

Chance Lander

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101 Stephenson Parkway SLSRC, Norman, OK 73019

EDUCATION

- 2021 – 2026 Ph.D., Physical Chemistry, University of Oklahoma, Norman, OK.
2016 – 2020 B.S., Biochemistry, University of Texas at Dallas, Richardson, TX.

ACADEMIC APPOINTMENT

- Summer 2023 Graduate Student Internship, LANL, Los Alamos, New Mexico.
Advisor: Dr. Yu Zhang
Fall 2021 – Present Graduate Research Assistant, University of Oklahoma, Norman, OK.
Advisor: Dr. Yihan Shao

FELLOWSHIPS & AWARDS

Spring 2025	Excellence in Graduate Research Award	University of Oklahoma
Spring 2023	Roger E. Frech Scholarship	University of Oklahoma
Spring 2023	Harwell Endowed Scholarship	University of Oklahoma
Summer 2021	Kenneth M. Nicholas Graduate Fellowship	University of Oklahoma
Fall 2016 – 2020	Academic Excellence Scholarship with Distinction	University of Texas at Dallas

RESEARCH EXPERIENCE (WITH VARIOUS COLLABORATORS)

2024 – Present	Descriptors for Chemical Reactivity in Surfaces and Metal Organic Frameworks Collaborators: Drs. Hyunho Noh (OU), Bin Wang (Tufts), Kasun Gunasooriya (OU), Yuezhi Mao (SDSU) ► Investigated scaling relations of adsorbates on metal surfaces using energy decomposition analysis, supporting older models with newer analysis techniques. ► Computationally supported hydrogen atom reactivity studies in Ce and Ti MOFs, relevant as catalytic descriptors and important for photoredox chemistry. ► Aided in the exploration of missing linker defects in Ti MOFs. EDA Scaling Relations MOF PCET
2023 - 2025	Investigation of Stereo Selectivity in Metal Catalyzed Furanosylation Reactions Collaborators: Drs. Indrajeet Sharma and Kenneth Nicholas (OU) ► Explored potential reaction mechanisms for metal catalyzed furanosylation reactions, which are important for synthesis of medicinal compounds. ► Rationalized the <i>cis</i> -selectivity in furanosylation product formation based on kinetic and thermodynamic relations. Organometallic Catalysis
2024 – 2025	Increased Photostability of Quantum Dots through Ligand Stabilization Collaborators: Dr. Yitong Dong (OU) ► Provided computational justification for the increased stabilization of perovskite quantum dots with small aromatic vs. larger aliphatic ligands. Quantum Dots Adsorption PWDFT GPW
2023 – Present	Excitonic Properties in Molecular Thin Films Collaborators: Drs. Madalina Furis (OU), Lloyd Bumm (OU), Sergei Tretiak and Yu Zhang (LANL) ► Investigated the excitonic coupling between dimers in organic semiconductor thin-films, for photovoltaic materials. ► Proposed a rationale for exciton coupling strengths in different molecular crystal materials. Excitons Molecular Crystals
2021 – Present	Organometallic Catalysts Design and Mechanistic Insight Collaborators: Dr. Kenneth Nicholas (OU) ► Proposed potential catalysts and reaction mechanisms for the decomposition of the greenhouse gas nitrous oxide. ► Provided mechanistic insight into the diperoxo to monodioxo conversion in molybdenum porphyrin species, relevant to O ₂ sequestration and oxygen atom transfer (OAT) reactions. Catalysis GHG OAT

† Indicates equal contribution.

PRE-PRINTS OR UNDER REVIEW

- (16) Sengupta, S.; Pei, Z.; **Lander, C.**; Wickizer, C.; Homma, Y.; Afashari, H.; Huo, P.; Zhang, Y.; Tretiak, S.; Bumm, L.; Furis, M.; Shao, Y. Towards a Theoretical Understanding of Excitonic Properties of Pthalocyanine Thin Films. I. Low-Temperature Exciton Absorption Spectra. *ChemRxiv* **2025**.
- (15) Londoño-Salazar, J.; Ye, G.; **Lander, C.**; Akhmedov, N. G.; Zhang, Y.; Shao, Y.; Richter-Addo, G. B. Direct Nitric Oxide Insertion into a Metalloporphyrin-Carbon Bond. *manuscript under review* **2025**.
- (14) Rong, J.; Chen, Z.; Wickizer, C.; Zhao, C.; **Lander, C.**; Zhou, X.; Haider, A.; Shao, Y.; Li, Z. A Metal-Free Universal Approach for Aromatic Radiofluorination via Arylbenziodoxolones. *manuscript under review* **2025**.

