

JULIANNE LAMPERT

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EDUCATION

Ph.D. in Theoretical Chemistry, *Yale University*

Aug 2024–Present

Advisor: Prof. Victor S. Batista; M.S. in Chemistry conferred Mar 2026

GPA: 4.00/4.00

B.A. in Chemistry, *Washington University in St. Louis*

Aug 2020–May 2024

Minors: Materials Science and Engineering; Art History

GPA: 3.90/4.00

RESEARCH EXPERIENCE

Batista Group

Nov 2024–Present

Yale University

New Haven, CT

- Apply molecular dynamics and quantum mechanics/molecular mechanics (QM/MM) simulations to investigate proton transfer, water insertion, electron transfer, and O–O bond formation in the Photosystem II oxygen-evolving complex, connecting computational predictions with spectroscopic and kinetic experiments.
- Model iridium- and cobalt-based water-oxidation catalysts using density functional theory and collaborate with experimental researchers through the Yale Energy Sciences Institute.

Head-Marsden Group

Dec 2022–Jun 2024

Washington University in St. Louis

St. Louis, MO

- Investigated the *double d-shell effect* in transition-metal compounds using *ab initio* electronic-structure and mutual-information methods.

Merck Future Talent Program

Jun 2023–Aug 2023

Analytical Research and Development, Materials and Biophysical Characterization

Rahway, NJ

- Evaluated laser direct infrared (LDIR) chemical imaging for pharmaceutical characterization by processing hyperspectral data and quantifying spatial homogeneity in model formulations.

Sadtler Lab

Jun 2021–Dec 2022

Washington University in St. Louis

St. Louis, MO

- Synthesized and characterized transition-metal oxide catalysts for photoelectrochemical water splitting.

TEACHING EXPERIENCE

Teaching Fellow, General Chemistry II (CHEM 165), *Yale University*

Spring 2025

Teaching Fellow, General Chemistry Laboratory (CHEM 134L), *Yale University*

Fall 2024

Grading Assistant, Physical Chemistry I, *Washington University in St. Louis*

Fall 2023

Course Mentor, General Chemistry Laboratory, *Washington University in St. Louis*

Fall 2021–Fall 2024

AWARDS AND FUNDING

• **NIH Biophysics Predoctoral Graduate Fellowship**

Jun 2025

Yale University Biophysics Training Grant

New Haven, CT

Selected by the Yale Biophysics Training Grant Executive Committee; provides stipend and tuition support for the second and third years of graduate study.

• **Lindsay Helmholtz Award for Inorganic/Physical Chemistry**

May 2024

Washington University in St. Louis Department of Chemistry

St. Louis, MO

• **Highest Distinction in Chemistry**

May 2024

Washington University in St. Louis Department of Chemistry

St. Louis, MO

• **Summer Undergraduate Research Award**

Jun 2022

Washington University in St. Louis Office of Undergraduate Research

St. Louis, MO

Funded ten weeks of full-time research in the Sadtler Lab.

LEADERSHIP AND OUTREACH

Lead Organizer, Collaborative PSII Group Meetings: Coordinate an international consortium of more than ten research groups studying Photosystem II; chair weekly meetings, manage the presentation schedule, and organize twice-yearly in-person meetings.

Lead Organizer, 2026 Yale Biophysics and Structural Biology Symposium: Led planning for an all-day symposium attended by approximately 200 participants; coordinated scientific programming, a keynote lecture, graduate-student talks, a poster session, networking events, catering, and logistics for visiting international students.

American Chemical Society, New Haven Local Section: Contribute to outreach initiatives, including the Student Research Symposium and establishment of a Younger Chemists Committee.

Recording Officer, Alpha Chi Sigma, Alpha Epsilon Chapter: Maintained meeting records, managed member communications, and supported chapter event planning.

