

Curriculum Vitae Gary E. Douberly

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Personal

Born: February 5, 1977, Jacksonville, FL, USA
Married: Jennifer A. Douberly (Audiologist), 10/19/02-present
Children: None
Residence: 240 Crawford Ave., Athens, GA 30601. 919-360-2083

Education

B.S. Chemistry, 2000, University of Central Florida.
Research Advisor – Hiroshi Matsui

Ph.D. Physical Chemistry, 2006, University of North Carolina at Chapel Hill.
Research Advisors - Roger E. Miller and Tomas Baer
Dissertation title: "Infrared Laser Spectroscopy of Dopants In and On Helium Nanodroplets: Rotational and Vibrational Dynamics"

Professional Appointments

2018 Professor, University of Georgia.
2014 Associate Professor, University of Georgia.
2008 Assistant Professor, University of Georgia.
2006 Postdoctoral Fellow, University of Georgia. Advisor – Michael A. Duncan

Professional Affiliations

American Chemical Society (Physical Division); American Physical Society (Chemical Physics Division); Coblenz Society

Awards and Honors

Molecular and Ionic Clusters Gordon Research Conference, co-Chair, 2018.
Conference on Cold and Controlled Molecules and Ions, Chair, 2018.
Northeast Georgia Section ACS, Chemist of the Year for Service, 2017.

JILA Visiting Fellow, 2016.
UGA Center for Teaching and Learning, Fellows for Innovative Teaching, 2016.
Coblentz Memorial Award (Coblentz Society), 2015.
Journal of Physical Chemistry A Lectureship (American Chemical Society), 2014.
Northeast Georgia Section ACS, Chemist of the Year for Research, 2014.
Frontiers of Spectroscopy Lecturer, Ohio State University, Columbus, OH, 2014.
Presidential Early Career Award for Scientists and Engineers (PECASE), 2013.
Department of Energy, Office of Science, Early Career Award, 2012.
National Science Foundation Faculty Early Career Development Award, 2011.
Rao Prize, International Symposium on Molecular Spectroscopy, 2006.
Ernest L. Eliel Fellowship, University of North Carolina at Chapel Hill, 2004.
Frances P. Venable Fellowship, University of North Carolina at Chapel Hill, 2001.
Office of Undergraduate Research Award, University of Central Florida, 2000.
Analytical Chemistry Award, University of Central Florida, 2000.
Physical Chemistry Award, University of Central Florida, 2000.

Other Professional Activities

- Member: Education Committee, *Coblentz Society*, 2012-2013.
- Chair: Coblentz Award Committee, *Coblentz Society*, 2017.
- Chair: Rao Prize Committee, *International Symposium on Molecular Spectroscopy*, 2014-2019
- Chair: International Advisory Committee to the *International Symposium on Molecular Spectroscopy*, 2019-2020
- Chair: *Northeast Georgia Section of the American Chemical Society*, 2016.
- Member: Committee of Visitors for the Division of Chemical Sciences, Biosciences and Geosciences. Basics Energy Sciences, US-DOE. March 27-30, 2017
- Member: Independent Review of the HPIR Venture, Savannah River National Laboratory. June 29, 2017.
- Member: Committee to review the *Journal of Chemical Physics*. November 27-28, 2017.
- Rao Prize Judge: *International Symposium on Molecular Spectroscopy*, 2007-present

International Advisory Boards:

1. *Cold and Controlled Molecules and Ions Symposium*, 2012-present
2. *International Conference on Quantum Fluid Clusters*, 2013-present
3. *International Symposium on Molecular Spectroscopy*, 2014-present

Editorial Boards:

1. Editorial Board of the *Journal of Molecular Spectroscopy*, 2014-2017.
2. Editorial Advisory Board, *Journal of Physical Chemistry Letters*, 2015-2017.

Symposium/Meeting Organizer:

1. 67th International Symposium on Molecular Spectroscopy, Columbus, OH. June 17-22, 2012. Co-organizer (David T. Anderson, University of Wyoming) of the mini symposium: *Cold Quantum Systems*.
2. 2016 Molecular and Ionic Cluster Gordon Research Conference, Vice co-Chair.
3. 2018 Molecular and Ionic Cluster Gordon Research Conference, co-Chair.
4. 2018 Conference on Cold and Controlled Molecules and Ions, Chair.

Session Chair:

1. “Cold Collisions.” XXI Dynamics of Molecular Collisions Meeting, Snowbird, UT. July 5-10, 2009.
2. “Matrix and Condensed Phase” 65th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH. June 21-25, 2010.
3. “Radicals and Ions” 66th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH. June 20-24, 2011.
4. “Cold Quantum Systems” 67th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH. June 17-22, 2012.
5. “Cold/Ultracold/Matrices/Droplets” 70th International Symposium on Molecular Spectroscopy, Urbana-Champaign, IL. June 22-26, 2015.
6. “Vibrational structure/frequencies” 71st International Symposium on Molecular Spectroscopy, Urbana-Champaign, IL. June 20-24, 2016.

