Stephen A. Lee

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Google Scholar: https://scholar.google.com/citations?user=M24HC8IAAAAJ&hl
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Academic Positions

Assistant Professor of Chemistry (August 2024)
Department of Chemistry, University of Miami, Coral Gables, Florida

Postdoctoral Research Associate (July 2019–June 2024)
Department of Chemistry, Rice University, Houston, TX
Department of Chemistry, University of Illinois Urbana-Champaign
Supervisors: Stephan Link and Christy F. Landes

Education

Ph.D., 2019	University of Michigan	Ann Arbor, MI	Chemistry
M.S., 2016	University of Michigan	Ann Arbor, MI	Chemistry
B.S., 2014	Sam Houston State University	Huntsville, TX	Chemistry & Biology
A.A., 2011	San Jacinto College	Houston, TX	General Studies

Research Experience

University of Illinois, January 2024–June 2024, Advisors: Stephan Link/Christy F. Landes
Elucidating the photophysics of carbon nanodots. Single-particle spectroscopy of solvothermally synthesized carbon nanodots.

Rice University, July 2019–June 2023, Postdoctoral Fellow, Advisor: Stephan Link
Chemical interface damping of plasmon resonances to quantify direct charge transfer in hybrid nanoparticles. Single-particle scattering, photoluminescence, absorption spectroscopy, and femtosecond time-resolved photoluminescence of plasmonic nanoparticles.

University of Michigan, June 2014–May 2019, Graduate Student Researcher, Advisor: Julie S. Biteen
Thesis: Enhanced, live-cell, super-resolution imaging and single-molecule emission spectrum reshaping.

Sam Houston State University, Undergraduate Thesis, Advisor: David E. Thompson
Thesis: Developing figures of merit for using surface-enhanced Raman spectroscopy for detection of cyanide metabolite 2-aminothiazoline-4-carboxylic acid.

Sam Houston State University, Student Lab Research Assistant, Advisor: Ilona Petrikovics
Pharmacological studies into dimethyl trisulfide as a cyanide poisoning antidote. HPLC methodology and animal pharmacological studies.

Honors and Awards

University of Michigan

2018	Department of Chemistry Dissertation Fellowship
2018	Rackham Graduate Student Research Grant
2018	PPG Graduate Summer Research Fellowship
2017	Margaret & Herman Sokol Graduate Summer Research Fellowship
2015	Rackham Graduate Student Research Grant (pre-candidate)
2015	NSF-GRFP Honorable Mention
2014	Dow Summer Research Fellowship

Publications (564 Citations, h-index 14, Google Scholar)

