

## Andrew J. Wilson

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### CURRENT POSITION

**Assistant Professor**

Department of Chemistry  
University of Louisville, Louisville, KY

July 2020 – present

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### EDUCATION

- **The University of Texas at Austin.** Austin, TX  
Ph.D., Physical Chemistry  
Certification in Nanoscience and Nanotechnology  
December 2015
- **The University of Iowa.** Iowa City, IA  
B.S., Chemistry  
May 2010

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### PROFESSIONAL EXPERIENCE

- **Postdoctoral Research Fellow** 2016–2020  
*Springborn Postdoctoral Fellow 2016-2018*  
*Department of Chemistry, University of Illinois at Urbana-Champaign*  
*Urbana, IL*  
Advisor: Professor Prashant K. Jain
- **Postdoctoral Research Fellow** 2015–2016  
*Department of Chemistry, Temple University*  
*Philadelphia, PA*  
Advisor: Professor Katherine A. Willets
- **Graduate Research Fellow** 2010–2015  
*Department of Chemistry, The University of Texas at Austin*  
*Austin, TX*  
Advisor: Professor Katherine A. Willets  
*Dissertation Title: Optical Readouts of Electrochemistry on Plasmonic Nanoparticle Electrodes*
- **Undergraduate Research Assistant** 2009–2010  
*Department of Chemistry, The University of Iowa*  
*Iowa City, IA*  
Advisor: Professor Johna Leddy

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**AWARDS**

- Ralph E. Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities, 2022
- Student Champion, University of Louisville, 2022
- Springborn Postdoctoral Fellowship, University of Illinois at Urbana-Champaign, 2016-2018
- Fall 2015 Nano Portfolio Program Student Presentations Best Presentation Award, The University of Texas at Austin, 2015
- Professional Development Award/Travel Award, The University of Texas at Austin, 2014
- Jeff Byers Memorial Graduate Award in Chemistry and Chemical Engineering, The University of Texas at Austin, 2013-2014
- Faraday Teaching Award, The University of Texas at Austin, 2010-2011
- Analytical Chemistry Award, The University of Iowa, 2009

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**PUBLICATIONS**

‡undergraduate author, †contributed equally, \*corresponding author

39. N. Karki, F.L. Mufoyongo, **A.J. Wilson\***. “Utilizing the magnetic properties of electrodes and magnetic fields in electrocatalysis,” *Inorg. Chem. Front.* **2024**, *submitted*
  - Invited review
38. N. Karki, I.G. Marquina, J.V. Hemmer, Y. Yu\*, **A.J. Wilson\***. “Suppressing competing solvent reduction in CO<sub>2</sub> electroreduction with a magnetic field,” **2024**, *submitted*
37. M. Al-Amin, J.V. Hemmer, P.B. Joshi, K. Fogelman, **A.J. Wilson\***. “Quantification and description of photothermal heating effects in plasmon-assisted electrochemistry,” *Commun. Chem.* **2024**, *7*, 70
36. J.V. Hemmer, P.B. Joshi, A. Kaur, **A.J. Wilson\***. “Reducing ensemble averaging for mechanistic understanding of electrocatalysis in energy conversion reactions,” *J. Phys. Chem. C* **2024**, *128*, 697-709
  - Invited Perspective
35. C.L. Brosseau\*, A. Colina\*, J.V. Perales-Rondón, **A.J. Wilson\***, P.B. Joshi, B. Ren\*, X. Wang\*. “Electrochemical Surface-Enhanced Raman Spectroscopy,” *Nat Rev Methods Primers* **2023**, *3*, 79
34. J.F. Adkins‡, A. Kaur, M.S. Alom, H. Chandran, F. Ramezanipour, **A.J. Wilson\***. “Directing the size and dispersity of Ag nanoparticles with kudzu leaf extracts,” *RSC Adv.* **2023**, *13*, 25360-25368
33. P.B. Joshi and **A.J. Wilson\***. “Potential-dependent temporal dynamics of CO surface concentration in electrocatalytic CO<sub>2</sub> reduction,” *J. Phys. Chem. Lett.* **2023**, *14*, 5754-5759