Collaborations:

Dr. C. Michael Lindsay, Air Force Research Laboratories, Eglin AFB, FL., 2008-2014

“Laser Spectroscopy of Energetic Materials Synthesized in Helium Nanodroplets”

Dr. Andrey Vilesov, University of Southern California, 2010, “Infrared spectroscopy of HCl-H₂O clusters in helium nanodroplets”; 2013, “Infrared Spectra in the 3 μm region of ethane and ethane clusters in He droplets”

Dr. Sotiris S. Xantheus, PNNL, 2011-2016. “Non-Equilibrium growth of non-cyclic water clusters in helium nanodroplets”

Dr. Henry F. Schaefer III, University of Georgia, 2012-present. “Spectroscopy of hydrocarbon radicals in helium nanodroplets”

Dr. Mark D. Marshall, Amherst College, 2012-2014. “Spectroscopic implications of unquenched electronic angular momentum in open shell complexes solvated in liquid helium”

Dr. Stephen J. Klippenstein, Argonne National Lab, 2013, “The Propargyl + O₂ reaction in helium droplets: entrance channel barrier or not?”

Dr. Jerry A. Boatz and Dr. Steven D. Chambreau, Air Force Research Laboratories, Edwards AFB, CA., 2013, “Helium Nanodroplet Isolation and Infrared Spectroscopy of the Isolated Ion- Pair 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide”

Dr. Wesley D. Allen, University of Georgia, 2013-2014. “Dipole Moment of the HOOO Radical: Resolution of a Structural Enigma”

Dr. John F. Stanton, University of Florida, 2013-present. “Capture of Hydroxymethylene in Helium Droplets: High-Resolution Rovibrational Laser Spectroscopy”

Dr. Anne McCoy, University of Washington, 2014-2016. “Stark and Zeeman Spectroscopy of the OH-CO radical”

Dr. Edwin Sibert, University of Wisconsin, 2016 “Anharmonic interactions in the Propyl Radical”

Dr. Hua Guo, University of New Mexico, 2016-present “Three-centered two-electron bonding in halogen containing molecular complexes”

Journal Referee:

Journal of Physical Chemistry, Journal of Chemical Physics, Chemical Physics, Physical Chemistry Chemical Physics (PCCP), Chemical Physics Letters, European Physical Journal D, Reviews of Scientific Instruments, Journal of Molecular Spectroscopy, Journal of the American Chemical Society, Frontiers in Chemistry, Advanced Materials, RSC Advances, ChemPhysChem

Proposal Review:

National Science Foundation, Department of Energy: Office of Science, American Chemical Society: Petroleum Research Fund, Louisiana Board of Regents, Austrian Science Fund (FWF),

Biography

Gary E. Douberly received a B.S. degree in chemistry from the University of Central Florida in 2000. He received a Ph.D. in physical chemistry from the University of North Carolina at Chapel Hill in 2006 under the direction of Roger E. Miller and Tomas Baer. Following postdoctoral work with Michael A. Duncan at the University of Georgia, he began his faculty appointment at the University of Georgia in 2008. Professor Douberly has received the CAREER award from the National Science Foundation, the Early Career Award from the Department of Energy Office of Science, the Presidential Early Career Award for Scientists and Engineers (PECASE) from the White House Office of Science and Technology Policy, a JILA Visiting Fellowship, and the Journal of Physical Chemistry Lectureship Award. Most recently, Gary received the Coblentz Memorial Award from the Coblentz Society recognizing advancements in the field of Molecular Spectroscopy by a scientist under the age of 40.

Research Focus

The Douberly research group has made significant contributions to the development of spectroscopic techniques designed for the helium nanodroplet isolation method. They have employed this methodology to address a diverse set of fundamental problems in chemical physics. The low temperature (0.4 K) and rapid cooling associated with helium droplets provides a perfectly suited medium to isolate and spectroscopically probe transient species, such as molecular radicals and carbenes. Reactants sequentially added

to helium droplets are often stabilized in high-energy, metastable configurations on the potential energy surface. Single and double resonance infrared (IR) laser spectroscopic techniques are used to probe the structural and dynamical properties of these systems, often with sufficiently high resolution to resolve rotational fine structure.

Continuous, effusive pyrolysis sources of molecular radicals and carbenes have been optimized for doping helium nanodroplets, and several spectroscopic studies have been reported which describe the fundamental chemical physics of helium-solvated small radicals and carbenes. The methyl,¹ ethyl,² vinyl,³ propargyl,⁴ allyl⁵ and hydroxyl⁶ radicals have been probed, as have the hydroxycarbene⁷ and dihydroxycarbene⁸ systems. These reports provided fundamental insights into the spectroscopy of these species and the interactions of these systems with the helium environment. Rotational and vibrational state-dependent line broadening,¹⁻³ dynamically-induced anomalous lambda doubling,^{6,9} and the solvent effect on tunneling dynamics³ are examples of the fundamental chemical physics that have been probed in these studies. Moreover, recent Stark spectroscopy measurements of hydrogen bonded complexes involving the hydroxyl radical (OH-C₂H₂, OH-C₂H₄, and OH-H₂O) have been interpreted via spectroscopic models developed by Douberly, which employ the spherical tensor operator formalism to account for the Stark effect in molecules possessing partially quenched electronic angular momentum.^{10,11}

