

- CONTACT INFORMATION *Email:* chinh.duong@yale.edu *Address:* 225 Prospect Street, New Haven, CT 06520
Website: <https://cduong.me>
- OBJECTIVE I am a PhD student in physical chemistry and Gates Millennium Scholar at Yale University. My research focuses on the study of proton networks, catalysts, and their reaction intermediates using cryogenic ion vibrational predissociation spectroscopy and *ab initio* calculations.
- EDUCATION **Yale University**, New Haven, CT
PhD Candidate, Chemistry, 2019 (expected)
Research Interests: cryogenic ion predissociation spectroscopy, spectroscopic instrumentation and design, proton dynamics, catalytic mechanisms
Advisor: Mark A. Johnson
- Wesleyan University**, Middletown, CT
BA, Chemistry (high honors), 2013
Honors Thesis: *Rotational Spectroscopy with ab initio Calculations of 2H,3H-Perfluoropentane, its Isotopologues and the Argon-36 Cyclopentanone van der Waals Complex*
Advisor: Stewart E. Novick, Wallace C. Pringle, Stephen A. Cooke
- RESEARCH EXPERIENCE **Graduate Researcher** March 2015 to present
Advisor: Mark A. Johnson
Cryogenic Ion Vibrational Predissociation Spectroscopy, Department of Chemistry, Yale University
- Studying proton dynamics of H₃O⁺ in rigid frameworks.
 - Studying novel catalysts and their reaction intermediates.
 - Using AutoCAD Inventor for the design and development of new instrumentations for mass spectroscopy coupled with IR-IR experiments.
- Research Assistant** December 2009 to August 2013
Advisor: Stewart E. Novick, Wallace C. Pringle, Stephen A. Cooke
Microwave Spectroscopy, Department of Chemistry, Wesleyan University
- Conducted pure rotational studies of van der Waals complexes and perfluorocarbons using *ab initio* calculations and microwave spectroscopy.
 - Determined the structures and assigned the spectrum of 2H,3H-perfluoropentane and its isotopologues and currently preparing the manuscript for publication.
- Research Intern** August 2008 to January 2009
Genomic Analysis, GeneSeek, Lincoln, Nebraska
- Conducted genetic extraction and analysis on domestic farm animal samples using PCR, electrophoresis and mass spectroscopy to determine genes of importance or concern for natural breeding consultations.
- PUBLICATIONS 2. **“Rotational Spectroscopy of 2H,3H-Perfluoropentane,”** Chinh H. Duong, Daniel A. Obenchain, S. A. Cooke, Stewart E. Novick, *J. Mol. Spectrosc.* **324**, 53-55 (2016).
doi:10.1016/j.jms.2016.04.008
1. **“Rotational Spectroscopy with *ab initio* Calculations of 2H,3H-Perfluoropentane, its Isotopologues and the Argon-36 Cyclopentanone van der Waals Complex,”** Chinh H. Duong, *Undergraduate Thesis*, Wesleyan University, Middletown, CT, (2013).
- TALKS AND POSTERS 18. *Contributed research for poster*, **“Stairway to Hydration,”** Olga Gorlova, Chinh H. Duong, Lais Tavares, Stephanie M. Craig, Anne McCoy, Ken D. Jordan, Mark A. Johnson, *Gordon Research Conference - Gaseous Ions: Structures, Energetics & Reactions*, Ventura, CA (2017).
17. *Contributed research for talk*, **“Draining the Anharmonic Swamp: Spectroscopic Behavior of the Shared Proton,”** Olga Gorlova, Chinh H. Duong, Lais Tavares, Stephanie M. Craig, Anne McCoy, Ken D. Jordan, Mark A. Johnson, *Gordon Research Conference - Gaseous Ions: Structures, Energetics & Reactions*, Ventura, CA (2017).