32. J.V. Hemmer<sup>†</sup>, P.B. Joshi<sup>†</sup>, **A.J. Wilson**\*. “Tracking electrochemistry at single nanoparticles with surface-enhanced Raman scattering spectroscopy and microscopy,” *J. Vis. Exp.* **2023**, *195*, e65486
- Invited article: Emerging Methods for Nanoscale Electrochemistry
31. J. Lee, P.B. Joshi, **A.J. Wilson**\*, Y. Kim\*. “Plasmon-Driven Near-Field Photopolymerization in a Gold Nanoparticle Colloid,” *J. Phys. Chem. C* **2023**, *127*, 8096-8103
30. P.B. Joshi and **A.J. Wilson**\*. “Understanding Electrocatalysis at Nanoscale Electrodes and Single Atoms with Operando Vibrational Spectroscopy,” *Curr. Opin. Green Sustain. Chem.* **2022**, *38*, 100682
- Invited review for the Special Issue on Nanocatalysis
29. P.B. Joshi and **A.J. Wilson**\*. “Plasmonically enhanced electrochemistry boosted by nonaqueous solvent,” *J. Chem. Phys.* **2022**, *156*, 241101
- Invited article for the JCP Special Topic on Plasmon-Driven Energy Conversion
28. D. Ogulu, P.P. Bora, M. Bihani, S. Sharma, T.N. Ansari, **A.J. Wilson**, J.B. Jasinski, F. Gallou, S. Handa. “Phosphine ligand-free bimetallic Ni(0)Pd(0) nanoparticles as catalyst for facile, general, sustainable, and highly selective 1,4-reductions in aqueous micelles,” *ACS Appl. Mater. Interfaces* **2022**, *14*, 6754-6761
27. P.B. Joshi, N. Karki, **A.J. Wilson**\*. “Electrocatalytic CO<sub>2</sub> reduction in acetonitrile enhanced by the local environment and mass transport of H<sub>2</sub>O,” *ACS Energy Lett.* **2022**, *7*, 602-609
26. T.N. Ansari, S. Sharma, S. Harza, J.B. Jasinski, **A.J. Wilson**, F. Hicks, D.K. Leahy, S. Handa. “Shielding effect of nanomicelles: Stable and catalytically active oxidizable Pd(0) nanoparticle catalyst compatible for cross-couplings of water-sensitive acid chlorides in water,” *JACS Au* **2021**, *1*, 1506-1513
25. D. Devasia, **A.J. Wilson**, J. Heo, V. Mohan, P.K. Jain. “A rich catalog of C–C bonded species formed in CO<sub>2</sub> reduction on a plasmonic photocatalyst,” *Nat. Commun.* **2021**, *12*, 2612
- Editors’ Highlight in Catalysis
24. **A.J. Wilson** and P.K. Jain. “Light-induced voltages in catalysis by plasmonic nanostructures,” *Acc. Chem. Res.* **2020**, *53*, 1773-1781
- Among most read articles, September 2020 list
23. J. Wang, J. Heo, C. Chen, **A.J. Wilson**, P.K. Jain. “Ammonia oxidation enhanced by photopotential generated by plasmonic excitation of a bimetallic electrocatalyst,” *Angew. Chem. Int. Ed.* **2020**, *59*, 18430-18434
- Designated as “Hot Paper”
22. **A.J. Wilson**, D. Devasia, P.K. Jain. “Nanoscale optical imaging in chemistry,” *Chem. Soc. Rev.* **2020**, *49*, 6087-6112

