Curriculum Vitae of Stephen Drucker

Department of Chemistry
University of Wisconsin-Eau Claire
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PROFESSIONAL POSITIONS

Professor, UW-Eau Claire, 2009–present
Visiting Faculty Fellow, Sandia National Labs, 2022
Associate Professor, UW-Eau Claire, 2004–2009
Visiting Associate Professor, Purdue University, 2005
Assistant Professor, UW-Eau Claire, 1998–2004
Postdoctoral Associate, Massachusetts Institute of Technology, 1994–98
Laboratory Specialist, University of Virginia School of Medicine, 1984–86

EDUCATION

Harvard University, Cambridge, Massachusetts

Ph.D. in Chemistry, 1994; A.M., 1988
Thesis title: "Using Millimeter-Wave Spectroscopy to Probe the Dynamics of Weakly Bound Complexes"

University of Virginia, Charlottesville, Virginia

B.S. in Chemistry with Highest Distinction, 1984
Honors: ACS Virginia Section Award, Phi Beta Kappa, Echols Scholar

COURSES TAUGHT, UW-EAU CLAIRE

Chem 115: Chemical Principles (advanced general chemistry) with lab
Chem 105, 106, 109: General Chemistry I and II with lab
Chem 213: Quantitative Analysis
Chem 405: Applied Physical Chemistry
Chem 433–434: Physical Chemistry I and II
Chem 438: Physical Analysis Laboratory

SERVICE TO UNIVERSITY AND PROFESSION

University Senator Representing Chemistry Department
Co-Chair of 'Transforming Learning,' University Strategic Planning Workgroup
Chair, University General Education Committee
Member, University Planning Committee
Member, University Liberal Education Committee
Member, Sabbatical Program Review Committee
Member, University Research and Creative Activity Council

Reviewer of manuscripts for *The Journal of Physical Chemistry*, *The Journal of Chemical Physics*, *The Journal of Molecular Spectroscopy*, and *Journal of Quantitative Spectroscopy*
Reviewer of grant proposals for the National Science Foundation, American Chemical Society, Research Corporation, Department of Energy, and German Research Foundation

RESEARCH STUDENTS (YEAR OF GRADUATION) AND GRADUATE PLACEMENT

1. Erik Charlson (1999)	Medical School, Mayo Clinic
2. Nick Gagnon (2001)	High School Physics Teacher
3. Jason Van Zanten (2001)	Chemistry Ph.D. Program, Berkeley
4. Nathan Pillsbury (2003)	Chemistry Ph.D. Program, Purdue
5. Emily Gilles (2004)	Cell Biology and Genetics Masters Program, Mayo Clinic
6. Logan Ausman (2004)	Chemistry Ph.D. Program, Northwestern
7. Elizabeth Brown (2006)	Medical School, Medical College of Wisconsin
8. Laura Hoffelt (2007)	Medical School, Michigan State
9. Mitchell Springer (2007)	Human Genetics Ph.D. Program, Pittsburgh
10. Sydney Jagusch (2010)	Nurse
11. Andrew Johnson (2010)	Astrophysics Ph.D. Program, Minnesota
12. Nikolaus Hlavacek (2010)	Chemistry Ph.D. Program, Berkeley
13. Daniel Stupca (2010)	Analytical Chemist, 3M
14. Kaitlyn Hellenbrand (2010)	Mathematics Ph.D. Program, Texas A&M
15. Dexter Davis (2012)	Chemistry Ph.D. Program, Purdue
16. Michael McAnally (2012)	Chemistry Ph.D. Program, Northwestern
17. Luke Desilet (2013)	Software Engineer, Epic
18. Katie Zabronsky (2013)	Food Scientist, Penford Corp.
19. Ashley Sexton (2014)	Cancer Biology Ph.D. Program, Minnesota
20. Olivia Vuylsteke (2015)	Mechanical Engineering B.S. Program, Minnesota
21. Shuting Qiu (2016)	Computer Science M.S. Program, Rice
22. Michael McDonnell (2018)	Physics Ph.D. Program, Berkeley
23. Noel Weber (2018)	Medical School, American University of Antigua
24. Drew Christianson (2019)	Chemistry Ph.D. Program, Virginia
25. Hannah Nennig (2019)	Chemistry Ph.D. Program, Iowa
26. Anna Sessions (2019)	Chemist, Pharmaceutical Product Development, LLC
27. Devon Hucek (2021)	Medicinal Chemistry Ph.D. Program, Michigan
28. Sean Parsons (2021)	Chemistry Ph.D. Program, University of Southern California
29. Alex Jodko-Narkiewicz (2023)	Chemistry Ph.D. Program, Brown University
30. Jenna Trzebiatowski (2024)	Current student
31. Isaac Swenson (2024)	Current student
32. Hansuja Chaurasia (2026)	Visiting REU student from U. Conn.

