

Blaise J Thompson

May 6, 2022

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EDUCATION

University of Wisconsin-Madison → Ph.D.; Analytical Chemistry	2011 - 2018
Bates College → B.S.; Major: Chemistry, Minor: Philosophy	2007 - 2011

EXPERIENCE

Instrumentation Scientist <i>UW-Madison Chemistry</i> → Manage an instrumental “makerspace” for the Chemistry department. → Create custom scientific instrumentation for researchers and educators. → Serve as a mentor to students undertaking instrumental design projects. → Maintain an inventory of over 1000 electronic components. → Manage multiple student workers assisting with shop jobs and upkeep. → Contribute to open-source software for instrumentation control. → Participate in writing, submitting, and reviewing scientific papers.	2018 - Present Madison WI
Graduate Research Assistant <i>John C. Wright Group - ultrafast materials spectroscopy</i> → Dissertation: <i>Development of Frequency Domain Multidimensional Spectroscopy with Applications in Semiconductor Photophysics</i> [PDF] → Designed and constructed software tools to collect and process multidimensional spectra. → Designed and constructed optomechanical and electronic hardware. → Maintained and conducted experiments on a custom ultrafast laser system. → Contributed to general-purpose multidimensional spectra modeling software.	2011 - 2018 Madison WI
Undergraduate Researcher <i>Matthew J. Cote Group - microscopy and plasmonics</i> → Thesis: <i>Investigating Plasmons with Total Internal Reflection Microscopy</i> [PDF] → Designed and constructed a combined total internal reflection / atomic force microscope.	2009 - 2011 Lewiston ME
Undergraduate Researcher <i>Michael Dailey Group - neuroscience</i> → Dissected and prepared mouse brain samples for in vivo microglial imaging studies.	2008 Iowa City IA
High School Researcher <i>Peter L. Nagy Group - epigenetics</i> → Designed created, and inserted plasmid into yeast.	2007 Iowa City IA

PUBLICATIONS (see [my online cv](#) for more context)