21. **A.J. Wilson**, V. Mohan, P.K. Jain. “Mechanistic understanding of plasmon-enhanced electrochemistry,” *J. Phys. Chem. C* **2019**, *123*, 29360-29369
20. **A.J. Wilson** and P.K. Jain. “Structural dynamics of the oxygen evolving complex of Photosystem II in water-splitting action,” *J. Am. Chem. Soc.* **2018**, *140*, 5853-5859
19. S. Yu, **A.J. Wilson**, J. Heo, P.K. Jain. “Plasmonic control of multi-electron transfer and C-C coupling in visible-light-driven CO<sub>2</sub> reduction on Au nanoparticles,” *Nano Lett.* **2018**, *18*, 2189-2194
  - Featured on the April issue front cover
  - Among most read articles, March and May 2018 list
  - Featured in Chemistry World article “Forcing reactions with plasmons”
  - Thomson Reuters Highly Cited (top 1%)
18. S. Yu, **A.J. Wilson**, G. Kumari, X. Zhang, P.K. Jain. “Opportunities and challenges of solar-energy-driven carbon dioxide to fuel conversion with plasmonic catalysts,” *ACS Energy Lett.* **2017**, *2*, 2058-2070
  - Among most read articles, September 2017 list
  - Featured in virtual issue “Plasmons for Energy Conversion”, *ACS Energy Lett.*, **2018**, *3*, 1467–1469
17. Z. Zhang, P. Li, Y. Tang, **A.J. Wilson**, K.A. Willets, M. Wuttig, R. Xiong, S. Ren. “Tunable electroresistance and electro-optic effects of transparent molecular ferroelectrics,” *Sci. Adv.* **2017**, *3* (8), e1701008
  - News Spotlight, Nanowerk: Advancing molecular ferroelectric thin-film technologies. <http://www.nanowerk.com/spotlight/spotid=47909.php>
16. Y. Kim, **A.J. Wilson**, P.K. Jain. “The nature of plasmonically assisted hot electron transfer in a donor-bridge-acceptor complex,” *ACS Catal.* **2017**, *7*, 4360-4365
15. P.B. Joshi, T.P. Anthony, **A.J. Wilson**, K.A. Willets. “Imaging out-of-plane polarized emission patterns on gap mode SERS substrates: from high molecular coverage to the single molecule regime,” *Faraday Discuss.* **2017**, *205*, 245-259
14. V. Sundaresan, K. Marchuk, Y. Yu, E.J. Titus, **A.J. Wilson**, C. Armstrong, B. Zhang, K.A. Willets. “Visualizing and Calculating Tip-Substrate Distance in Nanoscale Scanning Electrochemical Microscopy Using 3-Dimensional Super-Resolution Optical Imaging,” *Anal. Chem.* **2017**, *89*, 922-928
13. K.A. Willets, **A.J. Wilson**, V. Sundaresan, P.B. Joshi. “Super-resolution imaging and plasmonics,” *Chem. Rev.* **2017**, *117*, 7538–7582
12. S. Zaleski, M.F. Cardinal, D.V. Chulhai, **A.J. Wilson**, K.A. Willets, L. Jensen, R.P. Van Duyne. “Towards Monitoring Electrochemical Reactions with Dual-Wavelength SERS: Characterization of Rhodamine 6G (R6G) Neutral Radical Species and Covalent Tethering of R6G to Silver Nanoparticles,” *J. Phys. Chem. C* **2016**, *120*, 24982-24991

11. S. Zaleski, **A.J. Wilson**, M. Mattei, X. Chen, G. Goubert, M.F. Cardin, K.A. Willets, R.P. Van Duyne. "Investigating nanoscale electrochemistry with surface- and tip-enhanced Raman spectroscopy," *Acc. Chem. Res.* **2016**, *49*, 2023-2030
10. **A.J. Wilson** and K.A. Willets. "Unforeseen distance-dependent SERS spectroelectrochemistry from surface-tethered Nile Blue: the role of molecular orientation," *Analyst* **2016**, *141*, 5144-5151
9. **A.J. Wilson**, N.Y. Molina, K.A. Willets. "Modification of the electrochemical properties of Nile Blue through covalent attachment to gold as revealed by electrochemistry and SERS," *J. Phys. Chem. C* **2016**, *120*, 21091-21098
8. **A.J. Wilson** and K.A. Willets. "Molecular Plasmonics," *Annu. Rev. Anal. Chem.* **2016**, *9*, 27-43
7. B. Xu, Z. Luo, **A.J. Wilson**, K. Chen, H.D. Chopra, X. Chen, K.A. Willets, Z. Dauter, S. Ren. "Multifunctional charge-transfer single crystals through supramolecular assembly," *Adv. Mater.* **2016**, *28*, 5322-5329
6. B. Xu, Hu. Li, Ha. Li, **A.J. Wilson**, L. Zhang, K. Chen, K.A. Willets, F. Ren, J.C. Grossman, S. Ren. "Chemically driven interfacial coupling in charge-transfer mediated functional superstructures," *Nano. Lett.* **2016**, *16*, 2851-2859
5. B. Xu, Z. Luo, W. Gao, **A.J. Wilson**, C. He, X. Chen, G. Yuan, H-L Dai, Y. Rao, K.A. Willets, Z. Dauter, S. Ren. "Solution-processed molecular opto-ferroic crystals" *Chem. Mater.* **2016**, *28*, 2441-2448
4. **A.J. Wilson**, K. Marchuk, K.A. Willets. "Imaging electrogenerated chemiluminescence at single gold nanowire electrodes," *Nano Lett.* **2015**, *15*, 6100-6115
3. M.L. Weber, **A.J. Wilson**, K.A. Willets. "Characterizing the spatial dependence of redox chemistry on plasmonic nanoparticle electrodes using correlated super-resolution SERS imaging and electron microscopy," *J. Phys. Chem. C* **2015**, *119*, 18591-18601
2. **A.J. Wilson** and K.A. Willets. "Visualizing site-specific redox potentials on the surface of plasmonic nanoparticles with super-localization SERS microscopy," *Nano Lett.* **2014**, *14*, 939-945
1. **A.J. Wilson** and K.A. Willets. "Surface-enhanced Raman scattering (SERS) imaging using noble metal nanoparticles," *WIREs Nanomedicine and Nanobiotechnology* **2013**, *5*, 180-189