GRANTS AND AWARDS (Total external funding of $1.5 M since 1998)

1. "Understanding Photochemical Properties of Molecules," University of Wisconsin-Eau Claire (UW-EC) Startup Grant, $25,000, 1998.

2. "Cavity Ringdown Spectroscopy of Triplet State Molecular Species," Camille and Henry Dreyfus Foundation Faculty Start-Up Grant for Undergraduate Institutions, $20,000, 1998–2003.

3. "Spectroscopic Studies of Electronically Excited Sates of Molecules," Research Corporation Cottrell College Science Award, $26,700 plus $10,000 University match, 1999–2001.

4. "Spectroscopic Studies of Electronically Excited Sates," American Chemical Society Petroleum Research Fund, Type GB, $25,000, 1999–2001.

5. "Acquisition of a Digital Oscilloscope" (with Marcus McEllistrem), UW-EC Office of University Research, $6500, awarded Fall Semester 1999.

6. "Enhancement of Computing Resources in Chem 431/432," UW-EC Network for Excellence in Teaching, $925 for Spring Semester 2000.

7. Summer Research Experiences for Undergraduates, Kell Scholarship, and Faculty/Student Research Collaboraton programs, UW-EC Office of Research and Sponsored Programs, $70,050 (total for 19 grants from 1999–2004, 2012–2014, 2016, 2019–20, 2023).

8. "Acquisition of a Transportable Pulsed Laser System to Enhance Undergraduate Research Programs" (PI Drucker with co-PI's W.F. Polik, Karen Muyskens, Mark Muyskens, and Timothy Zwier), National Science Foundation Major Research Instrumentation Program, $241,663, 2004–2009.

9. "Spectroscopic Studies of Cyclic Enones in Triplet Excited States," American Chemical Society Petroleum Research Fund, Type B, $50,000, 2005–08.

10. University Research and Creative Activity Travel Award, UW-EC Office of Research and Sponsored Programs, $2500, 2005.

11. "RUI: Cavity Ringdown Spectroscopy of Cyclic Enones in Triplet Excited States," National Science Foundation, $190,050, 2005–09.

12. "Implementation of Advanced Laser Techniques to Contemporize Undergraduate Research in Physical Chemistry," UW-EC Claire full-year sabbatical award, 2005–06.

13. "Spectroscopy of Triplet Excited States," Henry Dreyfus Teacher-Scholar Award, Camille and Henry Dreyfus Foundation, $60,000 plus $14,000 University match, 2006–11.

14. "RUI: Spectroscopic Studies of Cyclic Conjugated Molecules in Triplet (n,pi*) Excited States," National Science Foundation, $222,318, 2009–14.

15. "Enhancement of a Jet-Cooled Laser Spectroscopy System," UW-EC full-year sabbatical award, 2012–13.

16. "RUI: Spectroscopic and Computational Studies of Alpha,Beta-Unsaturated Carbonyl Compounds in Triplet Excited States," National Science Foundation, $228,619, 2014–19.

17. "Spectroscopic Characterization of Acrolein in Its Lowest Triplet (n,π^*) State," American Chemical Society Petroleum Research Fund, Type UG, $70,000, 2014–18.

18. "Computational Investigation of Conjugated Organic Molecules in Triplet Excited States," Extreme Science and Enigineering Discovery Environment (XSEDE) allocation of high-performance computing time, 150,000 hours (2016).

19. Professor of the Year Award, UW-Eau Claire Studient Affiliate Chapter of the American Chemical Society, 2003 and 2017.

20. "RUI: Spectroscopic and Computational Studies of Cyclic Enone Molecules in Electronic Excited States," National Science Foundation, $334,554, 2020–23 (with no-cost extension to 2024).

21. "Meeting New Challenges in Experimental Physical Chemistry," UW-EC full-year sabbatical award, 2022-23.

22. "Rotational Spectroscopy of Molecular Triplet States," US Department of Energy Visiting Faculty Program, $17,750, 2022.

PUBLICATIONS (*denotes undergraduate collaborator)

1. Greg Brewer, Stephen Drucker*, Jaymee Girard, Charles Grisham, and Ekk Sinn. The Crystal and Molecular Structure of Pentaamminecobalt(III) Phosphate Trihydrate, a Sodium–Potassium ATPase Probe, *Inorg. Chim. Acta* **89**, 105 (1984).

2. Richard Whitehill, Stephen Drucker*, James A. McCoig, William E. Hooper, John E. Gatesy, Robert E. Fechner, and Gary Balian. Induction and Characterization of an Interface Tissue by Implantation of Methylmethacrylate Cement into the Posterior Part of the Cervical Spine of the Dog, *J. Bone and Joint Surgery* **70-A**, 51 (1988).