13. Kregel, S. J.; **Thompson, B. J.**; Nathanson, G. M.; & Betram, T. H. (2021) The Wisconsin Oscillator: A Low-Cost Circuit for Powering Ion Guides, Funnel, and Traps *Organic Letters*. doi:10.1021/jasms.1c00247
12. Lampkin, P. P.; **Thompson, B. J.**; & Gellman, S. H. (2021) Versatile Open-Source Photoreactor Architecture for Photocatalysis Across the Visible Spectrum. *Organic Letters*, 23, 13, 5277–5281. doi:10.1021/acs.orglett.1c01910
11. Salazar, C.; **Thompson, B. J.**; Knapp, S.; Myers, S. & Stahl, S. S. (2021) Multichannel gas-uptake/evolution reactor for monitoring liquid-phase chemical reactions. *Review of Scientific Instruments*, 92:044103. doi:10.1063/5.0043007
10. Ravindran, P.; **Thompson, B. J.**; Soares, R. K. & Wiedenhoef, A. C. (2020) The XyloTron: Flexible, Open-Source, Image-Based Macroscopic Field Identification of Wood Products. *Frontiers in Plant Science*, 11:1015. doi:10.3389/fpls.2020.01015
9. **Thompson, B. J.**; Sunden, K. F.; Morrow, D. K.; Neff-Mallon, N. A. & Wright, J. C. (2019) WrightTools: a Python package for multidimensional spectroscopy. *The Journal of Open Source Software*, 4(33), 1141. doi:10.21105/joss.01141
8. Handali, J. D.; Neff-Mallon, N.; Sunden, K. F.; **Thompson, B. J.**; Brunold, T. C & Wright, J. C. (2018) Mixed vibrational-electronic Coherent Multidimensional Spectroscopy Reveals the Electronic Structure of Co(III)balamins Cyanocobalamin and detuerated Aquacobalamin. *The Journal of Physical Chemistry A* 122 (46), pp 9031–9042. doi:10.1021/acs.jpca.8b07678
7. Kohler, D. D., **Thompson, B. J.** & Wright, J. C. (2018) Resonant Third-Order Susceptibility of PbSe Quantum Dots Determined by Standard Dilution and Transient Grating Spectroscopy. *The Journal of Physical Chemistry C*, 122 (31), 18086–18093. doi:10.1021/acs.jpcc.8b04462 osf.io/3vprb.
6. Sunden, K. F., **Thompson, B. J.** & Wright, J. C. (2018) WrightSim: Using PyCUDA to Simulate Multidimensional Spectra *Proceedings of the 17th Python in Science Conference* doi:10.25080/Majora-4af1f417-00c
5. Horak, E. H.; Rea, M. T.; Heylman, K. D.; Gelbwaser-Klimovsky, D.; Saikin, S. K.; **Thompson, B. J.**; Kohler, D. D.; Knapper, K. A.; Wei, W.; Pan, F.; Gopalan, P.; Wright, J. C.; Aspuru-Guzik, A. & Goldsmith, Randall H. (2018) Exploring Electronic Structure and Order in Polymers via Single-Particle Microresonator Spectroscopy. *Nano Letters* doi:10.1021/acs.nanolett.7b04211
4. Kohler, D. D.; **Thompson, B. J.** & Wright, J. C. (2017) Frequency-domain coherent multidimensional spectroscopy when dephasing rivals pulsewidth: Disentangling material and instrument response. *The Journal of Chemical Physics*, 147(8), 84202. doi:10.1063/1.4986069
3. Czech, K. J.; **Thompson, B. J.**; Kain, S.; Ding, Q.; Shearer, M. J.; Hamers, R. J.; Jin, S. & Wright, J. C. (2015) Measurement of Ultrafast Excitonic Dynamics of Few-Layer MoS₂ Using State-Selective Coherent Multidimensional Spectroscopy. *ACS Nano*, 9(12), 12146–12157. doi:10.1021/acsnano.5b05198
2. Fu, Y.; Meng, F.; Rowley, M. B.; **Thompson, B. J.**; Shearer, M. J.; Ma, D.; Hamers, R. J.; Wright J. C. & Jin, S. (2015) Solution Growth of Single Crystal Methylammonium Lead Halide Perovskite Nanostructures for Optoelectronic and Photovoltaic Applications. *Journal of the American Chemical Society*, 137(17), 5810–5818. doi:10.1021/jacs.5b02651
1. Cabán-Acevedo, M.; Kaiser, N. S.; English, C. R.; Liang, D.; **Thompson, B. J.**; Chen, H.-E.; Czech, K. C.; Wright, J. C.; Hamers, R. J. & Jin, S. (2014) Ionization of High-Density Deep Donor Defect States Explains the Low Photovoltage of Iron Pyrite Single Crystals. *Journal of the American Chemical Society*, 136(49), 17163–17179. doi:10.1021/ja509142w

PRESENTATIONS

5. *Invited Speaker: Thompson, B. J.* Scientific Software Development: A Pragmatic Approach (2020) *University of Colorado Boulder Department of Chemistry*. Boulder, CO USA [[PDF](#)]
4. *Presentation: Thompson, B. J.* Nonlinear Multidimensional Spectroscopy. (2017) *Chaos and Complexity Seminar*. Madison, WI USA [[PDF](#)]
3. *Poster: Thompson, B. J.* A Robust, Fully Automated Algorithm to Collect High Quality OPA Tuning Curves. (2016) *CMDS 2016*. Groningen, the Netherlands [[PDF](#)]
2. *Poster: Thompson, B. J.* Utilizing Coherent Multidimensional Spectroscopy to Investigate Nanomaterials for Solar Energy Generation. (2012) *Midwest Universities Analytical Chemistry Conference*. Madison, WI USA
1. *Poster: Thompson, B. J.* Spectroscopic Investigation of Plasmonic Nanoparticles. (2011) *Bates College Mount David Summit*. Lewiston, ME USA

AWARDS & HONORS

GSFLC Mentor Award 2022

→ Awarded by Graduate Students at the University of Wisconsin-Madison for outstanding mentorship of young researchers.

