020**
57. Department of Chemistry, University of Massachusetts, Lowell, MA, Sep. **2020**
58. Chemistry Department, Millikin University, Decatur, IL Feb. **2020**
59. Department of Chemistry and Biochemistry, **Dwain L Ford Guest Lecture Series**, Andrews University, Berrien Springs, MI Feb. **2020**.
60. Department of Chemical Engineering and Materials Science, Wayne State University, Detroit, MI,

Jan. **2020**.

61. Department of Chemistry and Biochemistry, California State University, Chico, CA, Oct. **2019**.
62. Department of Chemistry, Oakland University, Auburn Hills, MI, Feb. **2019**.
63. Chemistry Department, Eastern Michigan University, Ypsilant, MI, Feb. **2019**.
64. Department of Chemistry, Ball State University, Muncie, IN, Nov. **2018**.
65. BASF Ovonic Battery site, Rochester Hills, MI, Feb. **2018**.
66. Beijing Jiaotong University, Beijing, China, Dec. **2017**.
67. Institute of Chemistry, Chinese Academy of Sciences, Beijing, China, Dec. **2017**.
68. Department of Chemistry & Biochemistry, University of California, Los Angeles, CA, Jan. **2017**.
69. Department of Chemistry, University of Georgia, Athens, GA, Jan. **2017**.
70. Department of Chemistry, Wayne State University, Detroit, MI, Dec. **2016**.
71. Department of Chemistry & Biochemistry, Kent State University, Kent, OH, Dec. **2016**.
72. Department of Chemistry & Biochemistry, Boise State University, Boise, ID, Nov. **2016**.
73. Department of Chemistry, Saint Louis University, St. Louis, MO, Nov. **2016**.
74. Chemistry Department, University of North Carolina-Chapel Hill, Chapel Hill, NC, Nov. **2016**.
75. Department of Chemistry, University of Cincinnati, Cincinnati, OH, Nov. **2016**.
76. Department of Chemistry and Biochemistry, California State University, Los Angeles, CA, Feb. **2016**.
77. Chemical Engineering and Materials Science Department, the University of Minnesota, Minneapolis, MN, Feb. **2016**.
78. Department of Chemistry, Marquette University, Milwaukee, WI, Jan. **2016**.
79. Department of Chemistry and Chemical Biology, University of California, Merced, CA, Dec. **2015**.
80. School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA, Nov. **2015**.

Invited Conference and Workshop Presentations

1. **Luo, L.**, "Materials Chemistry toward Electrochemical Energy Storage and Conversion", ACS Northwest Regional Meeting, June **2026**, Boise, ID. (Invited talk)
2. **Luo, L.**, "Electrochemical Hydrogen Isotope Exchange", 249th ECS Meeting, May 2026, Seattle, WA, (invited talk).
3. Scialog Meeting: Automating Chemical Laboratories, April 16-19, **2025**, Tucson, AZ. (Invited attendance)
4. **Luo, L.**, "The role of fundamental interfacial processes in electrocatalysis" symposium, ACS Spring 2026 Meeting & Exposition, Mar. **2026**, Atlanta, GA. (Invited talk)
5. **Luo, L.**, "Advanced In-Situ Imaging Methods for Colloidal Chemistry: Probing Interaction and Dynamics at the Nanoscale" symposium, ACS Spring 2026 Meeting & Exposition, Mar. **2026**, Atlanta, GA. (Invited talk)
6. **Luo, L.**, Synchronizing a Ni catalytic cycle with AC electrolysis, 248th ECS Meeting, Oct. **2025**, Chicago, IL. (Invited talk)
7. **Luo, L.**, Synchronizing a Ni catalytic cycle with AC electrolysis, ACS Fall 2025 Meeting & Exposition, Aug. **2025**, Washington, DC. (Invited talk)
8. **Luo, L.**, Heterogeneous photocatalysis for hydrogen isotope labeling of pharmaceuticals, 15th International Symposium on the Synthesis and Applications of Isotopically Labelled Compounds, June **2025**, AstraZeneca Pharmaceuticals, Gothenburg, Sweden. (Invited talk, virtual)
9. **Luo, L.**, "Bubble-Based Separation Techniques for Analyzing PFAS: Inspired by Nature", Microscale Separations and Bioanalysis (MSB) Conference 2025, May **2025**, Tempe, AZ (invited Keynote Speaker).
10. **Luo, L.** Alternating Current Electrolysis for Organic Synthesis. The 2025 Bard Center for Electrochemistry Workshop, April 29, **2025**, Austin, TX. (Invited talk)
11. Scialog Meeting: Automating Chemical Laboratories, April **2025**, Tucson, AZ. (Invited attendance)