22. Yuan, T.; Guo, X.; Lee, S. A.; Brasel, S.; Chakraborty, A.; Masiello, D. J.; Link, S. Chemical Interface Damping Revealed by Single-Particle Absorption Spectroscopy. *ACS Nano*, **2025**, *19*, 10277-10288.
21. Shiratori, K.; West, C. A.; Jia, Z.; Lee, S. A.; Cook, E.; Murphy, C.; Landes, C. F.; Link, S. Machine Learning to Adaptively Predict Gold Nanorod Sizes on Different Substrates. *J. Phys. Chem. C*. **2025**, *129*, 5913-5920.
20. Ostovar, B.*; Lee, S. A.*; Mehmood, A.; Farrell, K.; Searles, E. K.; Bourgeois, B.; Chiang, W.-Y.; Misiura, A.; Gross, N.; Al-Zubeidi, A.; Dionne, J. A.; Landes, C. F.; Zanni, M.; Levine, B. G.; Link, S. Efficient hot-electron transfer through a direct plasmon-mediated pathway. *Science Adv.* **2024**, *10*, eadp3353.
19. Carlin, C. C.; Dai, A. X.; Al-Zubeidi, A.; Simmerman, E. M.; Oh, H.; Gross, N.; Lee, S. A.; Link, S.; Landes, C. F.; da Jornada, F. H.; Dionne, J. A. Nanoscale and ultrafast *in situ* techniques to probe plasmon photocatalysis. *Chem. Phys. Rev.* **2023**, *4*, 041309.
18. Oh, H.; Searles, E. K.; Chatterjee, S.; Jia, Z.; Lee, S. A.; Link, S.; Landes, C. F. Plasmon energy transfer driven by electrochemical tuning of methylene blue on single gold nanorods. *ACS Nano* **2023**, *17*, 18280–18289.
17. Lee, S. A.*; Kuhs, C.*; Searles, E. K.; Everitt, H. O.; Landes, C. F.; Link, S. *d*-band hole lifetimes in gold nanoparticles revealed by femtosecond time-resolved emission upconversion microscopy. *Nano Lett.* **2023**, *23*, 3501-3506.
16. Searles, E. K.; Gomez, E.; Lee, S. A.; Ostovar, B.; Link, S.; Landes, C. F. Single-particle photoluminescence under applied potentials shows increased modulation compared to dark-field scattering. *J. Phys. Chem. Lett.* **2023**, *14*, 318–325
15. Al-Zubeidi, A.; Ostovar, B.; Carlin, C. C.; Li, B.-C.; Chiang, W.-Y.; Gross, N.; Searles, E. K.; Lee, S. A.; Chakraborty, A.; Roberts, S. T.; Dionne, J. A.; Rossky, P. J.; Landes, C. F.; Link, S. Plasmons generate solvated electrons. *Proc. Natl. Acad. Sci.* **2023**, *120*, e2217035120
14. West, C. A.*; Lee, S. A.*; Shooter, J.; Searles, E. K.; Goldwyn, H. J.; Willets, K. A.; Link, S.; Masiello, D. J. Nonlinear effects in single-particle photothermal imaging. *J. Chem. Phys.* **2023**, *158*, 024202.
13. Lee, S. A.; Ostovar, B.; Landes, C. F.; and Link, S. Spectroscopic signatures of plasmon induced charge transfer. *J. Chem. Phys.*, **2022**, *156*, 064702.
12. Cai, Y.-Y.; Tauzin, L. J.; Ostovar, B.; Lee, S. A.; Link, S. light emission from plasmonic nanostructures. *J. Chem. Phys.* **2021**, *155*, 060901.
11. Hosseini Jebeli, S. A.; West, C. A.; Lee, S. A.; Goldwyn, H. J.; Bilchak, C. R.; Fakhraai, Z.; Willets, K. A.; Link, S.; Masiello, D. J. Wavelength-dependent photothermal imaging probes nanoscale temperature differences among subdiffraction coupled plasmonic nanorods. *Nano Lett.* **2021**, *21*, 5386–5393.
10. Lee, S. A. and Link, S. Chemical interface damping of surface plasmon resonances. *Acc. Chem. Res.* **2021**, *54*, 1950–1960.
9. Ostovar, B.; Cai, Y.-Y.; Tauzin, L. J.; Lee, S. A.; Ahmadivand, A.; Zhang, R.; Nordlander, P.; Link, S. Increased intraband transitions in smaller gold nanorods enhance light emission. *ACS Nano* **2020,** *14*, 15757-15765.
8. Lee, S. A. and Biteen, J. S. Spectral reshaping of single dye molecules coupled to single plasmonic nanoparticles. *J. Phys. Chem. Lett.* **2019**, *10*, 5764–5769.
7. Isaacoff, B. P.; Li, Y.; Lee, S. A.; Biteen, J. S. SMALL-LABS: an algorithm for localizing and measuring single molecules in the presence of obscuring backgrounds. *Biophys. J.* **2019**, *116*, 975-982.
6. Hinton D.; Ng, J.; Sun, J.; Lee, S. A.; Saikin, S.; Logsdon, J.; White, D.; Marquard, A.; Cavell, A.; Knapper, K.; Lupo, K.; Wasielewski, M.; Aspuru-Guzik, A.; Biteen, J. S.; Gopalan,

P.; Goldsmith, R. Mapping forbidden emission to structure in self-assembled organic nanoparticles. *J. Am. Chem. Soc.* **2018**, *140*, 15827-15841.