The Douberly group has leveraged the sequential pick-up technique developed by Scoles to investigate the mechanisms associated with several key elementary atmospheric and combustion reactions carried out inside low temperature helium droplets. The rationale for these studies is that spectroscopic measurements carried out downstream from the pick-up zones are capable of identifying the structural configuration of key intermediates along the reaction path, along with the associated product branching ratios. The outcome of low temperature reactions involving hydrocarbon radicals and O₂,^{4,5,12} or the hydroxyl radical (OH) and O₂,¹³ have been probed with this methodology. For example, a series of studies on the OH + O₂ helium-mediated reaction revealed the barrierless formation of *trans*-HOOO,¹³⁻¹⁵ which was inconsistent with theoretical studies that had predicted a large entrance channel barrier above the reactant asymptote. Higher level multireference configuration interaction computations of this system carried out by others confirmed the barrierless reaction path implied by Douberly's experiments. IR laser Stark spectroscopy of *trans*-HOOO revealed inertial components of the permanent electric dipole moment that were inconsistent with computations at the equilibrium geometry, consistent with a floppy species undergoing large-amplitude torsional motion.¹⁵ These experimental dipole components provided a stringent benchmark for theoretical computations of the ground state wavefunction, which eventually resulted in definitive computations of the dissociation energy and atmospheric abundance of this species.¹⁵

Measurements have been reported in which dipeptides,¹⁶ ionic liquids¹⁷ or mixed acid-water clusters^{17,18} are assembled within helium droplets. A two-stage oven source was developed which allowed for high-precision measurements of the gas-phase interconversion thermodynamics of the model di-peptide N-acetylglycine methylamide.¹⁶ Polarization spectroscopy of the ionic liquid 1-Ethyl-3-methylimidazolium

bis(trifluoromethylsulfonyl)imide revealed a dipole moment of ~12 Debye, confirming definitively that these types of systems evaporate as intact ion-pairs.¹⁷ IR laser spectroscopy was used to probe the evolution of the spectral signatures associated with the formation and trapping of non-equilibrium (HCl)_n-(H₂O)_m cluster geometries.^{18,19} This study was reported in collaboration with Andrey Vilesov and provided critical insights into controversial previous measurements of the onset of acid ionization in small acid-water clusters. More recently, a paper on the formation of exotic hydrogen-bonded water networks in helium droplets was published in the *Journal of the American Chemical Society*.²⁰ The range of systems studied during Douberly's independent career is both a testament to the versatility of the helium droplet method and the creativity of his research group.

1. Morrison, A.M.; Raston, P.L.; Douberly, G.E., "Rotational relaxation dynamics of the methyl radical in helium nanodroplets" *Journal of Physical Chemistry A*, (2013), 117, 11640-11647.
2. Raston, P.L.; Agarwal, J.; Turney, J.M.; Schaefer, III H.F.; Douberly, G.E., "The Ethyl radical in superfluid helium nanodroplets: Rovibrational spectroscopy and ab initio computations" *Journal of Chemical Physics*, (2013), 138, 194303.
3. Raston, P.L.; Liang, T.; Douberly, G.E., "Infrared spectroscopy and tunneling dynamics of the vinyl radical in ⁴He Nanodroplets" *Journal of Chemical Physics*, (2013), 138, 174302.
4. Moradi, C.P.; Morrison, A.M.; Klippenstein, S.J.; Goldsmith, C.F.; Douberly, G.E., "The propargyl + O₂ reaction in helium droplets: entrance channel barrier or not?" *Journal of Physical Chemistry A*, (2013), 117, 13626-13635.
5. Leavitt, C.M.; Moradi, C.P.; Acrey, B.W.; Douberly, G.E., "Infrared laser spectroscopy of the helium-solvated allyl and allyl peroxy radicals" *Journal of Chemical Physics*, (2013), 139, 234301.
6. Raston, P.L.; Liang, T.; Douberly, G.E., "Anomalous Λ-doubling in the infrared spectrum of the hydroxyl radical in helium nanodroplets" *Journal of Physical Chemistry A*, (2013), 117, 8103-8110.
7. Leavitt, C.M.; Moradi, C.P.; Stanton, J.F.; Douberly, G.E., "Communication: Helium Nanodroplet Isolation and Rovibrational Spectroscopy of Hydroxymethylene" *Journal of Chemical Physics*, (2014), 140, 171102.
8. Broderick, B.M.; McCaslin, L.; Moradi, C.P.; Stanton, J.F.; Douberly, G.E. "Reactive Intermediates in ⁴He Nanodroplets: Infrared Laser Stark Spectroscopy of Dihydroxycarbene" *Journal of Chemical Physics*, (2015), 142, 144309.
9. Raston, P.L.; Liang, T.; Douberly, G.E., "Observation of the Q(3/2) Λ-doublet transitions for X ²Π_{3/2} OD in Helium Nanodroplets" *Molecular Physics*, (2014), 112, 301-303.
10. Moradi, C.P.; Douberly, G.E.; "On the Stark effect in open shell complexes exhibiting partially quenched electronic angular momentum: Infrared laser Stark