3. A.L. Cooksy, S. Drucker, J. Faeder*, C.A. Gottlieb, and W. Klemperer. High Resolution Spectrum of the $v = 1$ Π State of ArHCN, *J. Chem. Phys.* **95**, 3017 (1991).

4. S. Drucker, A.L. Cooksy, and W. Klemperer. Spectroscopic Characterization of the Lowest Π and Σ Bending States of ArHCN, *J. Chem. Phys.* **98**, 5158 (1993).

5. Fu-Ming Tao, S. Drucker, R.C. Cohen, and W. Klemperer. *Ab initio* Potential Energy Surface and Dynamics of He—CO, *J. Chem. Phys.* **101**, 8680 (1994).

6. Stephen Drucker, Fu-Ming Tao, and William Klemperer. Bound States of HeHCN: *Ab Initio* Calculation and High-Resolution Spectroscopy, *J. Phys. Chem.* **99**, 2646 (1995).

7. Fu-Ming Tao, Stephen Drucker, and William Klemperer. Intermolecular Potentials and Rovibrational Energy Levels of the Ar Complexes with HCN and HCCH, *J. Chem. Phys.* **102**, 7289 (1995).

8. Stephen Drucker, Jonathan P. O'Brien, Paresh Patel*, and Robert W. Field. The Effects of Triplet Perturbations on Photophysical Processes in the $\tilde{A}^1A_u$ State of Acetylene, *J. Chem. Phys.* **106**, 3423 (1997).

9. Susan J. Humphrey, Christopher G. Morgan, Alec M. Wodtke, Kevin L. Cunningham, Stephen Drucker, and Robert W. Field. Laser Excited Metastable States of Acetylene in the 5.5 – 5.7 eV Region, *J. Chem. Phys.* **107**, 49 (1997).

10. Nathan R. Pillsbury*, Jaebum Choo, Jaan Laane, and Stephen Drucker. Lowest n, π^* Triplet State of 2-Cyclopenten-1-one: Cavity Ringdown Absorption Spectrum and Ring-Bending Potential-Energy Function, *J. Phys. Chem. A* **107**, 10648 (2003).

11. Jaebum Choo, Sunghwan Kim, Stephen Drucker, and Jaan Laane. Density Functional Calculations, Structure, and Vibrational Frequencies of 2-Cyclopenten-1-one in its S_0, $S_1(n, \pi^*)$, $T_1(n, \pi^*)$, and $T_2(\pi, \pi^*)$ States, *J. Phys. Chem. A* **107**, 10655 (2003).

12. Stephen Drucker, Jason L. Van Zanten*, Nicholas D. Gagnon*, Emily J. Gilles*, and Nathan R. Pillsbury*. Triplet Excited States Probed by Cavity Ringdown Spectroscopy (invited Feature Article), *J. Molec. Struct.* **692**, 1 (2004).

13. Nathan R. Pillsbury* and Stephen Drucker. Ultraviolet Spectrum of Vinylamine, *J. Molec. Spectrosc.* **224**, 188 (2004).

14. Emily J. Gilles*, Jaebum Choo, Daniel Autrey, Mohamed Rishard, Stephen Drucker, and Jaan Laane. Ultraviolet Cavity Ringdown Spectra of 2-Cyclohexen-1-one and Its Potential Energy Function and Structure for the Electronic Ground State, *Canadian Journal of Chemistry* **82**, 867 (2004).

15. Nathan R. Pillsbury*, Timothy S. Zwier, Richard H. Judge, and Stephen Drucker. Jet-Cooled Phosphorescence Excitation Spectrum of the $T_1(n, \pi^*) \leftarrow S_0$ Transition of 2-Cyclopenten-1-one, *J. Phys. Chem. A* **111**, 8357 (2007).

16. Mohamed Z. M. Rishard, Elizabeth A. Brown*, Logan K. Ausman*, Stephen Drucker, Jaebum Choo, and Jaan Laane. Ultraviolet Cavity Ringdown Spectra and the $S_1(n, \pi^*)$ Ring-Inversion Potential Energy Function for 2-Cyclohexen-1-one-d_0 and Its 2,6,6-d_3 Isotopomer, *J. Phys. Chem. A* **112**, 38 (2008).

17. Laura M. Hoffelt*, Mitchell G. Springer*, and Stephen Drucker, Phosphorescence Excitation Spectrum of the $T_1(n, \pi^*) \leftarrow S_0$ Transition of 4*H*-Pyran-4-one, *J. Chem. Phys.* **128**, 104312 (2008).