5. Lee, S. A. and Biteen, J. S. Interplay of nanoparticle resonance frequency and array surface coverage in live-cell plasmon-enhanced single-molecule imaging. *J. Phys. Chem. C.* **2018**, *122*, 5705–5709.
4. Kovacs, K.; Duke, A.; Shifflet, M.; Winner, B.; Lee, S. A.; Rockwood, G.; Petrikovics, I. Parenteral dosage form development and testing of dimethyl trisulfide, as an antidote candidate to combat cyanide intoxication. *Pharm. Dev. And Tech.,* **2017**, *22***,** 958–963.
3. Lee, S. A.; Ponjavic, A.; Siv, C.; Lee, S. F.; Biteen, J. S. Nanoscopic cellular imaging: confinement broadens understanding. *ACS Nano*, **2016**, *10*, 8143–8153.
2. De Silva, D.; Lee, S. Duke, A.; Angalakurthi, S.; Chou, C.-E.; Ebrahimpour, A.; Thompson, D. E.; Petrikovics, I.; Intravascular residence time determination for the cyanide antidote dimethyl trisulfide in rat by using liquid-liquid extraction coupled with high performance liquid chromatography. *J. Anal. Meth. Chem.,* **2016**, *2016*, 6546475.
1. Kovacs, K.; Ancha, M.; Jane, M.; Lee, S. A.; Angalakurthi, S.; Negrito, M.; Rasheed, S.; Nwaneri, A.; Petrikovics I. Identification, solubility enhancement and in vivo testing of a cyanide antidote candidate. *Euro. J. of Pharm. Sci*., **2013**, *49*, 352–358.

* Equal contribution

Teaching Experience

University of Michigan (Graduate Student Instructor) 2014–2018

CHEM 125 General Chemistry Laboratory; CHEM 130 General Chemistry Discussion; CHEM 211 Organic Chemistry Laboratory; CHEM 260 Physical Chemistry Discussion; CHEM 483 Physical/Analytical Laboratory

Discussions: Prepared and lectured over discussion material and administered evaluations of students' subject learning.

Laboratories: Facilitated learning of basic laboratory techniques and safety practices (CHEM 125) and directed original research projects and use of advanced analytical instruments (CHEM 483).

Sam Houston State University

Advanced Inorganic Guest Lecturer Fall 2013

Prepared and presented lecture material covering Brønsted-Lowry, Lewis, and Arrhenius acid/base theory, and coordination spectroscopy.

Sam Houston State University Student Advising and Mentoring Center 2010–2012

Study Skills Instructor

Prepared material and lectured to students on how to have excellent study skills and habits in order to excel in school and life.

Graduate Student Mentoring

I have had the great pleasure to mentor many outstanding graduate students including Dr. Behnaz Ostovar, Dr. Alexander Al-Zubeidi, Dr. Seyyed Ali Hosseini Jebeli, Dr. Emily Searles, Katsuya Shiratori, Eric Gomez, Sadie Brasel, Autumn Bruncz, Dongyu Fan, and Zhenyang Jia. These mentoring opportunities included *instrument training and building, writing, presenting, and data analysis*.

Outreach

2021 Rice University Mentor for Research Experience for Teachers with Rafferty Deeds
2018–2022 Co-Chair for Gordon Research Seminar on Noble Metal Nanoparticles with Melissa King
2018–2019 ACS/AACT Science Coach – Allen Park High School with Mary McMaster
2018–2019 University of Michigan Chemistry Graduate Student Mentorship Program

2017 Mentor for NSF-Research Experience for Undergraduates with Katie Perrotta
2015–2019 University of Michigan – Chemistry Graduate Student Recruiter