12. The National Academy of Sciences' thirty-fifth annual Kavli Frontiers of Science symposium, March 6-8, **2025**, Irvine, CA (Invited attendee, declined due to time conflict).
13. **Luo, L.**, Controlling Ag surface structure for the selective production of aminopyralid by alternating current electrolysis, ACS Spring 2025 Meeting & Exposition, March **2025**, San Diego, CA (invited talk).
14. **Luo, L.**, Controlling Organic Reaction Selectivity by Alternating Current Electrolysis, Pittcon, March 3, **2025**, Boston, MA. (The Pittcon Achievement Awardee talk).
15. **Luo, L.**, Electrochemical aerosol preconcentration for PFAS analysis and Gd recycling, ACS Fall 2024 Meeting & Exposition, August **2024**, Denver, CO (invited talk).
16. **Luo, L.**, Alternating Current Electrolysis for Organic Synthesis, the CET-CSOE joint workshop, Jun **2024**, Seoul, Korea (Invited talk and session chair).
17. **Luo, L.**, Quantum Dot-Catalyzed Hydrogen Isotope Labeling of Pharmaceuticals, ACS Spring 2024 Meeting & Exposition, Mar. **2024**, New Orleans, LA. (Invited talk).
18. **Luo, L.**, Alternating Current Electrolysis for Organic Synthesis, Pittcon, Feb. **2024**, San Diego, CA (The Royce Murray Award Symposium Awardee talk)
19. **Luo, L.**, Electrochemical Gelation of Metal Chalcogenide Quantum Dots: Applications in Gas Sensing and Photocatalysis, Sol-Gel Symposium of China & International Meeting, Oct. **2023**, Jinan, China (Plenary talk).
20. **Luo, L.**, Rational Design of Alternating Current Electrolysis (ACE) for Organic Synthesis, the 27th ACS Green Chemistry and Engineering Conference, June **2023**, Long Beach, CA (invited oral).
21. **Luo, L.**, Grain Boundary Rich Nobel Metal Nanoparticle Assemblies: Synthesis, Characterization, and Reactivity, MRS Spring Meeting and Exhibit, April **2023**, San Francisco, CA (invited oral).
22. **Luo, L.**, 1000-Fold Preconcentration of Per- and Polyfluorinated Alkyl Substances (PFAS) via Electrochemical Bubble-Bursting Aerosol Formation, ACS Spring 2023 Meeting & Exposition, Mar. **2023**, Indianapolis, IN. (invited oral)
23. **Luo, L.**, Bubble-based strategies for PFAS preconcentration and detection, Pittcon, Mar. **2023**, Philadelphia, PA, (invited oral)
24. **Luo, L.**, Understanding and Predicting the Reaction Selectivity in Alternating Current Electrolysis (ACE) by Electroanalytical Tools, Pittcon, Mar. **2023**, Philadelphia, PA, (invited oral)
25. **Luo, L.**, 1000-Fold Preconcentration of Per- and Polyfluorinated Alkyl Substances (PFAS) via Electrochemical Aerosol Formation, ANACHEM, Nov. **2022**, Livonia, MI. (invited oral)
26. **Luo, L.**, Electrochemical Assembly of Quantum Dots, Nanopore Weekly Meeting, July **2021** (invited oral)
27. **Luo, L.**; Ranaweera, R.; Cao, Y. Bubble-based electrochemical methods for preconcentration and detection of per- and polyfluoroalkyl substances (PFAS) in water, Pittcon, Mar. **2021**(Invited oral)
28. **Luo, L.**, the November meeting of the Detroit Section of the Electrochemical Society, Nov. **2019**, Livonia, MI. (Invited oral)
29. **Luo, L.**, the 2019 Telluride Workshop on Computational Materials Chemistry, Jul. **2019**, Telluride, CO. (Invited oral)
30. **Luo, L.**; Ranaweera, R. Nanobubble Nucleation-based Electrochemical Sensor for Environmental Monitoring, 70th Southeastern Regional Meeting, Nov. **2018**, Augusta, GA. (Invited oral)
31. **Luo, L.** Exploring New Frontiers in Electroanalytical and Electrocatalytic Sciences, BASF/Wayne State University Science Event, Oct. **2018**, Wyandotte, MI. (Invited poster)
32. The Second Nanobubbles and Biological Systems Conference, April **2013**, Tacoma, WA. (Invited attendee)

