

JOSEPH J. THIEBES

+1-971-998-9315 ◊ joseph@thieb.es.org ◊ linkedin.com/in/thieb.es

EDUCATION

Doctor of Philosophy Candidate in Chemistry <i>Montana State University</i>	graduation expected Aug. 2024 <i>Bozeman, MT</i>
Bachelor of Science in Chemistry <i>Portland State University</i>	Jun. 2017 <i>Portland, OR</i>
Bachelor of Arts in Physics & Liberal Studies (double major) <i>Portland State University</i>	Jun. 2017 <i>Portland, OR</i>

RESEARCH & TECHNICAL EXPERIENCE

Graduate Research Assistant <i>Montana State University · Research Advisor: Prof. Erik Grumstrup</i>	Jun. 2018 - present <i>Bozeman, MT</i>
--	---

- Established new reporting standards in the field of optical measurement of excited state diffusion by quantifying the impact of noise on experimental accuracy.
 - Developed and shared an open-source Python tool, improving measurement reliability within the field.
 - Achieved the honor of Editor's Pick in *J. Chem. Phys.*, marking the article as noteworthy.
 - The research poster was acclaimed by the Physical Chemistry division at the national meeting of the American Chemical Society.
- Significantly enhanced lab infrastructure and capabilities through key achievements:
 - Improved our capability to study ultrafast processes by constructing a femtosecond laser-based pump-probe microscope.
 - Achieved 10x improvement in signal-to-noise ratio by designing an automated focus system controlled via LabView, streamlining data acquisition.
 - Improved sample consistency by developing a 3D-printed device for uniform sonication.
- Additional responsibilities included:
 - Drove innovative research directions by mastering the synthesis of thin film & nanoparticle perovskites and other semiconducting materials.
 - Enhanced computational efficiency by over 95% by developing and optimizing kinetic Monte-Carlo models with parallelization on high-performance computing clusters in Mathematica and Python.
 - Elucidated material properties using advanced techniques, including femtosecond microscopy, XRD, SEM/EDS, and TEM.

Chemist I <i>Diatomix, Inc. · Supervisor: Dr. Nicholas Day, C.T.O.</i>	May 2017 - Dec. 2017 <i>Portland, OR</i>
--	---

- Helped secure a \$225,000 NSF SBIR grant through editing and revising the grant proposal.
- Applied Design of Experiments (DoE) principles to optimize a novel photocatalytic material for indoor VOC removal, including the development of a colorimetric assay and characterization techniques such as XRD, SEM/EDS, UV-Vis, and Gas Chromatography.

Undergraduate Research Assistant

Dec. 2013 - Jun. 2017

Portland State University · Faculty Mentor: Prof. Raj Solanki

Portland, OR

- Synthesized Prussian Blue analog materials, assembled electrochemical electrodes & cells, and characterized using XRD, SEM/EDX, cyclic voltammetry, and galvanic cycling.
- Improved data analysis efficiency by 99.97% with a MATLAB script for the group.

Research Intern

Jun. - Aug. 2015

NASA Glenn Research Center · Mentor: Dr. Dionne Hernandez-Lugo

Cleveland, OH

- Assembled lithium-sulfur coin cell batteries in a low-oxygen clean room, and characterized using SEM/EDS, cyclic voltammetry, EIS, and Raman spectroscopy.
- Collaborated on a video project highlighting diversity and inclusion in STEM at NASA GRC.

TECHNICAL SKILLS

Laboratory Techniques

- *Synthesis & Sample Prep*: spin coating, solution process, nanoparticle synthesis
- *Optical Bench*: beam alignment, lock-in amp, signal & delay generators
- *Electrochemical Cell Fabrication*: slurry prep, reference electrodes, electrolytes, coin cells

Material Characterization Techniques

- *Time-Resolved Microscopy & Spectroscopy*: Pump-probe, TRPL, TCSPC
- *Steady-State Spectroscopy*: UV-Vis, FT-IR, and fluorescence
- *Microscopy and Microanalysis*: SEM/EDS, TEM, EBSD, XRD
- *Electrochemical Analysis*: cyclic voltammetry, Galvanic cycling, and EIS
- *Mass Analysis*: micro-scale gravimetry, TGA, and GC/MS

Computational Competencies

- *Programming*: Python, Julia, Mathematica, and MATLAB
- *Automation*: LabView and Arduino
- *Molecular Modeling*: Avogadro, ChemDraw, Gaussian, Mercury, and Spartan
- *Computer Assisted Design*: Autodesk Fusion 360 and Tinkercad
- *Publishing and Graphics*: Adobe Creative Suite, HTML/CSS, L^AT_EX, and MS Office Suite
- *Operating Systems*: Linux, MacOS, and Windows

PROFESSIONAL BACKGROUND

Transferable Skills from Previous Roles

prior to 2011

- Managed operations and led staff training initiatives in public-facing retail environments, demonstrating strong leadership and organizational capabilities.
- Deployed comprehensive training program in franchise operations across the state of Montana as a Professional Trainer, standardizing technical, professional, and customer service skills.
- Crafted literary magazines and promotional content with expertise in writing and editing.