18. Mitchell G. Springer*, Nikolaus C. Hlavacek*, Sydney P. Jagusch*, and Stephen Drucker, Cavity Ringdown Spectrum of the $T_1(n, \pi^*) \leftarrow S_0$ Transition of 4-Cyclopentene-1,3-Dione, *J. Phys. Chem. A* **113**, 13318 (2009).

19. Nikolaus C. Hlavacek*, Michael O. McAnally*, and Stephen Drucker, Lowest Triplet (n, π^*) Electronic State of Acrolein: Determination of Structural Parameters by Cavity Ringdown Spectroscopy and Quantum-Chemical Calculations, *J. Chem. Phys.* **138**, 064303 (2013).

20. Michael O. McAnally*, Katherine L. Zabronsky*, Daniel J. Stupca*, Kaitlyn Phillipson*, Nathan R. Pillsbury*, and Stephen Drucker, Lowest Triplet (n, π^*) State of 2-Cyclohexen-1-one: Characterization by Cavity Ringdown Spectroscopy and Quantum-Chemical Calculations, *J. Chem. Phys.* **139**, 214311 (2013).

21. Ashley E. Mooneyham*, Michael P. McDonnell*, and Stephen Drucker, Cavity Ringdown Spectrum of 2-Cyclohexen-1-one in the CO/Alkenyl CC Stretch Region of the $S_1(n, \pi^*) - S_0$ Vibronic Band System, *J. Phys. Chem. A*, **121** 2343 (2017).

22. Anna G. Sessions*, Michael P. McDonnell*, Drew A. Christianson*, and Stephen Drucker, Triplet and Singlet (n,π^*) Excited States of 4*H*-Pyran-4-one Characterized by Cavity Ringdown Spectroscopy and Quantum-Chemical Calculations, *J. Phys. Chem. A*, **123** 6269 (2019).

23. Sean W. Parsons*, Piyush Mishra, Devon G. Hucek*, David F. Plusquellic, Timothy S. Zwier, and Stephen Drucker, Jet-Cooled Phosphorescence Excitation Spectrum of the $T_1(n, \pi^*) \leftarrow S_0$ Transition in 4*H*-Pyran-4-one, *J. Phys. Chem. A*, **127** 3636 (2023).

INVITED TALKS

"Laser Excitation of Triplet States: A Look through the Doorway"

1. Boston University, Department of Chemistry Seminar, March 12, 1997.
2. Wesleyan University, Department of Physics Seminar, November 6, 1997.

"Investigating Molecular Properties through Laser Spectroscopy"

1. Washington and Lee University, Department of Chemistry, January 12, 1998.
2. University of the South, Department of Chemistry, February 23, 1998.
3. Siena College, Department of Chemistry, February 26, 1998.
4. University of Wisconsin-Eau Claire, Department of Chemistry, March 5, 1998.

"Tickling Molecules with Laser Light"
University of Wisconsin-Eau Claire Faculty Forum, April 5, 2000.

"Molecular Excited States Probed by Cavity Ringdown Spectroscopy"
University of Wisconsin-La Crosse, Department of Physics and Astronomy Seminar, March 10, 2004.

"Cavity Ringdown Studies of Triplet Excited States"
Marquette University Chemistry Colloquium, April 15, 2005.

"Jet-Cooled Spectroscopy of Triplet-State Molecules"
Concordia College Chemistry and Physics Colloquium, October 26, 2006.

"Spectroscopic Probes of Molecular Triplet States"
University of Wisconsin-Eau Claire Chemistry Seminar, December 1, 2006.

"High-Sensitivity Spectroscopic Measurements of Triplet Excited States"
Gustavus Adolphus College Chemistry Seminar, April 8, 2011.

"Characterization of Excited Electronic States by Cavity Ringdown Spectroscopy,"
254th American Chemical Society National Meeting, August 22, 2017.

"Advice for Grantseekers"
Extramural Grantseekers Reception, UW-Eau Claire, February 17, 2020.

CONTRIBUTED CONFERENCE TALKS AND POSTERS

International Symposium on Molecular Spectroscopy, 1992, 1994, 1996, 2003, 2004, 2006, 2008, 2012, 2013 (talks).

UW-Eau Claire Celebration of Excellence in Researh and Creative Activity, 2000-2003, 2012-15, 2018, 2020-21 (posters).

American Chemical Society Great Lakes Regional Meeting, 2002, 2003 (posters).

Dijon Colloquium on High-Resolution Molecular Spectroscopy, 2003 (poster).

American Chemical Society National Meeting, 2005, 2007, 2017 (posters).

Midwest Theoretical Chemistry Conference, 2012 (poster).

Research in the [Madison, Wisc.] Rotunda, 2017 (invited poster).

National Conference on Undergraduate Research, 2023 (posters).