Contributed Conference and Workshop Presentations

33. **Luo, L.**, CdS quantum dot gel as a hydrogen atom transfer agent for organic reactions, ACS Spring 2025 Meeting & Exposition, March **2025**, San Diego, CA (Oral).
34. **Luo, L.**, Alternating Current Electrolysis for Organic Synthesis, Gordon Research Conference, Jan. **2024** Ventura, CA. (Poster)

35. **Luo, L.**, Electrochemical Hydrogen Isotope Exchange of Amines Controlled by Alternating Current Frequency, Electrochemistry Faraday Discussion, July **2023**, Edinburgh, United Kingdom (oral).
36. **Luo, L.**, Grain-boundary-rich Pt nanoparticle assembly enables room-temperature catalytic hydrogen sensing, Michigan Catalysis Society Symposium, May **2023**, Ann Arbor, MI (oral).
37. **Luo, L.**, Quantum Dot Gel as a Highly Sensitivity and Tunable Platform for Gas Sensing, ACS Spring 2023 Meeting & Exposition, Mar. **2023**, Indianapolis, IN (Oral).
38. **Luo, L.**, Grain-boundary-rich Pt nanoparticle assembly enables room-temperature catalytic hydrogen sensing, ACS Spring 2023 Meeting & Exposition, Mar. **2023**, Indianapolis, IN (Oral).
39. **Luo, L.**, Developing High-Performance Hydrogen Sensors Guided by Catalyst Design Principles. Midwest Universities Analytical Chemistry Conference, Oct. **2021**, Columbus, OH. (Oral)
40. **Luo, L.**, Reversible Electrochemical Gelation of Metal Chalcogenide Quantum Dots, ACS Spring 2021 Virtual Meeting & Exposition, Mar. **2021** (Oral)
41. **Luo, L.**; Rodrigo, S.; Um, C.; Gunasekera, D.; Mixdorf, J.; Nguyen, H. M. Mimicking Photoredox Catalysis using Electrochemistry for Organic Synthesis, ACS Fall 2020 Virtual Meeting & Exposition, Aug. **2020** (Oral)
42. **Luo, L.**; Ranaweera, R.; Cao, Y. Bubble-based electrochemical methods for detection of per- and polyfluoroalkyl substances (PFAS) in water, ACS Fall 2020 Virtual Meeting & Exposition, Aug. **2020** (Oral)
43. **Luo, L.**, Hewa-Rahinduwage, C.; Geng, X.; Silva, K. L.; Niu, X.; Zhang, L.; Brock, S. L. Reversible Electrochemical Gelation of Metal Chalcogenide Quantum Dots, ACS Fall 2020 Virtual Meeting & Exposition, Aug. **2020** (Oral)
44. **Luo, L.**; Rodrigo, S.; Um, C.; Gunasekera, D.; Mixdorf, J.; Nguyen, H. M. Mimicking Photoredox Catalysis using Electrochemistry for Organic Synthesis, Gordon Research Conference, **2020** Ventura, CA. (Poster)
45. **Luo, L.**; Zhao, X.; Ranaweera, R. Highly Efficient Hydrogen Evolution of Platinum via Tuning Interfacial Dissolved-Gas Concentration, the 235th ECS meeting, May **2019**, Dallas, TX. (Oral)