- spectroscopy of OH-C₂H₂, OH-C₂H₄, and OH-H₂O" *Journal of Molecular Spectroscopy*, (2015), 314, 54-62.
11. Hernandez, F.J.; Brice, J.T.; Leavitt, C.M.; Liang, T.; Raston, P.L.; Pino, G.A.; Douberly, G.E. "Mid-Infrared Signatures of Hydroxyl Containing Water Clusters: Infrared Laser Stark Spectroscopy of OH-H₂O and OH(D₂O)_n (n=1-3)" *Journal of Chemical Physics*, (2015), 143, 164304.
 12. Morrison, A.M.; Agarwal, J.; Schaefer, III H.F.; Douberly, G.E., "Infrared laser spectroscopy of the CH₃OO radical formed from the reaction of CH₃ and O₂ within a helium nanodroplet" *Journal of Physical Chemistry A*, (2012), 116, 5299-5304.
 13. Raston, P.L.; Liang, T.; Douberly, G.E., "Infrared spectroscopy of HOOO and DOOO in ⁴He nanodroplets" *Journal of Chemical Physics*, (2012), 137, 184302.
 14. Liang, T.; Raston, P.L.; Douberly, G.E., "Helium nanodroplet isolation spectroscopy and ab initio calculations of HO₃-(O₂)_n clusters" *ChemPhysChem*, (2013), 14, 764-770.
 15. Liang, T.; Magers, D.B.; Raston, P.L.; Allen, W.D.; Douberly, G.E., "Dipole moment of the HOOO radical: Resolution of a structural enigma" *Journal of Physical Chemistry Letters*, (2013), 4, 3584-3589.
 16. Leavitt, C.M.; Moore, K.B.; Raston, P.L.; Agarwal, J.; Moody, G.H.; Shirley, C.C.; Schaefer, H.F.; Douberly, G.E. "Liquid Hot NAGMA Cooled to 0.4 Kelvin: Benchmark Thermochemistry of a Gas-Phase Peptide" *Journal of Physical Chemistry A*, (2014), 118, 9692-9700.
 17. Obi, E.I.; Leavitt, C.M.; Raston, P.L.; Moradi, C.P.; Flynn, S.D.; Vaghjiani, G.L.; Boatz, J.A.; Chambreau, S.D.; Douberly, G.E., "Helium Nanodroplet Isolation and Infrared Spectroscopy of the Isolated Ion- Pair 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide" *Journal of Physical Chemistry A*, (2013), 117, 9047-9056.
 18. Flynn, S.D.; Skvortsov D.; Morrison, A.M.; Liang, T.; Choi, M.Y.; Douberly, G.E.; Vilesov, A.F., "Infrared spectra of HCl-H₂O clusters in helium nanodroplets" *Journal of Physical Chemistry Letters*, (2010), 1, 2233-2238.
 19. Morrison, A.M.; Flynn, S.D.; Liang, T.; Douberly, G.E., "Infrared spectroscopy of (HCl)_m(H₂O)_n clusters in helium nanodroplets: Definitive assignments in the HCl stretch region" *Journal of Physical Chemistry A*, (2010), 114, 8090-8098.
 20. Douberly, G.E.; Miller, R.E.; Xantheas, S.S. "Formation of Exotic Networks of Water Clusters in Helium Droplets Facilitated by the Presence of Neon Atoms" *Journal of the American Chemical Society*, (2017), 139, 4152-4156.

Research Funding

University of Georgia Research Foundation, \$8,925 "Vibrational Spectroscopy of Transient Combustion Intermediates Trapped in Helium Nanodroplets," 1/1/10 to 12/31/10. (1164)

Air Force Research Laboratory, Munitions Directorate (AFRL/RWME), \$65,000
"Automation of an Optical Parametric Oscillator for the Characterization of Energetic Materials Synthesized in Helium Nanodroplets," 8/1/10 to 7/31/11. (FA8651-10-C-0272)

American Chemical Society Petroleum Research Fund, \$100,000 "Vibrational Spectroscopy of Transient Combustion Intermediates Trapped in Helium Nanodroplets," 9/1/10 to 8/31/12. (PRF No. 50223-DNI6)

National Science Foundation, (CSDM), \$618,505 "CAREER: Using Helium Nanodroplets to Probe the Structure and Thermochemistry of Biomolecular Building Blocks" 1/15/11 to 12/31/15. (CHE-1054742)

Department of Energy, Office of Science, Early Career Research Program, \$750,000
"Vibrational Spectroscopy of Transient Combustion Intermediates Trapped in Helium Nanodroplets," 7/1/12 to 6/30/17. (DE-FG02-12ER16298)

National Science Foundation, (CSDM-A), \$436,406 "Helium Droplet Spectroscopy of Atmospherically Significant Reaction Intermediates" 5/1/17 to 4/30/20. (CHE-1664637)

Department of Energy, Office of Science, Basic Energy Sciences, Gas-Phase Chemical Physics Program (GPCP), \$799,100 "Theoretical and Experimental Studies of Elementary Hydrocarbon Species and Their Reactions," 12/1/17 to 11/30/20. (DE-SC0018412)

United States Air Force, Education Partnership Agreement, \$443,500 "Infrared Optical Parametric Oscillator for Infrared-Infrared Double Resonance Experiments using Beams of Helium Nanodroplets," 5/1/2018. (USAF EPA Number 18-136-RW-01)

Invited Lectures

1. "Infrared laser spectroscopy of metal atom adsorbate systems solvated and attached to helium nanodroplets" Roger E. Miller Memorial Symposium. Chapel Hill, NC. October 6-8, 2006.
2. "Synthesis of metastable/energetic metal nanoparticles within liquid helium droplets," Eglin Air Force Base, Munitions Research Laboratory, December 12, 2006.
3. "Helium nanodroplet isolation spectroscopy (HENDI):
The marriage between molecular beam and matrix isolation spectroscopy"