PUBLICATIONS

4. **J. S. Lampert**, G. Banerjee, I. Ghosh, J. Liu, K. M. Reiss, R. J. Debus, V. S. Batista, and G. W. Brudvig. "Binding of Acetate in the S₂ State of the Oxygen-Evolving Complex in Photosystem II." *Plants* **15**, 2291 (2026). [DOI](#).
3. B. Lee, C. J. Miller, J. G. Freeze, R. R. Prabhakar, G. Chen, S. Okuno, **J. S. Lampert**, V. S. Batista, and C. P. Kubiak. "Insights on Covalent Attachment of a Re Bipyridyl Catalyst onto p-Si(111) Using an Alkyl Linker for Photoelectrochemical CO₂ Reduction." *Inorg. Chem.* **65**, 9669–9679 (2026). [DOI](#).
2. J. Liu, K. R. Yang, **J. S. Lampert**, W. H. Armstrong, G. W. Brudvig, and V. S. Batista. "Mechanism of Tyrosine-Driven Deprotonation in Photosystem II Revealed by Multiscale Simulations." *J. Am. Chem. Soc.* **148**, 9255–9267 (2026). [DOI](#).
1. **J. S. Lampert**, T. J. Krogmeier, A. W. Schlimgen, and K. Head-Marsden. "Orbital Entanglement and the Double *d*-Shell Effect in Binary Transition-Metal Molecules." *J. Chem. Phys.* **161**, 174103 (2024). [DOI](#).

POSTERS AND PRESENTATIONS

10. **International Conference on Photosynthesis Research, Water Oxidation Satellite Meeting**, London, U.K., Jul 24, 2026. "Water-Mediated Reactivity in Photosystem II: Mechanistic Insights from Multiscale Simulations" (contributed oral presentation).
9. **Yale Energy Sciences Institute Retreat**, New Haven, CT, Sep 18, 2025. "Unraveling Water Oxidation Pathways: Computational Insights for Iridium- and Cobalt-Based Molecular Catalysts" (invited oral presentation).
8. **Yale Biophysics and Structural Biology Symposium**, New Haven, CT, May 16, 2025. "The Influence of Tyrosine Reduction on the Mechanism of O–O Bond Formation in Photosynthetic Water Splitting" (poster).
7. **42nd Eastern Regional Photosynthesis Conference**, Woods Hole, MA, Mar 28–30, 2025. "The Influence of Tyrosine Reduction on the Mechanism of O–O Bond Formation in Photosynthetic Water Splitting" (poster).
6. **Midstates Consortium for Math and the Physical Sciences**, Chicago, IL, Nov 3–4, 2023. "Density Matrix Renormalization Group Studies on the Bond Dissociation Behavior of Binary Transition-Metal Compounds" (poster).
5. **American Chemical Society Midwest Regional Meeting**, St. Charles, MO, Oct 18–19, 2023. "Density Matrix Renormalization Group Studies on the Bond Dissociation Behavior of Binary Transition-Metal Compounds" (poster).
4. **Merck Research Laboratories, Materials and Biophysical Characterization Intern Presentations**, Rahway, NJ, Aug 25, 2023. "Laser Direct Infrared Imaging Technology for Use in Pharmaceutical Characterization: Interpreting Hyperspectral Data and Quantifying Distributional Homogeneity on Furosemide Model Systems" (oral presentation).

3. **Merck Analytical R&D Summer Intern Symposium**, Rahway, NJ, Aug 14, 2023. “Laser Direct Infrared Imaging Technology for Use in Pharmaceutical Characterization: Image Processing and Data Analysis on Furosemide Model Systems” (oral presentation).
2. **Summer Undergraduate Research Award Symposium**, St. Louis, MO, Dec 5, 2022. “Nanoconfinement of Electrodeposited Nickel Oxide Catalysts in Porous Antimony Tin Oxide” (virtual poster).
1. **Midstates Consortium for Math and the Physical Sciences**, St. Louis, MO, Nov 11–12, 2022. “Nanoconfinement of Electrodeposited Nickel Oxide Catalysts in Porous Antimony Tin Oxide” (poster).

SKILLS

Programming and Scripting: Python, MATLAB, Bash, Tcl/Tk; Unix/Linux environments

Computational Chemistry and Molecular Modeling: Gaussian, GaussView, OpenMolcas, QCMaquis, PySCF, BOSS, VMD, ChimeraX, PyMOL, CCP4, FEFF/IFEFFIT

Data Analysis and Scientific Communication: ImageJ, Eigenvector Solo + MIA, Agilent Clarity, X’Pert High-Score, L^AT_EX, Adobe Illustrator, ChemDraw, Microsoft Office

Experimental Methods: PXRD, ATR-IR, laser direct infrared imaging, cyclic voltammetry, pulsed electrodeposition, and impedance spectroscopy