46. **Luo, L.**; Ranaweera, R. Bubble Nucleation-Based Electrochemical Sensor for Detection of Per- and Polyfluoroalkyl Substances (PFAS) in Water, the 235th ECS meeting, May **2019**, Dallas, TX. (Oral)
47. **Luo, L.** Controlling Concentration Overpotentials for High Efficiency Gas Evolution Reactions, 40th Annual Spring Symposium of the Michigan Catalysis Society, May **2019**, Dearborn, MI. (Oral)
48. **Luo, L.**; Ranaweera, R. Bubble Nucleation-Based Electrochemical Sensor for Detection of Per- and Polyfluoroalkyl Substances (PFAS) in Water, Pittcon Conference & Expo, Mar. **2019**, Philadelphia, PA. (Oral)
49. **Luo, L.**; Ranaweera, R. Bubble Nucleation-based Electrochemical Detection of Per- and Polyfluoroalkyl Substances (PFASs) in Water, Midwest Universities Analytical Chemistry Conference, Nov. **2018**, East Lansing, MI. (Oral)
50. **Luo, L.**; Gunasekera, D.; Kilani, M.; Yu, X.; Mao, G. Controlled Electrodeposition of Tetrathiafulvalene Bromide (TTFBr) Nanowires for Gas Sensing, 256th ACS National Meeting & Exposition, Aug. **2018**, Boston, MA. (Oral)
51. **Luo, L.**; Chen, Q. New Insights into Electrochemical Nucleation Processes, Electrochemistry Gordon Research Conference, **2018** Ventura, CA. (Poster)
52. **Luo, L.**; Kim, J.; Duan, Z.; Li, H.; Henkelman, G.; Crooks, R. M. A Comparative Study of Dendrimer-Encapsulated PtAu and PdAu Alloy Nanoparticles for Allyl Alcohol Hydrogenation, Center for Electrochemistry (CEC) Annual Workshop on Electrochemistry, **2016** Austin, TX. (Poster)
53. **Luo, L.**; Zhang, L.; Duan, Z.; Kim, J.; Li, H.; Henkelman, G.; Crooks, R. M. Theoretical and Experimental Approach for Correlating Nanoparticle Structure and Catalytic Activity, Electrochemistry Gordon Research Conference, **2016** Ventura, CA. (Poster)
54. **Luo, L.**; Li, X.; Crooks, R. M. Low Voltage Origami Paper-Based Electrophoretic Devices (oPEpDs) for Rapid Protein Separation Applications, Pittcon Conference & Expo, **2015** New Orleans, LA. (Oral)
55. **Luo, L.**; Li, X.; Crooks, R. M. Low Voltage Paper-based Electrophoretic Devices, Center for Electrochemistry (CEC) Annual Workshop on Electrochemistry, **2015** Austin, TX. (Poster)
56. **Luo, L.**; Johnson, R. P.; White, H.S. Numerical Modeling of the Bistability of Electrolyte Transport in Conical Nanopores, COMSOL Conference, Oct. **2013**, Boston, MA. (Oral & Poster)

57. **Luo, L.**; Holden, D. A.; White, H. S. Electrolyte Negative Differential Resistance (NDR) in Glass Nanopores and its Sensing Applications, the 87th ACS 2013 Colloid & Surface Science Symposium, Jun. **2013**, Riverside, CA. (Oral)
58. NanoUtah 2012 Conference & Expo, Oct. **2012**, Salt Lake City, UT.