- University of Georgia, Physical Chemistry Seminar. Athens, GA. January 12, 2007.
4. "Infrared and computational studies of small carbocations" American Chemical Society National Meeting. New Orleans, LA. April 6, 2008.
 5. "Infrared spectroscopy of size-selected gas phase carbocations" University of Alberta. Edmonton, Alberta. August 6, 2008.
 6. "Liquid helium droplet nanoreactors: Chemistry near absolute zero" Centre College, Danielsville, KY. April 7, 2009.
 7. "Liquid helium droplet nanoreactors: Chemistry near absolute zero" Georgetown College, Georgetown, KY. April 8, 2009.
 8. "Liquid helium droplet nanoreactors: Chemistry near absolute zero" Berea College, Berea, KY. April 9, 2009.
 9. "Spectroscopy of molecular clusters in 0.4 kelvin helium nanodroplets" Kyoto Workshop on Cold Atoms and Molecules, Kyoto, Japan. June 23-26, 2009.
 10. "Thermochemistry of cytosine tautomers with ± 0.1 kcal/mol accuracy" University of Georgia, Physical Chemistry Seminar. Athens, GA. September 11, 2009.
 11. "Liquid helium droplet nanoreactors: Chemistry near absolute zero" East Tennessee State University, Johnson City, TN. October 16, 2009.
 12. "Spectroscopy of molecular clusters in 0.4 Kelvin helium nanodroplets" University of Georgia, Department of Physics Colloquium. Athens, GA. November 12, 2009.
 13. "Liquid helium droplet nanoreactors: Chemistry near absolute zero" Armstrong Atlantic State University, Savannah, GA. March 5, 2010.
 14. "Spectroscopy of molecular clusters in 0.4 Kelvin helium nanodroplets" American Chemical Society National Meeting. San Francisco, CA. March 24, 2010.
 15. "Infrared spectroscopic studies of protonated polycyclic aromatic hydrocarbons (H^+ PAHs) and their relevance for the unidentified infrared bands" A Workshop of the Southeast Laboratory Astrophysics Community: Dust and Ice: Their Roles in Astrophysical Environments. University of Georgia, Athens, GA. March 30-April 1, 2010.
 16. "Spectroscopy and reactions of hydrocarbon radicals in 0.4 Kelvin helium nanodroplets" 41st Annual Meeting of the American Physical Society Division of Atomic, Molecular, and Optical Physics (DAMOP). May 29, 2010.

17. “Biophysical chemistry in helium nanodroplets: exploring fundamental interactions at play in biochemistry” Albany State University, Atlanta, GA. August 31, 2010.
18. “Spectroscopy of molecular clusters in 0.4 Kelvin helium nanodroplets” University of Florida, Gainesville, FL. September 14, 2010.
19. “Spectroscopy of molecular clusters in 0.4 Kelvin helium nanodroplets” James Madison University, Harrisonburg, VA. January 14, 2011.
20. “Rovibrational spectroscopy of aluminum carbonyl clusters in helium nanodroplets” University of North Carolina at Chapel Hill, Chapel Hill, NC. April 21, 2011.
21. “Rovibrational spectroscopy of aluminum carbonyl clusters in helium nanodroplets” Emory University, Atlanta, GA. April 25, 2011.
22. “An introduction to optical parametric oscillators,” Eglin Air Force Base, Munitions Research Laboratory, May 5, 2011.
23. Hot Topic Talk. “Rovibrational spectroscopy of aluminum carbonyl clusters in helium nanodroplets” 482nd Heraeus Seminar: *Helium Nanodroplets – Confinement for Cold Molecules and Cold Chemistry*. Bad Honnef, Germany. May 29 to June 1, 2011.
24. “Spectroscopy and Dynamics of Molecular Clusters in 0.4 Kelvin Helium Nanodroplets” XXII *Dynamics of Molecular Collisions* Meeting, Snowbird, UT. July 10-15, 2011.
25. Hot Topic Talk. “Spectroscopy and Dynamics of Open Shell Molecular Clusters in 0.4 K Helium Nanodroplets” 31st *International Symposium on Free Radicals*. Port Douglas, Australia. July 24 to July 29, 2011.
26. “Spectroscopy of Transient Species in Helium Droplets” University of Southern California, Los Angeles, CA. September 12, 2011.
27. “Hydrocarbon Radical Reactions in Helium Nanodroplets” 2012 Gordon Research Conference on *Molecular and Ionic Clusters*. Ventura, CA. January 29 to February 2, 2012.
28. “Spectroscopy of Molecular Clusters in 0.4 Kelvin Helium Nanodroplets” University of North Carolina at Greensboro, Greensboro, NC. February 10, 2012.
29. “Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets” Purdue University, West Lafayette, IN. April 4, 2012.

30. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" Marquette University, Milwaukee, WI. April 6, 2012.
31. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" University of Wisconsin, Madison, WI. April 9, 2012.
32. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" Rowland Institute at Harvard, Cambridge, MA. May 11, 2012.
33. "The Formation of Clusters Containing the Hydroxyl Radical and $(\text{O}_2)_n$ in Helium Nanodroplets: Experiment and Theory" *Southeast Theoretical Chemistry Association (SETCA) Annual Meeting*. Center for Computational Chemistry, University of Georgia, Athens, GA. May 17-19, 2012.
34. "Radical Containing Clusters in Helium Nanodroplets" *Aggregation of Small Molecules - from Dimers to Crystals*. Ruhr Universitat, Bochum, Germany. May 29-31, 2012.
35. "The Formation and Spectroscopy of OH and HO_n in Helium Nanodroplets" Telluride Workshop on *Spectroscopy and Dynamics on Multiple Potential Energy Surfaces*. Telluride, CO. July 9-13, 2012.
36. "Metastable Clusters in Helium Nanodroplets" 2012 Gordon Research Conference on *Atomic and Molecular Interactions*. Stonehill College, Easton, MA. July 15-20, 2012.
37. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" The Ohio State University, Columbus, OH. September 17, 2012.
38. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" University of Kentucky, Lexington, KY. September 21, 2012.
39. "High Resolution Laser Spectroscopy of Radical Containing Complexes and Radical-Radical Reaction Products in Helium Nanodroplets" 14th Edition of the *Conference on the Stereodynamics of Chemical Reactions*. Paris, France. October 22-26, 2012.
40. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" University of Wyoming, Laramie, WY. February 7, 2013.
41. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" University of Colorado, Boulder, CO. February 8, 2013.
42. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" University of Texas at Austin, Austin, TX. February 28, 2013.
43. "Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets" University of West Florida, Pensacola, FL. March 29, 2013.

44. “Radical Containing Complexes and Radical-Radical Reactions in Helium Nanodroplets” Lehigh University, Bethlehem, PA. April 17, 2013.
45. “High-Resolution Stark Spectroscopy of OH Containing Complexes in Helium Nanodroplets” Center for Free-Electron Laser Science (CFEL) Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany. June 14, 2013.
46. “High-Resolution Stark Spectroscopy of OH Containing Complexes in Helium Nanodroplets” *Quantum Fluid Clusters* 2013, Regensburg, Germany. June 16-19, 2013.
47. “High-Resolution Stark Spectroscopy of OH Containing Complexes in Helium Nanodroplets” Fritz Haber Institute, Berlin, Germany. June 21, 2013.
48. “Chemistry Near Absolute Zero: Spectroscopy of Reactive Molecules in Helium Nanodroplets” University of Mississippi, Oxford, MS. July 1, 2013.
49. “Stark Spectroscopy and the Vibrational Dynamics of Hydridotrioxigen (HOOO)” Telluride Workshop on *Vibrational Dynamics*. Telluride, CO. July 21-26, 2013.
50. “Helium Nanodroplet Isolation of Hydrocarbon Radicals” Telluride Workshop on *Radicals in the Rockies*. Telluride, CO. July 21-26, 2013.
51. “High-Resolution Stark Spectroscopy of OH Containing Complexes in Helium Nanodroplets” The 23rd *Colloquium on High-Resolution Molecular Spectroscopy*, Budapest, Hungary. August 25-30, 2013.
52. “High-Resolution Stark Spectroscopy of OH Containing Complexes in Helium Nanodroplets” *SASP XIX* 2014, Obergurgl, Austria. February 9-14, 2014.
53. *Frontiers of Spectroscopy* Lecture Series, Ohio State University, Columbus, OH. March 26-28, 2014.
54. “Helium Nanodroplet Isolation of Hydroxymethylene: The Formose Reaction at 0.4 K” Hot Topic talk: 2014 Gordon Research Conference on *Molecular and Ionic Clusters*. Lucca (Barga), Italy. April 27 to May 2, 2014.
55. “Molecular Radical Reactions and Carbene Chemistry at 0.4 Kelvin: High-Resolution Rovibrational Spectroscopy of Pre-Reactive Complexes and Transient Intermediates” *Reaction Mechanisms 2014*, UC-Davis, CA. June 22-25, 2014.
56. “Infrared Rovibrational Spectroscopy of OH-C₂H₂ in ⁴He Nanodroplets: Parity Splittings due to Partially Quenched Electronic Angular Momentum” Telluride Workshop on *Spectroscopy and Dynamics on Multiple Potential Energy Surfaces*. Telluride, CO. July 7-11, 2014.

57. "Dipole Moment of the HOOO Radical: Resolution of a Structural Enigma" *Journal of Physical Chemistry A. Lecture*. American Chemical Society National Meeting. San Francisco, CA. August 12, 2014.
58. "Molecular Radical Reactions and Carbene Chemistry at 0.4 Kelvin: High-Resolution Rovibrational Spectroscopy of Pre-Reactive Complexes and Transient Intermediates" Texas A&M University, College Station, TX. November 4, 2014.
59. "Laser Spectroscopy of Reactive Intermediates in Superfluid Helium Droplets" University of Auburn, Auburn, AL. January 29, 2015.
60. "Vibrational Spectroscopy of Transient Combustion Intermediates in Helium Nanodroplets" 35th Annual Combustion Research Meeting, U.S. Department of Energy Office of Basic Energy Sciences, Potomac, MD. May 29, 2015
61. "Chemical Reactions in Helium Droplets: Past Successes and Future Prospects" Xth international conference on *Quantum Fluid Clusters*. Toulouse, France. June 7-11, 2015.
62. Laser Spectroscopy of Radicals, Carbenes, and Ions in Superfluid Helium Droplets, *Coblentz Award Lecture*. 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
63. "Stark and Zeeman Spectroscopy of Open Shell Molecular Complexes in Helium Nanodroplets" *Defining New Directions in Cold Chemical Physics Workshop*. JILA, Boulder, CO. July 8-10, 2015.
64. "Bimolecular Reactions in Helium Droplets" 25th *Dynamics of Molecular Collisions* Meeting. Asilomar, CA. July 12-17, 2015.
65. "Stark and Zeeman Spectroscopy of Open Shell Molecular Complexes in Helium Nanodroplets" 33rd *International Symposium on Free Radicals*. Olympic Valley, CA. August 2-7, 2015.
66. "Laser Spectroscopy of Reactive Intermediates in Superfluid Helium Droplets" University of Louisville, Louisville, KY. September 4, 2015.
67. "Helium Nanodroplet Isolation: Past, Present, and Future" Roger E. Miller Symposium. Chapel Hill, NC. October 22-23, 2015.
68. "Laser Spectroscopy of Reactive Intermediates in Superfluid Helium Droplets" University of California at Berkeley, Berkeley, CA. November 3, 2015.
69. "Laser Spectroscopy of Reactive Intermediates in Superfluid Helium Droplets" 2015 *Symposium on Chemical Physics* at the University of Waterloo. Waterloo, Ontario. November 6-8, 2015.