PUBLICATIONS

- (13) Altıncekiç, N. G.; **Lander, C. W.**; Yu, J.; Roslend, A.; Shao, Y.; Noh, H. Proton, Electron, and Hydrogen-Atom Transfer Thermodynamics of the Metal–Organic Framework Ti-MIL-125, Are Intrinsically Correlated to the Structural Disorder. *J. Am. Chem. Soc.* **2025**, jacs.5c10498.
- (12) DiCenso, Jesse[†]; **Lander, C.**[†]; Pei, Z.; Sengupta, S.; Le, T.; Zhang, Y.; Gunasooriya, G. T. K. K.; Wang, B.; Mao, Y.; Shao, Y. Toward an Understanding of Linear Scaling Relations through Energy Decomposition Analysis. *JACS Au* **2025**, 5, 3092–3103.
- (11) Mi, C.; Gee, G. C.; **Lander, C. W.**; Shin, D.; Atteberry, M. L.; Akhmedov, N. G.; Hidayatova, L.; DiCenso, J. D.; Yip, W. T.; Chen, B.; Shao, Y.; Dong, Y. Towards non-blinking and photostable perovskite quantum dots. *Nat Commun* **2025**, 16, 204.
- (10) Singh, S. P.; Chaudhary, U.; **Lander, C. W.**; Daroczi, A.; Shao, Y.; Sharma, I. Iron-Carbene-Mediated Catalytic Activation of Conventional Thioglycosides for Stereoselective 1,2- *cis* -Furanosylations. *ACS Catal.* **2025**, 15, 9886–9896.
- (9) Altıncekiç, N. G.; **Lander, C. W.**; Roslend, A.; Yu, J.; Shao, Y.; Noh, H. Electrochemically Determined and Structurally Justified Thermochemistry of H atom Transfer on Ti-Oxo Nodes of the Colloidal Metal–Organic Framework Ti-MIL-125. *J. Am. Chem. Soc.* **2024**, 146, 33485–33498.
- (8) Pan, X.[†]; Snyder, R.[†]; Wang, J.N.[†]; **Lander, C.**[†]; Wickizer, C.[†]; Van, R.; Chesney, A.; Xue, Y.; Mao, Y.; Mei, Y.; Pu, J.; Shao, Y. Training machine learning potentials for reactive systems: A Colab tutorial on basic models. *J Comput Chem* **2024**, 45, 638–647.
- (7) Ghosh, B.; Alber, A.; **Lander, C. W.**; Shao, Y.; Nicholas, K. M.; Sharma, I. Catalytic Stereoselective 1,2- *cis* -Furanosylations Enabled by Enynal-Derived Copper Carbenes. *ACS Catal.* **2024**, 14, 1037–1049.
- (6) Ghosh, B.; Alber, A.; **Lander, C. W.**; Shao, Y.; Nicholas, K. M.; Sharma, I. Catalytic Activation of Thioglycosides with Copper-Carbenes for Stereoselective 1,2- *Cis* -Furanosylations. *Org. Lett.* **2024**, 26, 9436–9441.
- (5) Ingram, Z. J.; **Lander, C. W.**; Oliver, M. C.; Altıncekiç, N. G.; Huang, L.; Shao, Y.; Noh, H. Hydrogen Atom Binding Energy of Structurally Well-Defined Cerium Oxide Nodes at the Metal–Organic Framework–Liquid Interfaces. *J. Phys. Chem. C* **2024**, 128, 9556–9565.
- (4) Rusmore, T. A.; **Lander, C.**; Nicholas, K. M. Reaction Pathway for the Aerobic Oxidation of Phosphines Catalyzed by Oxo-molybdenum Salen Complexes. *Eur J Inorg Chem* **2024**, 27, e202300506.
- (3) **Lander, C.**[†]; Satalkar, V.[†]; Yang, J.[†]; Pan, X.; Pei, Z.; Chatterji, A.; Liu, C.; Nicholas, K. M.; Cichewicz, R. H.; Yang, Z.; Shao, Y. Visualization of electron density changes along chemical reaction pathways. *Molecular Physics* **2023**, 121, e2113566.
- (2) Jana, A. K.; **Lander, C. W.**; Chesney, A. D.; Hansmann, U. H. E. Effect of an Amyloidogenic SARS-CoV-2 Protein Fragment on α -Synuclein Monomers and Fibrils. *J. Phys. Chem. B* **2022**, 126, 3648–3658.
- (1) Nicholas, K. M.; **Lander, C.**; Shao, Y. Computational Evaluation of Potential Molecular Catalysts for Nitrous Oxide Decomposition. *Inorg. Chem.* **2022**, 61, 14591–14605.

PRESENTATIONS

- Oral ACS Southwest Regional Meeting (2023), ACS San Diego (2025)
Poster ACS Southwest Regional Meeting (2024), ACS New Orleans (2024)

TECHNICAL SKILLS

- Software** Q-Chem, Gaussian, CP2K, VASP, PySCF, LAMMPS, ASE
Languages Python, C/C++, FORTRAN

TEACHING

- 2025 Physical Chemistry I Lecture
2025 Physical Chemistry I Lab Teaching Assistant
2021 – 2022 General Chemistry II Lab and Recitation Teaching Assistant

MEMBERSHIP AND OUTREACH

- 2022 – 2024 Graduate Student Senate, University of Oklahoma
2022 – 2024 Chemistry and Biochemistry Researchers Officer, University of Oklahoma
Secretary (2022-2023) and Undergraduate Involvement Committee Chair (2023-2024)
2022 – 2024 Graduate Student Recruitment Committee, University of Oklahoma