TEACHING EXPERIENCE

Graduate Teaching Assistant <i>Montana State University</i>	Jan. 2018 - present <i>Bozeman, MT</i>
Freelance STEM Tutor <i>Self-Employment</i>	Dec. 2015 - Dec. 2017 <i>Portland, OR</i>
Teacher and Tutor <i>The Princeton Review</i>	May 2016 - Dec. 2017 <i>Portland, OR</i>
Volunteer Tutor <i>PCC Volunteer Literacy Tutoring Program</i>	Mar. 2013 - Apr. 2014 <i>Portland, OR</i>
Instructional Support Technician <i>Portland Community College, Rock Creek Campus</i>	Nov. 2012 - Jul. 2013 <i>Portland, OR</i>
Peer Mentor <i>Portland Community College, Cascade Campus</i>	Sep. 2011 - Jun. 2012 <i>Portland, OR</i>

VOLUNTEER LEADERSHIP

President <i>The Optics & Photonics Society at MSU (OPS)</i>	May 2021 - May 2022
<ul style="list-style-type: none">· Secured over \$5,000 in grant funding and guided chapter through non-profit incorporation.· Forged interdisciplinary connections with departments in sciences & humanities.· Expanded outreach initiatives to youth with new optics demonstrations.· Established chapter affiliation with Optica and maintained chapter affiliation with SPIE.	
Treasurer <i>Montana State University SPIE Student Chapter</i>	Jun. 2019 - May 2021
<ul style="list-style-type: none">· Sustained operations through COVID-19 by adapting activities for virtual engagement.· Managed finances and budgets.	
Treasurer <i>PSU chapter of ACS <u>and</u> PSU Physics Society</i>	Jan. 2015 - Jun. 2017
<ul style="list-style-type: none">· Helped increase membership through outreach in both clubs via events & demonstrations.· Managed finances and budgets.	

AWARDS

- **A. R. Johanssen Teaching Award:** Dept. of Chemistry & Biochemistry, Montana State U. 2024
- **Outstanding Student Poster Award:** ACS Fall Meeting, Physical Chemistry Division 2023
- **National Innovation Award (team):** TechConnect World Innovation Conference 2018
- **First Place:** Portland ACS, Green Chemistry Essay Contest 2016
- **Superior Presentation Award:** Sigma Xi National Student Research Symposium 2015
- **Second Place (team):** NASA Glenn Research Center Intern Design Challenge 2015
- **Outstanding Research Award:** Columbia-Willamette Sigma Xi Research Symposium 2015
- **First Place (team):** NASA National Community College Aerospace Scholar 2012

PUBLICATIONS & PRESENTATIONS

Peer-Reviewed Journals

- **Thiebes, J. J.**; Grumstrup, E. M. Dark-field pump-probe microscopy. In preparation — expected submission Jun. 2024.
- **Thiebes, J. J.**; Guzley, P.; Grumstrup, E. M. Excited state lifetime imaging of bismuth-based inorganic microplatelets. In preparation — expected submission May 2024.
- **Thiebes, J. J.**; Grumstrup, E. M. Quantifying noise effects in optical measures of excited state transport. *J. Chem. Phys.* **2024**, *160*, 124201. DOI: 10.1063/5.0190347 [*Editor's Pick*]
- Kuperman, N.; Padigi, P.; Goncher, G.; Evans, D.; **Thiebes, J. J.**; Solanki, R. High performance Prussian Blue cathode for non-aqueous Ca-ion intercalation battery. *J Power Sources* **2017**, *342*, 414-418. DOI:10.1016/j.jpowsour.2016.12.074 [*Citations: 84*]
- Padigi, P.; Kuperman, N.; **Thiebes, J. J.***; Goncher, G.; Evans, D.; Solanki, R. Calcium cobalt hexacyanoferrate cathodes for rechargeable divalent ion batteries. *J New Mater Electrochem Syst* **2016**, *19*, 57-64. DOI:10.14447/jnmes.v19i2.231 (*Corresponding author.) [*Citations: 8*]
- Padigi, P. **Thiebes, J. J.**; Swan, M.; Goncher, G.; Evans, D.; Solanki, R. Prussian green: a high rate capacity cathode for potassium ion batteries. *Electrochim Acta* **2015**, *166*, 32-39. DOI:10.1016/j.electacta.2015.03.084 [*Citations: 144*]

Book Chapters

- Kuperman, N.; Padigi, P.; Goncher, G.; **Thiebes, J. J.**; Evans, D.; Solanki, R. Electrochemical Energy Storage in Prussian Blue Batteries and Capacitors. In *Prussian Blue-Type Nanoparticles and Nanocomposites: Synthesis, Devices, and Applications*; Guari, Y., Larionova, J., Eds. Jenny Stanford Publishing: Singapore, **2019**. [*Citations: 2*]

Software

- **Thiebes, J. J.** Diffusion Insight Computational Engine (DICE). *Zenodo* **2023**, DOI:10.5281/zenodo.10258192

Conference Proceedings

- **Thiebes, J. J.**, Hathaway, A., Kennedy, C., Grumstrup, E. Probing microscale disorder with time-resolved emission and reflection microscopies. Meeting Abstract presented at the *National Meeting of the ACS*, August 25-29, **2019**, San Diego, CA. Abstract No. 34-PHYS.
- Day, N.; Olsen, J; Dereviankin, V.; **Thiebes, J. J.**; Beyers, B.; Polliak, A. Diatom Frustules as Substrates for Photocatalysts. *TechConnect Briefs* **2018**, *5*, 263-266.
- **Thiebes, J. J.**, Padigi, P., Kuperman, N., Goncher, G., Evans, D., Solanki, R. Calcium cobalt hexacyanoferrate cathodes for rechargeable divalent ion batteries. Meeting Abstract presented at the *National Meeting of the ACS*, April 02-06, **2017**, San Francisco, CA. Abstract No. 1000.

Oral Presentations

- Optical Technology Center (OpTeC) Conference, Montana State University Sep. 2023
- ACS Northwest Regional Meeting (NORM) Jun. 2023
- Optical Technology Center (OpTeC) Conference, Montana State University Sep. 2022
- Northwest Regional Meeting (NORM) of the ACS Jun. 2019
- NASA Glenn Research Center Summer Intern Presentation Jul. 2015