70. “Laser Spectroscopy of Radicals, Carbenes, and Ions in Superfluid Helium Droplets” *Recent Progress in Matrix Isolated Species*, 2015 Pacificchem. Honolulu, Hawaii. December 17-18, 2015.
71. “Laser Spectroscopy of Radicals, Carbenes, and Ions in Superfluid Helium Droplets” 2016 *Cold and Controlled Molecules and Ions* Symposium. Rehovot, Israel. March 13-17, 2016.
72. “Laser Spectroscopy of Reactive Intermediates in Superfluid Helium Droplets” University of California at San Diego, San Diego, CA. April 5, 2016.
73. “Stark and Zeeman Spectroscopy of Open Shell Molecular Complexes in Helium Nanodroplets” JILA, University of Colorado at Boulder, Boulder, CO. June 30, 2016.
74. “Infrared Spectroscopy of Reactive Intermediates in Helium Droplets” 2016 Gordon Research Conference on *Vibrational Spectroscopy*. University of New England, Biddeford, ME. July 17-22, 2016.
75. “Infrared Laser Spectroscopy of Propyl Radicals in Helium Droplets: the Quest for QOOH” Telluride Workshop on *Radicals in the Rockies*. Telluride, CO. August 1-5, 2016.
76. “Stark and Zeeman Spectroscopy of Open Shell Molecular Complexes in Helium Nanodroplets” *Department of Physics Colloquium*, University of Georgia. Athens, GA. September 1, 2016.
77. “Infrared Laser Spectroscopy of Peroxy Radicals in Helium Droplets” 2017 *Pacific Conference on Spectroscopy and Dynamics*. Asilomar, CA. January 19-22, 2017.
78. “Laser Spectroscopy of Reactive Intermediates in Superfluid Helium Droplets” University of California at Davis, Davis, CA. February 21, 2017.
79. “Formation of Exotic Networks of Water Clusters in Helium Droplets Facilitated by the Presence of Neon Atoms” 253rd ACS National Meeting. San Francisco, CA. April 2-6, 2017.
80. “New Insights into the Dynamics of Radical-Radical Reactions in Helium Droplets” XIth International Conference on *Quantum Fluid Clusters*. Obergurgl, Austria. June 7-9, 2017.
81. “New Insights into the Dynamics of Radical-Radical Reactions in Helium Droplets” *Controllable Quantum Impurities in Physics and Chemistry* (CoQIPC), Vienna, Austria. August 16-18, 2017.
82. Invited Tutorial Talk. Spectroscopy and Dynamics Group Meeting. Durham, UK. January 8-19, 2018.

83. “Bimolecular Oxygen Atom Reactions in Helium Nanodroplets” SASP 2018, Obergurgl, Austria. February 11-16, 2018.
84. “O(³P) + Alkene Chemistry in Helium Nanodroplets” ACS National Meeting, New Orleans, LA. March 18-22, 2018.
85. “Theoretical and Experimental Studies of Elementary Hydrocarbon Species and their Reactions” DOE Contractor’s Meeting, Washington, DC. May 30-June 1, 2018.
86. “Spectroscopy of Water Clusters in Helium Droplets” Gordon Research Conference on *Molecular Interactions and Dynamics*, Stonehill College, July 8-13, 2018.
87. “Sequential Capture of O(³P) and Alkenes by Helium Nanodroplets: Infrared Spectroscopy and Ab Initio Computations of the Triplet Biradical Intermediates” *International Symposium on Reactive Intermediates and Unusual Molecules*, ISRIUM, Ascona Switzerland. July 15-20, 2018.
88. Plenary Lecture “Spectroscopy of Molecular Radicals in Helium Droplets” 25th *International Conference on High Resolution Molecular Spectroscopy*, Bibao, Spain. September 3-7, 2018.
89. “TBD” Kennesaw University, Atlanta, GA November 6, 2018.
90. Invited Introductory Lecture “TBD” Conference on *Quantum Fluid Clusters*, QFC-2019, Bad Honnef, Germany, May 19-22, 2019.