16. *Contributed research for poster*, “**Formate Formation and Competing Reactions in CO₂ Activation at a Diiron Complex,**” Fabian S. Menges, Stephanie M. Craig, Chinh H. Duong, Helen J. Zeng, Nikolas A. Arnet, Patrick L. Holland, Mark A. Johnson, *Gordon Research Conference - Gaseous Ions: Structures, Energetics & Reactions*, Ventura, CA (2017).
15. *Contributed research for poster*, “**Crazy Broad OH Bands in Ionic H-bonds - The Calling Cards of Vibrational Shapeshifters,**” Stephanie M. Craig, Fabian S. Menges, Chinh H. Duong, Olga Gorlova, Joanna K. Denton, Anne McCoy, Mark A. Johnson, *Gordon Research Conference - Gaseous Ions: Structures, Energetics & Reactions*, Ventura, CA (2017).
14. *Contributed poster*, “**Spectroscopic Signatures of Interlocking Molecular Ionophores,**” Chinh H. Duong, Stephanie M. Craig, Fabian S. Menges, Mark A. Johnson, *Gordon Research Conference - Vibrational Spectroscopy*, Biddeford, ME (2016).
13. *Contributed research for poster*, “**Formate Formation and Competing Reactions in CO₂ Activation at a Diiron Complex,**” Fabian S. Menges, Stephanie M. Craig, Chinh H. Duong, Helen J. Zeng, Nikolas A. Arnet, Patrick L. Holland, Mark A. Johnson, *Gordon Research Conference - Vibrational Spectroscopy*, Biddeford, ME (2016).
12. *Contributed research for poster*, “**Characterization of an Activated CO₂ Captured on a Cationic Ni(I) Complex Using Cryogenic Ion Chemistry,**” Stephanie M. Craig, Fabian S. Menges, Chinh H. Duong, Helen J. Zeng, Subrata Ghosh, Hans-Jorg Kruger, Mark A. Johnson, *Gordon Research Conference - Vibrational Spectroscopy*, Biddeford, ME (2016).
11. *Presented talk*, “**Vibrational Signatures of Large Amplitude Motions for the Shackled Hydronium Ion Nested in 18-Crown-6 Ether Using D₂ Tagging,**” Chinh H. Duong, Fabian S. Menges, Stephanie M. Craig, Conrad T. Wolke, Mark A. Johnson, *International Symposium on Molecular Spectroscopy*, Champaign-Urbana, IL (2016).
10. *Contributed poster*, “**Surprises From the Shackled Hydronium Ion in 18-Crown-6 Ether,**” Chinh H. Duong, Stephanie M. Craig, Fabian S. Menges, Conrad T. Wolke, Mark A. Johnson, *Gordon Research Conference - Molecular & Ionic Clusters*, Ventura, CA (2016).
9. *Contributed research for poster and talk*, “**Formate Formation and Competing Reactions in CO₂ Activation at a Diiron Complex,**” Fabian S. Menges, Stephanie M. Craig, Chinh H. Duong, Nikolas A. Arnet, Patrick L. Holland, Mark A. Johnson, *Gordon Research Conference - Molecular & Ionic Clusters*, Ventura, CA (2016).
8. *Contributed research for poster*, “**Characterization of an Activated CO₂ Captured on a Cationic Ni(I) Complex Using Cryogenic Ion Chemistry,**” Stephanie M. Craig, Fabian S. Menges, Chinh H. Duong, Niklas Totsch, Aaron Bloomfield, Subrata Ghosh, Hans-Jorg Kruger, Mark A. Johnson, *Gordon Research Conference - Molecular & Ionic Clusters*, Ventura, CA (2016).
7. *Presented talk*, “**Molecular Spectroscopy: A Splash of Radiation with Matter,**” Chinh H. Duong, Daniel A. Obenchain, Stewart E. Novick, S. A. Cooke, *Ronald E. McNair Symposium*, Middletown, CT (2013).
6. *Contributed poster*, “**Rotational Study of 2H,3H-Perfluoropentane and its Isotopologues,**” Chinh H. Duong, Daniel A. Obenchain, Stewart E. Novick, S. A. Cooke, *Howard Hughes Poster Session*, Middletown, CT (2012).
5. *Presented talk*, “**A Rotational Study of 2H,3H-Perfluoropentane and its Isotopologues,**” Chinh H. Duong, Daniel A. Obenchain, Stewart E. Novick, S. A. Cooke, *International Symposium on Molecular Spectroscopy*, Columbus, OH (2012).
4. *Presented talk*, “**Looking for Needles in a Haystack with Expensive Equipment: Spectral Assignment and Structural Determination of the Argon-36 Cyclopentanone Complex,**” Chinh H. Duong, Daniel J. Frohman, G. S. Grubbs II, Wallace C. Pringle, Stewart E. Novick, *Ronald E. McNair Symposium*, Middletown, CT (2011).
3. *Contributed poster*, “**Spectral Assignment and Structural Determination of the Argon-36 Cyclopentanone van der Waals Complex,**” Chinh H. Duong, Daniel J. Frohman, G. S. Grubbs II, Wallace C. Pringle, Stewart E. Novick, *Howard Hughes Poster Session*, Middletown, CT (2011).

