Benjamin R. Heiner

benheiner@lanl.gov | (541) 854-5257 | linkedin.com/in/benheiner

Education

Ph. D., Chemistry	*The University of Notre Dame, Notre Dame, IN*
2025	Research Advisor: S. Alex Kandel
Thesis:	Applications of Scanning Tunneling Microscopy for the Study of Atomic, Molecular, and Surface Properties
B.S., Chemistry	*Brigham Young University, Provo, UT*
2020	Research Advisor: Jeremy A. Johnson
Minor:	Scandinavian Studies and Swedish Language

Research Experience

Postdoctoral Research Associate	Los Alamos National Laboratory, Los Alamos, NM
2025-Present	Postdoc Advisor: Miles F. Beaux II, MST-7
Graduate Research Assistant	Los Alamos National Laboratory, Los Alamos, NM
2023-2025	Research Advisor: Miles F. Beaux II, MST-7
Graduate Researcher	Department of Chemistry and Biochemistry
2020-2025	The University of Notre Dame, Notre Dame, IN
Undergraduate Researcher	Department of Chemistry and Biochemistry
2017-2020	Brigham Young University, Provo, UT

Fellowships and Awards

2020-2025	Arthur J. Schmitt Leadership Fellowship in Science
2023	P. C. Reilly Teaching Fellowship
2022	Emil T. Hofman Graduate Teaching Award
2022	William Scanlan Science Fellowship
2021	Beyer Foundation Fellowship
2020	D. Clark Turner Mentored Scholar

Other Funding

2023-2024	Schmitt Travel Grants - $2000
2023-2024	Dorothy M. and Earl S. Hoffman Travel Grant - $1000
2022	Notebaert Professional Development Grant - $15,000
2017-2020	Undergraduate Research Awards - $30,000

Publications

1. Benjamin R. Heiner and S. Alex Kandel, “Monte Carlo Simulations Recreate Observed Two-dimensional Quasicrystals,” *In Preparation*
2. T. Davis Curry, Julia L. Martin, Emily R. Mikeska, Benjamin R. Heiner, Marco Caricato, Miles F. Beaux, Ron L. Grimm, and James D. Blakemore, “Capture and Sensing of the Uranyl Dication by a Hybrid Molecular Platform on Carbon Electrodes,” *JACS* (2025). -*In Preparation*
3. Alex L. Walter, Jewel L. Soucek, Benjamin R. Heiner, and S. Alex Kandel, “Guanine and cytosine: electrospray ionization shows Watson-Crick base-pairing starting in solution,” *Phys. Chem. Chem. Phys.* (2025). - *In Preparation*
4. Benjamin R. Heiner, Kaitlyn M. Handy, Alex L. Walter, Jacob P. Petersen, and S. Alex Kandel, “Scanning tunneling microscopy of ferrocenecarboxylic acid assemblies on Ag(111): a comparison to Au(111),” *Phys. Chem. Chem. Phys.* (2025). - *In Preperation*
5. Benjamin R. Heiner and Miles F. Beaux, "Scanning tunneling spectroscopy of surface-oxidized gallium-stabilized δ-phase plutonium," *Surf. Interfaces* **55**, 105424 (2024).
6. Benjamin R. Heiner, Kaitlyn M. Handy, Angela M. Devlin, Jewel L. Soucek, Alexander M. Pittsford, David A. Turner, Jacob P. Petersen, Allen G. Oliver, Steven A. Corcelli, and S. Alex Kandel, "Enantiopure molecules form apparently racemic monolayers of chiral cyclic pentamers," *Phys. Chem. Chem. Phys.* **26** (39), 25430–25438 (2024).
7. Benjamin R. Heiner, Alexander M. Pittsford, and S. Alex Kandel, "Self-assembly controlled at the level of individual functional groups," *Chemical Communications* **59.2,** 170-178 (2023).

Presentations

1. AVS, 70th International Symposium, “Experimental electronic structure measurements of actinide-containing samples using STS,” Tampa, FL, November 2024.
2. Plutonium Futures, “Electronic structure measurements of plutonium-containing materials using scanning tunneling spectroscopy,” Charleston, SC, September 2024.
3. AVS, 69th International Symposium, “Self-assembly controlled at the level of individual functional groups,” Portland, OR, November 2023.
4. ACS, Central Regional Meeting, “Self-assembly controlled at the level of individual functional groups,” Detroit, MI, June 2023. -Session chair
5. GRC on Self-Assembly and Supramolecular Chemistry, “Self-Assembly Controlled at the level of individual functional groups,” Les Diablerets, Switzerland, May 2023. -Presentation award
6. AVS, 68th International Symposium, “STM Investigations of self-assembly of proline,” Pittsburgh, PA, November 2022.
7. AVS, Prairie Chapter Meeting, “STM investigations of the Self-Assembly of Proline,” Notre Dame, IN, September 2022.