Conference and Workshop Presentations by the Group Members (starting from 09/2025)

1. Ambrose, C.; Pence, M.; Sgro, G.; Liu, M.; Luo, L. (2025). *Accessible Tools Developed for Complex Cyclic Voltammetry Simulation and Bayesian Parameter Optimization*. Presented at the **Center for Synthetic Organic Electrochemistry All-Hands Meeting**, St. Louis, MO. (Poster)
2. Rodrigo, S.; Sanford, M. S.; Luo, L. (2025). *Electrochemical Trifluoromethylchlorosulfonylation of Alkenes via Copper-Mediated SO₂Cl Radical Transfer*. Presented at the **NSF Center for Synthetic Organic Electrochemistry All-Hands Meeting**, St. Louis, MO. (Poster)
3. Sreekumar, S.; Beeler, J. A.; Mal, D. D.; White, H. S.; Luo, L. (2025). *Origin of Selectivity in Alternating Current-Enabled Partial Reduction of (Hetero)Arenes: A Case Study of Two Consecutive Irreversible Electrochemical Steps*. Presented at the **Center for Synthetic Organic Electrochemistry All-Hands Meeting**, St. Louis, MO. (Poster)

Media highlights

1. Pittcon 2025: Long Luo Discusses His Laboratory's Tetrahedron Approach, 2025 March 5.
<https://www.chromatographyonline.com/view/pittcon-2025-long-luo>
2. Chemistry Department Hosts First Utah Electrochemistry Symposium, 2025 August 20
<https://www.chemistry.utah.edu/history/chemistry-department-hosts-first-utah-electrochemistry-symposium/>

Reviewer for Journals (50+)

Journal of the American Chemical Society, Journal of Physical Chemistry Letters, Langmuir, ACS Applied Materials & Interfaces, RSC Advances, Journal of Electroanalytical Chemistry, Sensors & Actuators: B. Chemical, Electrochemistry Communications, The Journal of Physical Chemistry, Analytical Chemistry, Nature Catalysis, Chemical Communications, ACS Nano, Chemical Science, Electroanalysis, Nature Communications, Small, Analyst, Journal of Materials Chemistry A., Chemistry of Materials, Joule, Journal of The Electrochemical Society, Electrochimica Acta, Applied Catalysis B: Environmental, ChemElectroChem, Scientific Reports, Medical Devices & Sensors, The Innovation, Nano Research, Synlett, Applied Energy, Materials Advances, Organic Letters, Nano Select, Nature Synthesis, Nano Letters, ACS Applied Nano Materials, Angewandte Chemie, JACS Au, ACS Measurement Science Au, Energy & Fuels, Advanced Energy Materials, ACS Energy Letters, Nature Materials, Advanced Synthesis & Catalysis, Green Chemistry, Sens Actuators Rep, Mass Spectrometry Reviews, Science Bulletin, ACS Electrochemistry, NJP Clean Water, Science Advances.

Reviewer for Funding Agencies

- The European Research Council
- The Department of Defense, Strategic Environmental Research and Development Program
- The U.S. Department of Energy
- National Science Foundation
- Czech Science Foundation, June **2025**
- National Science Foundation, Chemistry LEAPS Panel July 10 and 11, **2025**
- ACS Petroleum Research Fund
- The Netherlands Organisation for Scientific Research (NWO, the Dutch Research Council)
- The Center for the Advancement of Science in Space, International Space Station U.S. National Laboratory
- Research Corporation for Science Advancement

- The U.S. Army Research Office

Courses Taught

CHEM 3000 Quantitative Analysis, Fall 2025
CHEM 7740 Electrochemistry 2, Fall 2024, Fall 2025
CHM 1140/1145 General Chemistry II, Winter 2024
CHM 8800 Analytical Seminar, Fall 2023
CHM 3120 Analytical Chemistry, Fall 2022, Fall 2023
CHM 7740 Instructor for the topic of Publication Ethics & Authorship Allocation, Fall 2021, Fall 2022
CHM 5900 Biomedical Research as Discovery, Winter 2021
CHM 2280 General Chemistry II, Fall 2020
CHM 7120 Electroanalytical Chemistry, Fall 2017, Fall 2018, Winter 2022
CHM 5570 Instrumental Analytical Chemistry Laboratory, Winter 2018, Winter 2019, Winter 2020
CHM 7142 Data Analysis, Fall 2019