2. *Contributed research for talk, “Determination of the Structure of Cyclopentanone and Argon and Neon Cyclopentanone van der Waals Complexes,”* Wei Lin, Andrea J. Minei, Andrew H. Brooks, Daniel J. Frohman, Chinh H. Duong, G. S. Grubbs II, Wallace C. Pringle, Stewart E. Novick, *International Symposium on Molecular Spectroscopy*, Columbus, OH (2011).
1. *Contributed poster, “Determination of the Spectra and Structure of the ³⁶Ar Cyclopentanone van der Waals Complex,”* Chinh H. Duong, Daniel J. Frohman, Wallace C. Pringle, Stewart E. Novick, *Howard Hughes Poster Session*, Middletown, CT (2010).

AWARDS

National Science Foundation

- National Science Foundation Graduate Research Fellowship, 2016-2019

Yale University

- Graduate Teaching Fellowship, 2014-2015

Wesleyan University

- Wallace C. Pringle Prize, 2013
- Dean’s List, 2012-2013
- Ronald E. McNair Fellowship, 2011-2013
- Howard Hughes Summer Research Fellowship, 2010-2012
- American Chemical Society Analytical Award, 2012

Gates Millennium Scholars Program

- Gates Millennium Scholarship, 2009-2019

Michael & Susan Dell Foundation Scholarship

- Michael & Susan Dell Foundation Scholarship, 2009-2015

TEACHING EXPERIENCE

Yale University, New Haven, CT

August 2014 to May 2015

Teaching Fellow

- Held weekly discussion sessions, assisted undergraduate students with understanding homework and concepts from general chemistry.

Upward Bound, University of Nebraska, Lincoln, NE

October 2013 to May 2014

Upward Bound Tutor

- Held weekly tutoring sessions, assisted high school students with understanding homework and concepts from mathematics up to calculus, elementary chemistry, physics and biology.

Wesleyan University, Middletown, CT

September 2012 to May 2013

Teaching Assistant

- Led homework discussion sections and helped students in General Chemistry I & II with questions concerning basic equilibrium, thermodynamics, kinetics and inorganic chemistry.

PROFESSIONAL EXPERIENCE

Instructional Media Services (IMS), Wesleyan University, Middletown, CT

Media Specialist

August 2012 to May 2013

- Led large classroom installation and renovation projects to add/upgrade classroom technology on the Wesleyan campus.

Training Manager

August 2010 to May 2012

- Created and managed the training program for new IMS technicians and taught classes on troubleshooting and maintenance of campus technology and software.

Media Technician

August 2009 to May 2010

- Acted as a liaison between faculty and IMS, provided live assistance and technology maintenance services, provided and operated media equipment for the annual reunion and commencement events.

OUTREACH
ACTIVITIES

Free Radicals, Wesleyan University, Middletown, CT

August 2010 to May 2013

- Participating member of the chemistry club at Wesleyan University primarily focused on science outreach and the promotion of chemistry with events, exam review sessions and chemical demonstrations.

Habitat for Humanity, Exmore, Virginia

October 2010 - November 2010

- Worked with a team to install insulation and roofing for a home construction project in Exmore, Virginia.

RELEVANT
SKILLS

Hardware:

- Basic Machine Shop Skills
- Moderate Electronic and Technology Design and Construction Skills

Software:

- AutoCAD Inventor
- Gaussian
- LabView
- Mathematica
- Operating systems: Windows, OS X
- PROSPE (spectral fitting programs for rotational spectroscopy)
- WordPress

Program Languages:

- LaTeX

Certifications:

- Gates Millennium Scholars Program Student Leader

Foreign Languages:

- Fluent in English, Moderate Vietnamese and French