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## PRESENTATIONS

### INVITED SEMINARS

18. TBA, Washington University in St. Louis, Department of Chemistry, invited seminar, St. Louis, MO, April 24, 2025

17. *Controlling concentration gradients in electrochemistry with plasmons and magnetic fields*, Temple University, Department of Chemistry, invited seminar, Philadelphia, PA, April 11, 2024
16. *Formation and dynamics of CO in CO<sub>2</sub> electroreduction in acetonitrile*, University of Iowa, Department of Chemistry, invited seminar, Iowa City, IA, September 28, 2023
15. *Reducing ensemble averaging for mechanistic insight in electrocatalysis*, Indiana State University, Department of Chemistry and Physics, invited seminar, Terre Haute, IN, September 5, 2023
14. *Tracking reaction intermediates in electrocatalysis with SERS microscopy*, University of Mississippi, Department of Chemistry, invited seminar, Oxford, MS, February 9, 2023
13. *Plasmons in electrocatalysis*, University of Notre Dame, Electrochemical Society Student Chapter, invited seminar, Notre Dame, IN, October 12, 2022
12. *Using plasmonics to measure and enhance electrocatalysis*, University of Iowa, Department of Chemistry, invited seminar, Iowa City, IA, March 31, 2022
11. *Using light to study and enhance electrochemistry*, University of Louisville, Society of Undergraduate Chemistry Students, invited seminar, Louisville, KY, March 7, 2022
10. *Vibrational microscopy*, Southwestern University, Department of Chemistry, invited seminar, Georgetown, TX, March 23, 2021
9. *Energy conversion and storage at the nanoscale*, University of Louisville, Society of Undergraduate Chemistry Students, invited seminar, Louisville, KY, March 15, 2021
8. *Photovoltages in plasmonic electrocatalysis*, Eastern Kentucky University, Department of Chemistry, invited seminar, Richmond, KY, February 12, 2021
7. *Accelerating electrocatalysis with plasmons*, Western Kentucky University, Department of Chemistry, invited seminar, Bowling Green, KY, September 18, 2020
6. *Synergy between nanoplasmonics and electrochemistry*, Brandeis University, Department of Chemistry, invited seminar, Waltham, MA, December 9, 2019
5. *Synergy between nanoplasmonics and electrochemistry*, University of Louisville, Department of Chemistry, invited seminar, Louisville, KY, November 21, 2019
4. *Synergy between nanoplasmonics and electrochemistry*, Oak Ridge National Laboratory, invited seminar, Oak Ridge, TN, November 18, 2019
3. *Watching chemistry at the nanoscale with in situ SERS microscopy*, Sandia National Laboratories, invited seminar, Albuquerque, NM, April 15, 2019
2. *Watching chemistry at the nanoscale with SERS microscopy*, Marquette University, Department of Chemistry, invited seminar, Milwaukee, WI, January 14, 2019

1. *Watching chemistry at the nanoscale with SERS microscopy*, Mississippi State University, Department of Chemistry, invited seminar, Mississippi State, MS, November 29, 2018

#### INVITED CONFERENCE PRESENTATIONS

7. *Time-resolved spectroelectrochemistry on noble metal nanostructures*, Gordon Research Seminar, Noble Metal Nanoparticles, invited keynote address, South Hadley, MA, June 15, 2024
6. *Local heating, hot charge carrier, and solvent effects in plasmon-assisted electrochemistry*, Gordon Research Conference, Electrochemistry, invited talk, Ventura, CA, January 8, 2024
5. *Measuring the temporal evolution of surface intermediates in electrocatalysis*, ECS National Meeting, invited talk, Boston, MA, May 31, 2023
4. *Tracking surface intermediates in electrocatalysis with time-resolved electrochemical SERS microscopy*, ACS National Meeting, invited talk, Indianapolis, IN, March 28, 2023
3. *Plasmon-enhanced electrochemistry in nonaqueous solvent*, SciX Conference, Surface Plasmon Resonance (Plasmonics), invited talk, Covington, KY, October 3, 2022
2. *Tracking reaction intermediates in electrocatalysis with high spatiotemporal resolution*, ACS National Meeting, invited talk, Chicago, IL, August 24, 2022
1. *Boosting electrocatalytic activity with plasmonic electrodes*, BK 21 Four International Symposium: Materials for Solar Energy Harvesting & Utilization, Yeungnam University, invited virtual oral presentation, Gyeongsan, South Korea, January 21, 2021

