

Blaise J Thompson

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EDUCATION

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

EXPERIENCE

Instrumentation Scientist <i>UW-Madison Chemistry</i>	2018 - Present Madison WI
→ 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.	
Graduate Research Assistant <i>John C. Wright Group - ultrafast materials spectroscopy</i>	2011 - 2018 Madison WI
→ Dissertation: <i>Development of Frequency Domain Multidimensional Spectroscopy with Applications in Semiconductor Photophysics</i> [doi:10.5281/zenodo.7627321]	
→ 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.	
Undergraduate Researcher <i>Matthew J. Cote Group - microscopy and plasmonics</i>	2009 - 2011 Lewiston ME
→ Thesis: <i>Investigating Plasmons with Total Internal Reflection Microscopy</i> [PDF]	
→ Designed and constructed a combined total internal reflection / atomic force microscope.	
Undergraduate Researcher <i>Michael Dailey Group - neuroscience</i>	2008 Iowa City IA
→ Dissected and prepared mouse brain samples for in vivo microglial imaging studies.	
High School Researcher <i>Peter L. Nagy Group - epigenetics</i>	2007 Iowa City IA
→ Designed created, and inserted plasmid into yeast.	

14. The yaq project: Standardized software enabling flexible instrumentation
Sunden, K. F.; Kohler, D. K.; Meyer, K. A.; Cruz Parrilla, P. L.; Wright, J. C.; & Thompson, B. J.
(2023) *Review of Scientific Instruments*. doi:10.1063/5.0135255

13. The Wisconsin Oscillator: A Low-Cost Circuit for Powering Ion Guides, Funnels, and Traps
Kregel, S. J.; Thompson, B. J.; Nathanson, G. M.; & Betram, T. H.
(2021) *Journal of the American Society for Mass Spectrometry*. doi:10.1021/jasms.1c00247

12. Versatile Open-Source Photoreactor Architecture for Photocatalysis Across the Visible Spectrum
Lampkin, P. P.; Thompson, B. J.; & Gellman, S. H.
(2021) *Organic Letters*. doi:10.1021/acs.orglett.1c01910

11. Multichannel gas-uptake/evolution reactor for monitoring liquid-phase chemical reactions.
Salazar, C.; Thompson, B. J.; Knapp, S.; Myers, S. & Stahl, S. S.
(2021) *Review of Scientific Instruments*, 92:044103. doi:10.1063/5.0043007

10. The XyloTron: Flexible, Open-Source, Image-Based Macroscopic Field Identification of Wood Products.
Ravindran, P.; Thompson, B. J.; Soares, R. K. & Wiedenhoeft, A. C.
(2020) *Frontiers in Plant Science*. doi:10.3389/fpls.2020.01015

9. WrightTools: a Python package for multidimensional spectroscopy.
Thompson, B. J.; Sunden, K. F.; Morrow, D. K.; Neff-Mallon, N. A. & Wright, J. C.
(2019) *The Journal of Open Source Software*. doi:10.21105/joss.01141

8. Mixed vibrational-electronic Coherent Multidimensional Spectroscopy
Reveals the Electronic Structure of Co(III)balamins Cyanocobalamin and detuerated Aquacobalamin.
Handali, J. D.; Neff-Mallon, N.; Sunden, K. F.; Thompson, B. J.; Brunold, T. C & Wright, J. C.
(2018) *The Journal of Physical Chemistry A*. doi:10.1021/acs.jpca.8b07678

7. Resonant Third-Order Susceptibility of PbSe Quantum Dots
Determined by Standard Dilution and Transient Grating Spectroscopy.
Kohler, D. D., Thompson, B. J. & Wright, J. C.
(2018) *The Journal of Physical Chemistry C*. doi:10.1021/acs.jpcc.8b04462

6. WrightSim: Using PyCUDA to Simulate Multidimensional Spectra
Sunden, K. F., Thompson, B. J. & Wright, J. C.
(2018) *Proceedings of the 17th Python in Science Conference*. doi:10.25080/Majora-4af1f417-00c

5. Exploring Electronic Structure and Order in Polymers via Single-Particle Microresonator Spectroscopy.
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) *Nano Letters* doi:10.1021/acs.nanolett.7b04211

4. Frequency-domain coherent multidimensional spectroscopy when dephasing rivals pulsewidth:
Disentangling material and instrument response.
Kohler, D. D.; Thompson, B. J. & Wright, J. C.
(2017) *The Journal of Chemical Physics*. doi:10.1063/1.4986069

3. Measurement of Ultrafast Excitonic Dynamics of Few-Layer MoS₂
Using State-Selective Coherent Multidimensional Spectroscopy.
Czech, K. J.; Thompson, B. J.; Kain, S.; Ding, Q.; Shearer, M. J.;
Hamers, R. J.; Jin, S. & Wright, J. C.
(2015) *ACS Nano*. doi:10.1021/acsnano.5b05198

2. Solution Growth of Single Crystal Methylammonium Lead Halide Perovskite Nanostructures
for Optoelectronic and Photovoltaic Applications.
Fu, Y.; Meng, F.; Rowley, M. B.; Thompson, B. J.; Shearer, M. J.; Ma, D.;
Hamers, R. J.; Wright J. C. & Jin, S.
(2015) *Journal of the American Chemical Society*. doi:10.1021/jacs.5b02651

1. Ionization of High-Density Deep Donor Defect States Explains
the Low Photovoltage of Iron Pyrite Single Crystals.
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) *Journal of the American Chemical Society*. 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

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|---|------------|
| GSFLC Mentor Award | 2022, 2023 |
| → Awarded by Graduate Students at the University of Wisconsin-Madison for outstanding mentorship of young researchers. Won twice: 2022 and 2023. | |
| 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. Johonnot 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 - 2023
6 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.