Nominated: Letters & Science Early Career Award 2020

→ Nominated by Chemistry Department faculty, graduate students, and postdocs for outstanding performance, promise of future contributions, and a high degree of professionalism.

Roger Carlson Award 2017

→ Awarded by the University of Wisconsin Chemistry department for excellence in research.

James W. Taylor Excellence in Teaching Award 2016

→ Selected by University of Wisconsin Chemistry students and faculty as one of the most outstanding Teaching Assistants of the 2015-2016 School Year.

Rodney F. Jhonnot Graduate Award 2011

→ Selected by Bates College faculty as most deserving of aid in furthering his or her studies in professional or postgraduate work.

Bates College Key 2011

→ Awarded by Bates College faculty and staff to 20 students in each graduating class based on academic standing, character, campus and community service, leadership, and future promise.

TEACHING EXPERIENCE

Graduate Chemical Instrumentation: Design & Control (Electronics)

2017, 2019 - 2022

5 semesters

UW-Madison

- Led laboratory section of course.
- Introduced graduate students to basic electronics skills such as bread-boarding, oscilloscope usage, component choice and enclosure design and construction.
- Assisted students during extended independent instrument design and construction.
- Assisted in course design and improvement.

Fundamentals of Analytical Science (Quantitative Analysis)

2018

Teaching Assistant, 1 semester

UW-Madison

- Led laboratory and discussion sections for honors section.
- Prepared worksheets and homework keys.
- Contributed to staff notes for future teaching assistants.

Graduate Instrumental Analysis

2012, 2015

Teaching Assistant, 2 semesters

UW-Madison

- Led laboratory section of course.
- Prepared homework assignments and led homework review sessions.
- Lectured in professor's absence.
- Switched course from mathcad to Python using Jupyter Notebooks, introducing first-year graduate students to script-based programming.
- Received James W. Taylor Excellence in Teaching Award.

Undergraduate Research Mentor

2012 - 2013, 2015 - 2017

6 semesters

UW-Madison

- Designed appropriate experiments that were complementary to my own research.
- Introduced undergraduates to spectroscopy, programming, and instrument design.
- Advised students in coursework and future directions.

General Chemistry II

2011, 2012

Teaching Assistant, 2 semesters

UW-Madison

- Coordinated two sections—total of ~ 50 students in each semester.
- Led labs.
- Designed and led discussion sections.

General Chemistry I

2010, 2011

Peer Science Leader, 2 semesters

Bates College

- Designed and led class-wide review sessions for General Chemistry.
- Assisted in first trials of new peer leadership program at Bates College.
- Attended regular meetings to share teaching strategies with other peer leaders.

SERVICE ACTIVITIES & COMMUNITY INVOLVEMENT

Science Olympiad

2019 - 2021

Coach

Madison WI

- Lead “mechatronics” section of region-wide science and engineering competition for middle- and high-school students (2019).
- Coached “detector building” team of high-school students (2020).
- Designed and administered exam testing micro-controller programming and basic circuit design and construction.
- Created and curated real electronic hardware for use during test.

Science Bowl

2017, 2019

Scientific Judge & Moderator

Madison WI

- Judged middle school students in statewide science-knowledge competition.
- Winning team proceeded to national competition.

Plasma Group Python Introduction

2017

Assistant

UW-Madison

- Helped introduce a group of faculty and graduate Students in Physics to Python.
- Created lesson sections and chose topics.
- Group was switching to Python from IDL.
- Introduction consisted of weekly meetings across several months.

Pre-college Enrichment Opportunity Program for Learning Excellence (PEOPLE)

2017

Volunteer

Madison WI

- Taught disadvantaged high school students about electronics, science and what it is like to be an analytical chemist.

McElvain Committee

2013 - 2014

Member

UW-Madison

- Graduate student committee to choose seminar speakers.

Freewill Folk Society

2008 - 2011

President

Bates College

- Contradance club, offering alcohol-free community-engaging social activity to the college.
- Reorganized club structure, recruited other students to new club positions.
- Organized monthly folk dances, bringing in bands and callers.