#### CONTRIBUTED PRESENTATIONS

16. *Plasmon-enhanced electrochemistry in nonaqueous solvents*, Gordon Research Conference, Noble Metal Nanoparticles, poster, South Hadley, MA, June 16-21, 2024
15. *Probing local environments and the dynamics of electrocatalytic CO<sub>2</sub> reduction in acetonitrile with spatiotemporally-resolved SERS spectroscopy*, Gordon Research Conference, Electrochemistry, poster, Ventura, CA, September 11-16, 2022
14. *CO<sub>2</sub> Reduction in Acetonitrile Enhanced by Electrolyte-assisted Mass Transport of Water*, ACS Southeastern Regional Meeting, oral presentation, Birmingham, AL, November 10, 2021
13. *Enhancing laboratory preparation with Perusall*, University of Louisville, Seminar on Teaching for New Faculty, poster, Louisville, KY, April 7, 2021
12. *Photosynthesis in Photosystem II-Plasmonic Hybrid Photocatalysts*, Gordon Research Conference, Renewable Energy: Solar Fuels, poster, Ventura, CA, January 28-February 2, 2017

11. *Structural Analysis of the Oxygen Evolving Complex Using Low Frequency SERS*, International Symposium on Molecular Spectroscopy, oral presentation, Champaign-Urbana, IL, June 21, 2017
10. *Probing Nanoelectrochemistry with Optical Microscopy*, ACS National Meeting, oral presentation, Philadelphia, PA, August 23, 2016
9. *Optical Readouts of Nanoelectrochemistry on Plasmonic Electrodes*, Philadelphia Electrochemical Society Symposium, poster, Drexel University, Philadelphia, PA, April 28, 2016
8. *Spectroelectrochemical Microscopy on Plasmonic Nanoparticle Electrodes*, MRS Spring Meeting, poster, Phoenix, AZ, March 28-April 1, 2016
7. *Plasmon-assisted Electrochemistry*, Temple Materials Institute Inaugural Meeting, poster, Philadelphia, PA, March 1, 2016
6. *Optical Readouts of Electrochemistry on Plasmonic Nanoparticle Electrodes*, Nano Portfolio Program, oral presentation, The University of Texas at Austin, Austin, TX, December 2015
  - Won oral presentation competition
5. *Electrochemistry on Plasmonic Nanoparticle Electrodes*, ACS National Meeting, oral presentation, Denver, CO, March 22-26, 2015
4. *Plasmon-mediated electrochemical reactions*, Gordon Research Conference: Plasmonics, poster, Newry, ME, July 6-11, 2014
3. *Visualizing Site-Specific Redox Potentials on the Surface of Plasmonic Nanoparticles*, Nano Night annual poster session, Center for Nano- and Molecular Science, The University of Texas at Austin, Austin, TX, March 26, 2014
2. *Visualizing Site-Specific Redox Potentials on the Surface of Plasmonic Nanoparticles*, 2014 CEC Annual Workshop on Electrochemistry, poster, Austin, TX, February 8-9, 2014
1. *Electron transfer rates of Cobalt (III) tris(1,10-phenanthroline)*, Analytical Chemistry Award, poster, Iowa City, IA, May 2009

#### CO-AUTHORED PRESENTATIONS

20. A. Kaur and A.J. Wilson. “*Investigating the role of electrolyte cations on CO intermediate formation in electrocatalytic CO<sub>2</sub> reduction*,” Graduate Student Regional Research Conference, poster, Louisville, KY, March 28, 2024
  - Best Poster Presentation Award
19. A. Kaur and A.J. Wilson. “*Investigating the role of electrolyte cations on CO intermediate formation in electrocatalytic CO<sub>2</sub> reduction*,” Graduate Student Regional Research Conference, oral presentation, Louisville, KY, March 28, 2024