Departmental and University Service

- Presenter, REU seminar series, Chemistry Department, University of Utah, July 2025
- Stream Leader of "Per- and Polyfluoroalkyl Substances (PFAS) Analysis and Remediation", Science Research Initiative, College of Science, University of Utah, 2024
- Co-Chair, Graduate Admission Committee, Chemistry Department, University of Utah, 2024, 2025
- Co-Chair, Graduate Recruiting Committee, Chemistry Department, University of Utah, 2024, 2025
- Analytical Division Head, Chemistry Department, Wayne State University, 2023-2024
- Election Committee Member, Wayne State University Association of Chinese Faculty and Staff, 2022
- ReBUILDetroit Faculty Pilot Award Review Panel, 2022
- Member, Wayne State University Chemical Safety Committee, 2021-present
- Member, Departmental Teaching Assignments Committee, 2021-2022, 2022-2023
- Member, Departmental Green Chemistry Committee, 2020-202, 2021-2022, 2022-2023
- Member, Departmental Gopal Symposium Committee, 2020-present
- Session leader and presenter, STEM Day, Mar. 2020 and 2023
- Presenter, Advanced Placement Day, 2019
- Member, Departmental Graduate Recruiting Committee, 2019-2020, 2020-2021, 2021-2022
- Member, Departmental By-laws Committee, 2019
- Member, Master of Arts in Chemistry Program Special Committee, Nov. 2018
- Judge for the C.P. Lee Endowed Graduate Student Research Presentation Day, Oct. 2018
- Member, Graduate Admission Committee, 2017-2018, 2018-2019, 2019-2020, 2022-2023, 2023-2024
- Member, Departmental Safety Committee, 2018-2019, 2021-2022
- Judge for the College of Arts and Sciences Undergraduate Research Fair, Mar. 2018
- Reviewer for the Undergraduate Research Opportunities Program (UROP)-Barber Undergraduate Research Award, Aug. 2018

Professional Society Membership

- The Michigan Chapter of the North American Catalysis Society (2022-2024)
- Society of Electroanalytical Chemistry (Mar. 2019-present)
- International Society of Electrochemistry (Jan. 2019-present)
- The Electrochemical Society (Jan. 2019-present)
- American Chemical Society (May 2018-present)

Other Professional Activities

- Faculty co-advisor, The Electrochemical Society University of Utah Student Chapter, 2025-now
- External reviewer for tenure case
- Co-guest editor for the special issue of *Accounts for Chemical Research* on Electrifying Synthesis,

Feb, 2026.

- Co-organizer of the Utah Electrochemistry Symposium, July 2025.
- Participant of the Spring 2025 Faculty Upskilling in AI (UAI) program, University of Utah, 2025
- Co-organizer of “Advances in Gas Sensing Material Development”, Pacifichem 2025.
- Panelist of the Panel Discussion “Renewability in Energy and Opportunities”, Chinese Association for Science and Technology in Utah, the University of Utah, Jan 18, 2025.
- Judge, STEM Fair, Cottonwood Elementary School, Holladay, UT, Dec 16, 2024.
- Co-organizer of Midwestern Universities Analytical Chemistry Conference, Detroit, Oct 3-5, 2024
- Co-organizer of the 2024 UT Electrochemistry Symposium, Austin, May 31-June 1, 2024
- Session Presider, Informed Design of Quantum Dots and Quantum Dot Assemblies for Energy Applications, ACS Spring 2024 Meeting & Exposition, New Orleans.
- Organizer of the All-Hands Meeting, The Center for Synthetic Organic Electrochemistry, Wayne State University, Detroit, MI, Aug 21, 2023.
- Mentor, ACS SEED project, summer 2023.
- Session chair, Rare Earth and Lithium Session II, 2023 MRS Spring Meeting and Exhibit, 2023.
- Member, Board of Directors for the Society for Electroanalytical Chemistry, 2023-2028
- Organizer of “Electrochemistry of Bubbles” Symposium at ACS Spring National Meeting, 2023.
- Organizer and founder of “Advances in Gas Sensing” Symposium at ACS Spring National Meeting, 2023.
- Secretary, The Michigan Chapter of the North American Catalysis Society, 2022
- Session Presider, Advances in Electrochemistry, ACS Fall 2022 Meeting & Exposition, Chicago
- Session Presider, Advances in Electrochemistry, ACS Spring 2021 Virtual Meeting & Exposition
- Faculty Advisor, The Electrochemical Society Detroit Student Chapter, 2020-2024
- Session Chair, the ANACHEM/SAS Symposium 2019, Livonia, MI, 2019
- Member-at-Large, The Detroit Section of the Electrochemical Society, 2019-2021
- Session Chair, the ANACHEM/SAS Symposium, Livonia, MI, 2018, 2021
- Founder and presenter, **Bubble T SciShow**

