

# JULIANNE LAMPERT

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## EDUCATION

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**Doctor of Philosophy - Theoretical Chemistry, Yale University** Aug 2024 - Present  
**Bachelor of Arts - Chemistry, Washington University in St. Louis** Aug 2020 - May 2024  
Minors: Materials science and engineering, Art history GPA: 3.90/4.00

## RESEARCH EXPERIENCE

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**Batista Group** Nov 2024 - Present  
*Yale University* New Haven, CT

- Investigating the mechanism of water oxidation in iridium dimer complexes using density functional theory

**Head-Marsden Group** Dec 2022 - Jun 2024  
*Washington University in St. Louis* St. Louis, MO

- Studied 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

- Investigated laser direct infrared (LDIR) chemical imaging technology for uses in the pharmaceutical industry.

**Sadtler Lab** Jun 2021 - Dec 2022  
*Washington University in St. Louis* St. Louis, MO

- Studied transition metal oxide catalysts for the photoelectrochemical splitting of water

## TEACHING AND WORK EXPERIENCE

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**Teaching Fellow, General Chemistry II 165** Yale University Spring 2025

**Teaching Fellow, General Chemistry Laboratory 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

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• **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 10 weeks of full time research in the Sadtler Lab.

## PUBLICATIONS

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1. **J. S. Lampert**, T. J. Krogmeier, A. W. Schlimgen, **K. Head-Marsden**.(2024) Orbital entanglement and the double *d*-shell effect in binary transition metal molecules *The Journal of Chemical Physics*.  
<https://doi.org/10.1063/5.0232316>

## PRESENTATIONS

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6. **Midstates Consortium for Math and the Physical Sciences**, Chicago, IL, November 2023. **Lampert, J.** “Density Matrix Renormalization Group Studies on the Bond Dissociation Behavior of Binary Transition Metal Compounds” (poster presentation)
5. **American Chemical Society Midwest Regional Meeting**, St. Charles, MO, October 2023. **Lampert, J.** “Density Matrix Renormalization Group Studies on the Bond Dissociation Behavior of Binary Transition Metal Compounds” (poster presentation)
4. **Merck Research Labs, Materials and Biophysical Characterization Intern Presentations**, Rahway, NJ, August 2023. **Lampert, J.**, Confer, A. “Laser Direct Infrared Imaging Technology for Use in Pharmaceutical Characterization: Interpreting Hyperspectral Data and Quantifying Distributional Homogeneity on Furosemide Model Systems” (25 minute oral presentation)
3. **Merck Analytical R&D Summer Intern Symposium**, Rahway, NJ, August 2023. **Lampert, J.**, Confer, A. “Laser Direct Infrared Imaging Technology for Use in Pharmaceutical Characterization: Image Processing and Data Analysis on Furosemide Model Systems” (10 minute oral presentation)
2. **Summer Undergraduate Research Award Symposium**, St. Louis, MO, December 2022. **Lampert, J.** “Nanoconfinement of Electrodeposited Nickel Oxide Catalysts in Porous Antimony Tin Oxide” (virtual poster presentation)
1. **Midstates Consortium for Math and the Physical Sciences**, St. Louis, MO, November 2022. **Lampert, J.** “Nanoconfinement of Electrodeposited Nickel Oxide Catalysts in Porous Antimony Tin Oxide” (poster presentation)

## SKILLS

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**Programming Languages:** Python, MATLAB, Unix, L<sup>A</sup>T<sub>E</sub>X

**Software Packages:** GView, Gaussian, MOLCAS, QCMAQUIS, PySCF, Eigenvector Solo + MIA, Agilent Clarity, X’Pert HighScore, ImageJ

**Experimental:** PXRD, ATR-IR, Laser Direct Infrared imaging, cyclic voltammetry, pulsed electrodeposition, impedance spectroscopy, use of bright light sources and oxygen gas environments