18. F. Mufoyongo and A.J. Wilson. “*Enhancing ammonium synthesis from nitrate with electrocatalysis in a magnetic field,*” Graduate Student Regional Research Conference, poster, Louisville, KY, March 28, 2024
17. F. Mufoyongo and A.J. Wilson. “*Enhancing ammonium synthesis from nitrate with electrocatalysis in a magnetic field,*” Graduate Student Regional Research Conference, oral presentation, Louisville, KY, March 28, 2024
16. M. Al-Amin, J.V. Hemmer, P.B. Joshi, K. Fogelman, A.J. Wilson. “*Understanding the origin and effect of local heating in plasmon-assisted electrochemistry,*” ACS National Meeting, oral presentation, New Orleans, LA, March 20, 2024
15. N. Karki and A.J. Wilson. “*Enhancing CO:H<sub>2</sub> selectivity in CO<sub>2</sub> electroreduction with an external magnetic field,*” ACS National Meeting, oral presentation, New Orleans, LA, March 20, 2024
14. N. Karki and A.J. Wilson. “*Enhancing CO:H<sub>2</sub> selectivity in CO<sub>2</sub> electroreduction with an external magnetic field,*” Sci-Mix, ACS National Meeting, poster, New Orleans, LA, March 18, 2024
13. N. Karki and A.J. Wilson. “*Magnetic field-induced modulation of the ratio of CO:H<sub>2</sub> in electrocatalytic CO<sub>2</sub> reduction,*” ACS Southeastern Regional Meeting, oral presentation, Durham, NC, October 26, 2023
12. J. Adkins<sup>‡</sup> and A.J. Wilson. “*Directing the size and dispersity of silver nanoparticles with kudzu extracts,*” Undergraduate Arts & Research Showcase, poster, Louisville, KY, April 21, 2023
11. N. Karki and A.J. Wilson. “*Tuning the selectivity of electrocatalytic CO<sub>2</sub> reduction with an external magnetic field,*” ACS Energy and Fuels Student Travel Award competition, poster, Indianapolis, IN, March 28, 2023
10. N. Karki and A.J. Wilson. “*Tuning the selectivity of electrocatalytic CO<sub>2</sub> reduction with an external magnetic field,*” ACS National Meeting, oral presentation, Indianapolis, IN, March 27, 2023
9. P.B. Joshi and A.J. Wilson. “*Improving plasmonic enhancement in electrochemistry using nonaqueous solvents,*” ACS National Meeting, poster, Indianapolis, IN, March 27, 2023
8. J. Adkins<sup>‡</sup> and A.J. Wilson. “*Synthesis of silver nanoparticles using kudzu extract,*” ACC Meeting of the Minds Undergraduate Research Conference, oral presentation, Blacksburg, VA, March 25, 2023
7. N. Karki and A.J. Wilson. “*Effects of an external magnetic field in electrocatalytic CO<sub>2</sub> reduction,*” Graduate Student Regional Research Conference, poster, Louisville, KY, March 23, 2023

6. J.V. Hemmer, P.B. Joshi, A.J. Wilson. “*Measuring intermediates of electrochemical CO<sub>2</sub> reduction with spatially and temporally resolved SERS spectroscopy*,” Graduate Student Regional Research Conference, poster, Louisville, KY, March 23, 2023
5. M. Al-Amin and A.J. Wilson. “*Isolation and quantification of photothermal heating in plasmon-enhanced electrochemistry*,” Graduate Student Regional Research Conference, poster, Louisville, KY, March 23, 2023
4. N. Karki and A.J. Wilson. “*Effects of an external magnetic field in electrocatalytic CO<sub>2</sub> reduction*,” Graduate Student Regional Research Conference, oral presentation, Louisville, KY, March 22, 2023
3. P.B. Joshi and A.J. Wilson. “*Plasmonics for understanding and enhancing electrochemistry in nonaqueous solvent*,” Midwest Universities Analytical Chemistry Conference, poster, Cincinnati, OH, October 28, 2022
  - Best Poster Award
2. P.B. Joshi and A.J. Wilson. “*Engineering the local environment and mass transport of proton donors to enhance proton-coupled electrochemical reactions*,” ACS National Meeting, oral presentation, Chicago, IL, August 24, 2022
1. J. Adkins<sup>‡</sup> and A.J. Wilson. “*Synthesis of silver nanoparticles using plant-based extract*,” Summer Research Showcase, poster, Louisville, KY, August 5, 2022

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## TEACHING EXPERIENCE

### *University of Louisville*

- **Chem 625**, Advanced Analytical Chemistry F22, S24
- **Chem 426**, Instrumental and Statistical Analysis Laboratory – WR F22–F24
- **Chem 620**, Optical Spectrochemical Methods of Analysis S22, F24
- **Chem 691/692**, Research S21–F24
- **Chem 391/392/491/492**, Undergraduate Research – CUE S21–S24
- **Chem 527**, Introduction to Separations and Spectroscopy – WR F20, F21