Collaborations

2019–2024: DMREF – Optical Control of Thermal Metamaterials via Plasmonic Hybridization and Interferences. Collaboration with David Masiello and Katherine Willets.
http://faculty.washington.edu/masiello/DMREF/
2021–2024: NSF CCI: Center for Adopting Flaws as Features. Collaboration with Christy Landes, Jennifer Dionne, Charlisa Daniels, Martin Gruebele, Ben Levine, Sean Roberts, Peter Rossky, and Martin Zani. https://nsfcaff.org/

Presentations

Independent Career

Lee, S. A. Quantifying femtosecond emission lifetimes from individual emitters. *ACS Spring Meeting*, March **2025**, San Diego, CA. (Invited Oral Presentation, Session Chair)

Lee, S. A. Understanding and controlling emission from individual and coupled emitters. *University of Miami, Department of Physics*, October **2024**, Coral Gables, FL.

Postdoctoral

Lee, S. A.; Kuhs, C.; Searles, E. K.; Everitt, H. O.; Landes, C. F.; Link, S. Femtosecond time-resolved emission spectroscopy reveals emission mechanism in single gold nanorods. *Gordon Research Conference/Seminar: Noble Metal Nanoparticles*, June **2024**, South Hadley, MA.

Lee, S. A.; Kuhs, C.; Searles, E. K.; Everitt, H. O.; Landes, C. F.; Link, S. Hot electrons generated through Auger scattering dominate charge transfer under interband excitation. *Wintergreen Meeting of Physical Chemists*, Spetember **2023**, Wintergreen, VA. (Invited Oral Presentation and Discussion Leader)

Lee, S. A.; Kuhs, C.; Searles, E. K.; Everitt, H. O.; Landes, C. F.; Link, S. Time-resolved emission upconversion microscopy reveals photoluminescence dynamics in gold nanoparticles. *ACS Fall Meeting*, August **2023**, San Fransisco, CA. (Oral Presentation and Session Chair)

Lee, S. A.; Kuhs, C.; Searles, E. K.; Everitt, H. O.; Landes, C. F.; Link, S. d-band hole dynamics in gold nanoparticles measured with time-resolved emission upconversion microscopy. *The International Conference on Surface Plasmons Photonics*, May **2023**, Houston, TX. (Oral Presentation)

Lee, S. A.; Ostovar, B.; Link, S. Chemical interface damping of plasmonic nanoparticles. *ACS Fall Meeting*, August **2022**, Chicago, IL. (Oral Presentation and Session Chair)

Lee, S. A.; Ostovar, B.; Link, S. Efficient hot-electron transfer *via* a direct plasmon-mediated pathway. *Gordon Research Conference/Seminar: Plasmonics and Nanophotonics*, July **2022**, Newry, ME. (Poster Presentation and Discussion Leader)

Lee, S. A.; Ostovar, B.; Link, S. Efficient hot-electron transfer *via* a direct plasmon-mediated pathway. *Gordon Research Conference/Seminar: Noble Metal Nanoparticles* June **2022**, South Hadley, MA. (Poster Presentation and Seminar Chair)

Lee, S. A.; Ostovar, B.; Link, S. Chemical interface damping of plasmonic nanoparticles. *Wintergreen Meeting of Physical Chemists*, September **2021**, Wintergreen, VA. (Invited Oral Presentation)

Lee, S. A.; Link, S. Chemical Interface Damping. *METANANO*, September **2021**, Tbilisi, Georgia. (Keynote Oral Presentation)

Lee, S. A.; Ostovar, B.; Link, S. Spectroscopic signatures of coherent plasmon-induced charge separation in gold nanorods on metal-oxide semiconductors. *ACS National Meeting*, August **2021**, Atlanta, GA. (Selected for an Oral Presentation)

Lee, S. A.; Ostovar, B.; Link, S. Spectroscopic signatures of plasmon-induced charge separation in gold nanorods on metal-oxide semiconductors. *ACS Colloids and Surface Science Symposium*, June **2021**, Houston, TX. (Selected for an Oral Presentation)

Lee, S. A.; Ostovar, B.; Link, S. Spectroscopic signatures of plasmon-induced charge separation in gold nanorods on metal-oxide semiconductors. *PITTCON*, March **2021**, New Orleans, LA. (Selected for an Oral Presentation)