8. ACS, Colloid and Surface Science Symposium, “STM Investigations of the Self-Assembly of Proline,” Golden, Colorado, July 2022.
9. Physical Electronic Conference, “STM Investigations of the Self-Assembly of Proline,” Chicago, IL, June 2022.
10. SAS, BYU Alumni Spotlight, “STM Investigations of the Self-Assembly of Prolint,” Provo, UT, March 2022.
11. 45th International Conference on Infrared, Millimeter, and Terahertz Waves, “2D THz Studies of GaAs Metamaterials,” Buffalo, NY, November 2020. - *Contributing Author*
12. Brigham Young University, Student Research Conference, “Terahertz Applications of Water Plasmas Created through a Waterfall Apparatus,” Provo, UT, March 2019.
13. APS, Four Corners Chapter Meeting, “Measuring the Frequency-Dependency of the Critical Field of Carrier Multiplication in GaAS,” Salt Lake City, UT, October 2018.
14. ACS, BYU Chapter Meeting, “Measuring the Frequency-Dependency of the Critical Field of Carrier Multiplication in GaAs,” Provo, UT, November 2018.
15. Brigham Young University, Student Research Conference, “Measuring the Frequency-Dependency of the Critical Field of Carrier Multiplication in GaAs,” Provo, UT, March 2018.

Teaching Experience

Instructor/SuperTA - The University of Notre Dame

Fall 2023	Introduction to Chemical Principles Chemical Problem Solving Skills Chemical Principles Tutorial	- Letter of Commendation
Fall 2022	Introduction to Chemical Principles Chemical Problem Solving Skills Chemical Principles Tutorial	
Fall 2021	Chemical Principles Laboratory	- Emil T. Hoffman Teaching Award - Letter of Commendation

Teaching Assistant

Winter 2021	Across the Periodic Table	- Letter of Commendation
Fall 2020	Chemical Principles Laboratory	- Letter of Commendation

Professional & Volunteer

Chemistry Grad. Student Org. President, 2023-2024, Notre Dame, IN

- Represented the chemistry graduate students at Notre Dame to the administration
- Negotiated a departmental sponsorship to organization valuing over $2,000 annually
- Fundraised more than $15,000 for promoting departmental unity and collaboration
- Established a permanent student/faculty diversity committee within the department
- Collaborated with the department to successfully register as an ACS Bridge Program
- Certified organization as a student chapter of the ACS

Chemistry Grad. Student Org. Physical/Analytical Representative, 2022-2023

- Chaired committee that applied for and received ACS GSO Starter Grant
- Authored letter to department spurring administrative advocacy overhaul
- Assisted in running key departmental events, especially recruitment and orientation
- Planned departmental activities to promote moral and connection
- Served on constitution committee that rewrote documents to better serve students

Society of A. J. Schmitt Fellows Vice-President, 2022-2023, Notre Dame, IN

- Planned and executed volunteer and fundraising events, including:
  - "Is Graduate School Right for Me?" panel for undergraduates
  - Pi Day 5k fundraiser for the Boys and Girls Club of St. Joseph County.
  - Cultivate Food Rescue Bank
  - Fundraising concession stand for the Society

Society of A. J. Schmitt Fellows Member, 2020-2025

- Attended leadership development workshops, including:
  - Personality and communication styles for leadership using DISC
  - Authentic leadership, improv skills for science and engineering, research impacts, emotional intelligence
- Participated in fundraising events for non-profit organizations, including:
  - The Boys and Girls Club of St. Joseph County
  - Grad21 - program for ensuring the welfare of graduate students

The Boy Scouts of America Chemistry Presenter, 2018-2019, Provo, UT

- Taught 250+ scouts about chemistry for merit badge fulfillment

Y-Chem, BYU Chemistry Club Freshman Mentor, 2019, Provo, UT

- Provided support for new students in the chemistry program

Brigham Young University New Student Mentor, 2017-2019, Provo, UT

- Provided experience and advice for 120+ incoming freshmen

The Church of Jesus Christ of Latter-day Saints Full-time Volunteer Missionary, 2014-2016 Stockholm, Sweden

- Worked 70-80 hours per week providing various services to the local community
- Provided weekly 2-hour training sessions for groups of 30+ volunteers
- Offered drug and alcohol rehabilitation services