### *Temple University*

- **Chem 8300**, Optical Spectroscopy and Microscopy S16

### *University of Texas at Austin*

- **Chemistry 455**, Fundamentals of Analytical Chemistry S13, S12
- **Chemistry 456**, Analytical Chemistry F11, S12, F12
- **Chemistry 302**, Principles of Chemistry II Su12
- **Chemistry 376K**, Advanced Analytical Chemistry S11
- **Chemistry 456**, Analytical Chemistry Laboratory F10

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## RESEARCH MENTORING

### Graduate students

- Md Al Amin, November 2020 – present
  - Graduate Student Council Travel Award, S24
- Nawaraj Karki, January 2021 – present

- Graduate Student Council Travel Award, S23 & F23
- Outstanding Chemistry Student Award, Louisville ACS Local Section, 2023
- Chemistry Graduate Students Association, President, 2023-2024
- ACS, Energy and Fuels Division Travel Award, S24
- Dorothy Gibson Memorial Fellowship, 2024-2025
- Johann Hemmer, December 2022 – present
  - Most Auspicious First Year Award, UofL Chemistry Department, 2023
  - Chemistry Graduate Students Association, Vice President, 2023-2024
  - Best Laboratory Graduate Teaching Assistant Award, 2024
- Amandeep Kaur, May 2023 – present
  - 2024 GSRRC best poster presentation award
- Fredrick Mufoyongo, May 2023 – present
- Amanda Borden, January 2024 – present

### High school students

- Luna Asbell, May 2024 – August 2024

### Alumni

- Kyle Barnett, January 2021 – April 2021 (undergraduate researcher)
- Virginia Noe, August 2021 – December 2021 (undergraduate researcher)
  - 2022 Summer Research Opportunity Program (declined)
- Hoang Gia An Tran, June 2021 – April 2022 (undergraduate researcher)
  - Awarded an EVPRI Undergraduate Research Scholar Grant, 8/9/2021-8/10/2022
  - University Fellow, University of Louisville Graduate School, 2022
- Jaley Adkins, January 2022 – May 2023 (undergraduate researcher)
  - 2022 Summer Research Opportunity Program
  - 2023 ACC Meeting of the Minds Conference
- Dr. Padmanabh B. Joshi, May 2021 – July 2023 (postdoctoral researcher)
  - 2022 Midwest Universities Analytical Chemistry Conference best poster award
- Ayan Abdi, January 2023 – December 2023 (undergraduate researcher)
  - 2023 Summer Research Opportunity Program (declined)
- Jacob Long, January 2024 – April 2024 (undergraduate researcher)
- Sam Shircliff, January 2024 – April 2024 (undergraduate researcher)
- Colin Ackerman, January 2024 – April 2024 (undergraduate researcher)

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### SERVICE

11. Director, Graduate Admissions, Recruitment, and Appeals, Department of Chemistry, University of Louisville, Fall 2024 – present
10. Past Chair, Electrochemical Society Mid-America Section, 2023 – 2025
9. Chair, Electrochemical Society Mid-America Section, 2021 – 2023
8. Member, Lab Fees Committee, Department of Chemistry, University of Louisville, Fall 2021 – 2024
7. Chemistry Representative, Department Teaching Evaluation Program, College of Arts & Sciences, University of Louisville, AY21-22

6. Director, Undergraduate Research, Department of Chemistry, University of Louisville, Spring 2021 – Spring 2024
5. Member, Graduate Admissions Committee, Department of Chemistry, University of Louisville, Fall 2020 – Spring 2024
4. Member, Stockroom Manager Search Committee, Department of Chemistry, University of Louisville, Fall 2020
3. Committee member of 25 Ph.D./M.S. students, 2020 – present
2. Reviewer Board, *Nanomaterials*, 2020 – present
1. Invited peer reviewer: *National Science Foundation*, *Department of Energy*, *American Chemical Society Petroleum Research Fund*, *Journal of the American Chemical Society*, *ACS Energy Letters*, *Science Advances*, *ACS Catalysis*, *Journal of Catalysis*, *Nature Communications*, *Nano Letters*, *Nature Reviews Chemistry*, *Advanced Materials*, *ACS Photonics*, *ACS Nano*, *ACS Applied Materials & Interfaces*, *Journal of Physical Chemistry*, *Journal of Chemical Physics*, *Analytical Chemistry*, *Current Opinion in Electrochemistry*, *ACS Sustainable Chemistry & Engineering*, *MRS Communications*, *Laser & Photonics Reviews*, *Sensors*, *Nanomaterials*, *Catalysts*, *Leverhulme Trust (UK)*, *Micromachines*