Graduate

Lee, S. A.; Isaacoff, B. P.; Biteen, J. S. Hyperspectral PAINT super-resolution imaging of single-molecule emission spectrum reshaping by gold nanoparticles. *Gordon Research Seminar: Single Molecule Approaches to Biology*, July **2018**, Mount Snow, VA. (Poster Presentation)

Lee, S. A.; Isaacoff, B. P.; Biteen, J. S. Single-molecule emission spectrum reshaping and all-fluorescence nanothermometry using gold nanoparticles. *Gordon Research Conferences: Noble Metal Nanoparticles*, June **2018**, South Hadley, MA. (Oral presentation)

Lee, S. A.; Biteen, J. S. Enhancing by design: gold nanoparticle arrays for enhanced live-cell fluorescence imaging. *UM Karle Symposium*, August **2017**, Ann Arbor, MI. (Selected for an oral presentation)

Lee, S. A.; Biteen, J. S. Plasmon-enhanced single-molecule imaging in live bacteria. *Sam Houston State University*, March **2017**, Huntsville, TX. (Invited Oral Presentation)

Lee, S. A.; Biteen, J. S. Gold nanoparticle arrays for plasmon-enhanced single-molecule fluorescence in live bacteria. *ACS National Meeting*, August **2016**, Philadelphia, PA. (Selected for an oral presentation)

Lee, S. A.; Flynn, J. D., Biteen, J. S. Metal nanoprisms for plasmon-enhanced single-molecule fluorescence in live bacteria. *Gordon Research Conferences: Noble Metal Nanoparticles*, June **2016**, South Hadley, MA. (Poster Presentation)

Lee, S. A.; Flynn, J. D., Biteen, J. S. Metal nanoprisms for plasmon-enhanced single-molecule fluorescence in live bacteria. *ACS CERM*, May **2016**, Covington, KE. (Poster Presentation)

Undergraduate

Thompson, D. E.; Lee, S. A.; Miller, E. N.; Gray, K. R.; McNeill, X. J. Deforming gold films with patterned colloidal stamps to generate spectroscopically enhancing surfaces. *ACS National Meeting*, August **2014**, San Francisco, CA. (Poster Presentation)

Lee, S. A.; Miller, E. N.; Thompson, D. E. Developing a novel method for identifying 2-aminothiazoline-4-carboxylic acid using surface enhanced Raman spectroscopy. *SHSU Undergraduate Research Symposium*, April **2014**, Huntsville, TX. (Oral Presentation)

Lee, S. A.; De Silva, D.; Miller, E. N.; Thompson, D. E. Reaction of ATCA and 2-IT to use ATCA as a biomarker for cyanide intoxication. *ACS National Meeting*, March **2014**, Dallas TX. (Poster Presentation)

Lee, S. A.; Miller E. N.; Thompson, D. E. Developing a novel method for identifying 2-aminothiazoline-4-carboxylic acid using surface enhanced Raman spectroscopy. *ACS SWRM*, November **2013**, Waco TX. (Oral Presentation)

Lee, S. A.; Miller, E. N.; Fisher, D. M.; Jane, M. A.; Rojas, M. A.; Petrikovics, I. Use of synthetic and garlic sulfur donors to treat cyanide intoxication. *ACS SWRM*, November **2013**, Waco TX. (Poster Presentation)

Lee, S. A.; Jane, M. A.; Petrikovics, I. US Army invited in vivo cyanide antidote demonstration. November **2012**, Edgewood, MD. (Oral Presentation and Technical Demonstration)

Lee, S. A.; Shifflet, M.; Ancha, M.; Angalakurthi, S. K.; Jane, M. A.; Nwaneri, A. C.; Rasheed, S.; Kovacs, K.; Petrikovics, I. Preclinical drug formulation and animal studies in cyanide antidote development. *SHSU Undergraduate Research Symposium*, April **2012**, Huntsville, TX. (Poster Presentation)