Current Group Members

Postdocs

1. Dr. Rajendra Maity (2022-present)
2. Dr. Nibedita Behera (2022-present)
3. Dr. Diptangshu Datta Mal (2023-present)
4. Dr. Sachini Rodrigo (2023-present)
5. Dr. Bingxin Yang (2024-present)
6. Dr. Mike Pence (2025-present), co-advised by Prof. Shelley Minter

Significant awards and honors:

2025 NSF Mathematical and Physical Sciences Ascending Postdoctoral Research Fellowship

Graduate Students

1. Ms. Sethma Dinushi Wijesinghe (2022-present, co-advised by Prof. Matthew Allen at Wayne State University)
Significant awards and honors:
2025 Summer Dissertation Fellowship Award
2. Ms. Udesika Kangane Arachchige (2023-present)
3. Ms. Sreesaila Sreekumar (2023-present)

4. Ms. Marisa Organiscak (2024-present)
5. Ms. Nguyen Tran (2024-present)
Significant awards and honors:
2026 SRI Graduate Assistantship
6. Mr. Griffyn Sgro (2025-present)
7. Mr. Kenny Drbohlay (2025-present)
8. Mr. Tingxuan Liu (2025-present)

Undergraduate and High School Students

1. Kaden Gravois (2025)
Significant awards and honors:
Poster Presentation Award at the College of Science symposium **2025**
2. Connor Ambrose (Research assistant, 09/2025)
3. Aubree Reeve (2026, SRI program)
4. Griffin Ulrich (2026, SRI program)
5. Hailey Jorgensen (2026, SRI program)
6. Coltin Johnson (2026, SRI program)
7. Jasper Stevenson (2026, SRI program)

Alumni

Former Postdocs

1. Dr. Atanu Hazra (2022-2025)
Current position: TBA.
2. Dr. Qianjin Chen (2017)
Current position: Professor, Donghua University
3. Dr. Xu Zhao (2018-2019)
Current position: Associate Professor, Xi'an Jiaotong University
4. Dr. Jyoti P. Mahajan (2020-2022)
Current position: Postdoc, The University of North Carolina at Chapel Hill
5. Dr. Bingwen Wang (2022)
Current position: Polymer Scientist III, BASF (Southfield, MI)
6. Dr. Xin Geng (2019-2022)
Current position: Postdoc, Max Planck Institute
7. Dr. Yi Peng (2021-2022)
Current position: Princeton NuEnergy
8. Dr. Jie Gao (2023-2024)
Current position: Special-term Associate Professor, Sichuan University
9. Dr. Sulekha (2023-2024)
Current position: Postdoc, University of Graz, Austria
10. Dr. Chanaka Navarathna (2023-03/2025)
Current position: unknown, Sri Lanka.

Former Graduate Students

1. Mr. Yanick Wanzi; M.A. May 2021
Current position: Good manufacturing practices (GMP) operator 1, Aldevron, L.L.C., (Fargo, North Dakota)