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## PROFESSIONAL SOCIETIES

- Electrochemical Society (ECS)
- American Chemical Society (ACS)
- The Society for Electroanalytical Chemistry (SEAC)
- Kentucky Academy of Sciences (KAS)

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## OUTREACH

- Judge, Science Fair, Fairdale High School, Louisville, KY, May 17, 2024
- Poster session coordinator, Fairdale High School, Louisville, KY, February 2, 2024
- Outreach experiment coordinator, “Synthesis and optical characterization of Ag and Au nanoparticles,” Fairdale High School, Louisville, KY, October 25, 2023
- Judge, Science Fair, Fairdale High School, Louisville, KY, May 23, 2023
- The Cardinal Edge, “Pasta, Pizza, and Profs,” University of Louisville, March 21, 2023
- First-Gen Cards Networking Luncheon, University of Louisville, February 28, 2023
- Invited talk, University of Louisville, Society of Undergraduate Chemistry Students, Louisville, KY, February 6, 2023
- Invited talk, Undergraduate Research Forum, Alpha Epsilon Delta, University of Louisville, December 1, 2022
- Outreach experiment coordinator, “Synthesis and optical characterization of Ag nanoparticles,” Fairdale High School, Louisville, KY, November 17, 2022
- Louis Stokes Alliance for Minority Participation, Speed Networking for Pre-Professional and Graduate Students, University of Louisville, September 27, 2022
- Guest lecturer, “Nanomaterials, microscopy, and chemistry,” Fairdale High School, Louisville, KY, March 25, 2022

- Invited talk, Multicultural Association of Pre-Health Students, University of Louisville, March 21, 2022
- Chemistry representative, Cardinal Preview Day, University of Louisville, October 16, 2021
- Panelist, Undergraduate Research Forum, Alpha Epsilon Delta, University of Louisville, September 16, 2021
- Seminar, “Undergraduate Research in Chemistry,” University of Louisville, August 25, 2021
- Judge, Graduate Student Regional Research Conference, University of Louisville, Louisville, KY, March 11, 2021
- High School STEM Teacher-University Researcher Network, Collaborative initiative between the National Science Teachers Association, the Tri-Services (Army, Navy, Air Force), and UofL’s College of Education and Human Development, October 8, 2020, virtual event
- Parkland Community College research shadow mentor, Younger Chemists Committee, East Central Illinois ACS Local Section, Urbana, IL, July 30, 2018
- Post-doc career panelist, Younger Chemists Committee, East Central Illinois ACS Local Section, Urbana, IL, May 15, 2018
- Committee member, Physical Chemistry Seminars, UIUC, 2017-2018
- Station leader, Women’s Chemist Committee Day Camp, “Nanochemistry,” Urbana, IL, June 24 & July 8, 2017
- Light/Matter Interactions at the Nano-Bio Interface, workshop participant, University of Illinois at Urbana-Champaign, IL, November 28-29, 2016
- Chemistry After Dark, “Probing Nanoelectrochemistry with Optical Microscopy,” Temple University, Philadelphia, PA, August 26, 2016, oral presentation
- Welch Summer Scholar Program, “Metal Nanoparticles and Color”, Austin, TX, July 3, 2014, oral presentation
- GirlStart Conference in STEM,
  - “Chemistry in Action”, Austin, TX, March 26, 2014
  - “Exploring the Nanoworld: How do we “see” what we cannot see?”, Austin, TX, March 26, 2011
- Explore UT volunteer, Superabsorbent polymer demonstration, K-12, Austin, TX, 2011
- Judge
  - East Central Illinois ACS Undergraduate Research Conference, Urbana, IL, October 14, 2017
  - Rao Prize Competition, International Symposium on Molecular Spectroscopy, UIUC, Urbana, IL, 2017
  - Undergraduate Research Symposium, UIUC, Urbana, IL, April 27, 2017
  - Undergraduate Research Symposium, Temple University: College of Science & Technology, Philadelphia, PA, September 16, 2016
  - Undergraduate Research Symposium, Temple University: College of Science & Technology, Philadelphia, PA, September 17, 2015
  - “Safety Madness”, UT Austin, 2014