CONNOR HERRING

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EDUCATION

Tulane University
Ph.D. Chemical and Biomolecular Engineering

New Orleans, LA August 2024

University of Pittsburgh
Bachelor of Science Chemical Engineering
Minor: Computer Science
Semester abroad: Technical University of Munich

Pittsburgh PA
May 2019
Germany
2018

RESEARCH EXPERIENCE

Tulane University
Graduate Researcher

Aug. 2019 - present

- Applied real-time, time-dependent density functional theory (RT-TDDFT) (SIESTA, TDAP) to elucidate mechanisms in plasmonic nanostructures, guiding the enhancement of their light-harvesting capabilities.

- Used DFT (VASP) to investigate catalytic surfaces and systems for a variety of chemical reactions (ammonia decomposition, benzaldehyde hydrogenation, molybdenum-boride monolayer for batteries). Explained reaction mechanisms and supported experimentally observed trends using DFT.

- Utilized machine learning techniques (scikit-learn, PyTorch) for chemistry-related problems such as predicting friction coefficients of polymers and the power conversion efficiency of dye sensitized solar cells.

University of Pittsburgh
Undergraduate Researcher

Aug. 2015 – May 2019

- Synthesized graphene via chemical vapor deposition, fabricated ReRAM devices and biosensors.

- Practiced common nanofabrication techniques (electron beam/atomic-layer deposition, photolithography, spin-coating).

LEADERSHIP AND TEAMWORK

Tulane University
Graduate Mentor

May 2022 - present

- Trained undergraduate and graduate students on computational tools used in our group (Python, DFT, VMD, Linux, HPC).

- Collaborated with research groups both in and outside of Tulane on a variety of projects related to catalysis, photochemistry, and energy leading to numerous publications.

Aug. 2019 - March 2020

Tulane University
Graduate Teaching Assistant

- Assisted with teaching responsibilities for intro to biotechnology and unit operations laboratory.

SKILLS

Computational: DFT and RT-TDDFT (SIESTA, VASP); Coding (Python, MATLAB, Java, Bash); high-performance computing; machine learning (scikit-learn, PyTorch)
Lab: Nanodevice fabrication (photolithography, metal deposition, acid etching)
Language: German (intermediate)

SELECTED PUBLICATIONS

- Herring, C. J.; Montemore, M. M. Chem. Mater. 2023.
  https://doi.org/10.1021/acs.chemmater.2c03061

- Herring, C. J.; Montemore, M. M. ACS Nanosci. Au 2023, 3 (4), 269–279.
  https://doi.org/10.1021/acsnanoscienceau.2c00061

- So, S.; Khalaf, A.; Yi, X.; Herring, C.; Zhang, Y.; Simon, M. A.; Akcakaya, M.; Lee, S. H.; Yun, M. Biosens. Bioelectron. 2021, 175, 112903.
  https://doi.org/10.1016/j.bios.2020.112903

- Herring, C. J.; M. M. Montemore. "Computational Discovery of Design Principles for Plasmon-Driven Bond Activation on Alloy Antenna–Reactors". *In Preparation.*

PRESENTATIONS

AICHE Annual Meeting, Nov. 8th, 2023
Herring, C. J.; Montemore, M. M. "Plasmonic Photocatalysis by Dynamic Calculations: Mechanisms and Design"

AICHE Annual Meeting, Nov. 18th, 2022
Herring, C. J.; Montemore, M. M. "Mechanistic Insights into Plasmonic Photocatalysis by Dynamic Calculations"

AICHE Annual Meeting, Nov. 8th, 2021
Herring, C. J.; Montemore, M. M. "Computational Evaluation of Plasmonic Photocatalysis in Au and Ag Nanoparticles"

ACS Spring Meeting, 2021 (online)
Herring, C. J.; Montemore, M. M. "Computational Evaluation of Plasmonic Photocatalysis in Au and Ag Nanoparticles"