2. Dr. Chathuranga Chinthana Hewa Rahinduwage; Ph.D. December 2021
Dissertation: "ELECTROCHEMICAL GELATION OF METAL CHALCOGENIDE QUANTUM DOTS".
Significant awards and honors:
Departmental Citation for Excellence in Teaching 2018-2019
Summer Dissertation Award 2021
Thomas C. Rumble University Graduate Fellowships 2021
David F. Boltz Award in Analytical Chemistry 2021
Current position: Senior Scientist, Boehringer Ingelheim
3. Dr. Ruchiranga Ranaweera; Ph.D. June 2022
Dissertation: "ELECTROCHEMISTRY OF BUBBLES: DEVELOPING NEW SENSORS, PROMOTING GAS EVOLUTION REACTIONS, AND EXTRACTION OF RARE EARTH ELEMENTS"
Significant awards and honors:
Graduate Student Professional Travel Award 2019-2020
Competitive GRA Award from the Graduate School 2020-2021
Thomas C. Rumble University Graduate Fellowship 2020-2021
David F. Boltz Award in Analytical Chemistry 2020-2021
Departmental Citation for Excellence in Teaching 2019-2020
Current position: Intel (Oregon)
4. Dr. Henadeera Appuhamilage Dona Disni Gunasekera; Ph.D. March 2023
Dissertation: "ALTERNATING CURRENT ELECTROLYSIS FOR AMINE FUNCTIONALIZATION AND HYDROGEN ISOTOPE EXCHANGE"
Significant awards and honors:
Thomas C. Rumble University Graduate Fellowships 2019
Departmental Citation for Excellence in Teaching 2018-2019
David F. Boltz Memorial Award in Analytical Chemistry 2022
Graduate Student Professional Travel Award, 2022
Current position: Postdoc, Texas A&M University
5. Dr. Sachini Dilrukshi Rodrigo Nambukara Wasam Payagala Welivitage Don, Ph.D. September 2023
Dissertation: "ALTERNATING CURRENT ELECTROLYSIS FOR TRIFLUOROMETHYLATION OF (HETERO)ARENES AND ALKENES"
Significant awards and honors:
Organic Chemistry Top Graduate Students Award 2023
Summer Dissertation Award 2023
David F. Boltz Award in Analytical Chemistry 2023
Graduate Student Professional Travel Award 2019, 2022
Thomas C. Rumble University Graduate Fellowships 2021
Current position: Postdoc, University of Utah
6. Dr. Daohua (Trista) Liu, Ph.D. August 2024
Dissertation: "VISIBLE LIGHT PHOTOCATALYSIS WITH QUANTUM DOT GEL FOR ORGANIC SYNTHESIS"
Significant awards and honors:
Thomas C. Rumble University Graduate Fellowships 2023-2024
Graduate Student Professional Travel Award 2022
David F. Boltz Award in Analytical Chemistry 2024
Current position: Arkema Inc., North Carolina
7. Ms. Janya Lumbini (2023-2024)
Current position: Graduate student at Wayne State University
8. Mr. Blake Stringer, M.A. May 2024
Significant awards and honors:
Departmental Citation for Excellence in Teaching 2023-2024
Current position: Graduate student at Wayne State University

9. Mr. Ransford Appianin Boateng, M.A. May 2024
Significant awards and honors:
Departmental Citation for Excellence in Teaching 2022-2023
Current position: Instructor at Henry Ford College
10. Ms. Sumudu Nimasha; M.A. May 2024
Significant awards and honors:
Departmental Citation for Excellence in Teaching 2022-2023
Current position: Graduate student at Wayne State University

Visiting Students and Scholars

1. Mr. Yue Cao (2018-2019), Shandong University of Technology
2. Dr. Shizhong An (2019-2020), Associate Professor, Henan University of Science and Technology

Research Associates

Ms. Udeshika Weerathna (2022), Analytical Chemist, Piramal Pharma Solutions (Riverview, MI)

Undergraduate and High School Students

Ms. Carina Ghafari (2018 summer); Ms. Kelly Shaye Patero (2017-2020); Mr. Srihari Ganesh (2018 summer); Ms. Sahar Almatrahi (2020-2022); Ms. Sarah Alhader (2020-2022); Aneesa Chowdhury (2022-2023); Travis Lenhausen (2022 summer), Siham Azom (2023 summer), Grace Sun (2023 summer), Arriea Bonds (2023 summer, ACS SEED Project), Christa Kovaci (2023-2024), Mitchel Horn (2024, 2025 summer), Kenny Drbohlav (2025 summer).