Other Lectures and Contributed Papers

1. Douberly, G.E.; and Matsui, H. “Fabrication of protein tubules using a peptide tubule template” *Particles* 2001. Orlando, FL. February 24-27, 2001.
2. Douberly, G.E.; and Miller, R.E. “Isomers of hydrogen fluoride clusters (HF)_N (N=4-6) formed in helium nanodroplets” 57th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 17-21, 2002.
3. Douberly, G.E.; Merritt, J.M.; and Miller, R.E. “Infrared-Infrared double resonance spectroscopy of HCCCN solvated in superfluid helium droplets” 58th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-20, 2003.
4. Douberly, G.E.; Merritt, J.M.; and Miller, R.E. “Infrared-Infrared double resonance spectroscopy of HCN-HCCH in helium droplets: conformer switching via single mode excitation” 58th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-20, 2003.

5. Douberly, G.E.; Merritt, J.M.; and Miller, R.E. "IR-IR double resonance spectroscopy: isomerization dynamics of the linear HCN-HF and bent HF-HCN complexes embedded in helium nanodroplets" 59th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 21-25, 2004.
6. Merritt, J.M.; Douberly, G.E.; and Miller, R.E. "Photo-induced chemistry in liquid helium droplets" 228th ACS National Meeting, Philadelphia, PA, August 22-26, 2004.
7. Douberly, G.E.; Falconer, T.M.; and Miller, R.E. "Infrared laser spectroscopy of the HCN-Sodium complex embedded in a helium nanodroplet" 60th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 20-24, 2005.
8. Douberly, G.E.; and Miller, R.E. "Infrared laser spectroscopy of dopants in and on helium nanodroplets: rotational and vibrational dynamics" Gordon Research Conference: Molecular and Ionic Clusters. Ventura, CA. February 19-24, 2006.
9. Douberly, G.E.; and Miller, R.E. "The HCN-X (X=Na, K, Rb, Cs) complexes formed on the surface of helium nanodroplets" 61st Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 19-23, 2006.
10. Douberly, G.E.; and Miller, R.E. "The HCN-Ca and HCN-Sr complexes formed on the surface of helium nanodroplets: spectroscopic probes of solvation dynamics" 61st Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 19-23, 2006.
11. Douberly, G.E.; Ricks, A.M.; Ticknor, B.W.; and Duncan, M.A "Infrared spectroscopy of protonated molecular clusters isolated in the gas phase" Gordon Research Conference: Gaseous Ions: Structures, Energetics, and Reactions. Ventura, CA. February 25- March 2, 2007.
12. Douberly, G.E.; Ticknor, B.W.; Ricks, A.M.; and Duncan, M.A "Infrared spectroscopy of size-selected protonated molecular clusters" 62nd Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 18-22, 2007.
13. Douberly, G.E.; Ticknor, B.W.; Ricks, A.M.; and Duncan, M.A "Infrared spectroscopy of H⁺(C₂H₂)_n-Ar and H⁺(C₂H₄)_nAr (n=1,2)" 62nd Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 18-22, 2007.
14. Douberly, G.E.; Ricks, A.M.; Ticknor, B.W.; and Duncan, M.A "Infrared spectroscopy of size-selected carbocations isolated in the gas phase" 29th. International Symposium on Free Radicals. Big Sky, MT. August 12-17, 2007.

15. Douberly, G.E.; Ricks, A.M.; Ticknor, B.W.; and Duncan, M.A. "Infrared spectroscopy of size-selected carbocations isolated in the gas phase" Southeast Regional Meeting of the American Chemical Society. Greenville, SC. October 27, 2007.
16. Merritt, J.M.; Douberly, G.E.; and Miller, R.E. "Photo-induced isomerization and chemical reaction dynamics in superfluid helium droplets" American Physical Society National Meeting. New Orleans, LA. March 10-14, 2008.
17. Douberly, G.E. "Alkaline earth metal atom complexes with HCN trapped on/in helium droplets: vibrational excitation induced solvation and desolvation" American Physical Society National Meeting. New Orleans, LA. March 10-14, 2008.
18. Douberly, G.E.; Ricks, A.M.; and Duncan, M.A. "Infrared spectroscopy of size-selected carbocations I: $C_3H_3^+$, $C_3H_5^+$, and $C_4H_9^+$ " 63rd Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-20, 2008.
19. Douberly, G.E.; Ricks, A.M.; and Duncan, M.A. "Infrared spectroscopy of size-selected carbocations II: $C_6H_7^+$, $C_7H_7^+$, and $C_7H_9^+$ " 63rd Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-20, 2008.
20. Ricks, A.M.; Douberly, G.E.; and Duncan, M.A. "Infrared spectroscopy of size-selected protonated molecular clusters: $(N_2)_nH^+$, $(CO)_nH^+$, and $((CH_3)_2CO)_nH^+$." 63rd Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-20, 2008.
21. Douberly, G.E.; Ricks, A.M.; and Duncan, M.A. "Infrared spectroscopy of size-selected carbocations and protonated molecular clusters" Gordon Research Conference: Molecular and Ionic Clusters. Aussois, France. September 7-12, 2008.
22. Douberly, G.E. "Progress towards helium nanodroplet spectroscopy of reactive metal cluster systems" Air Force Office of Scientific Research, 2009 Molecular Dynamics Contractor's Meeting. San Diego, CA. May 17-19, 2009.
23. Morrison, A.; Douberly, G.E. "Helium nanodroplet spectroscopy using an external cavity quantum cascade laser" 64th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 22-26, 2009.
24. Ricks, A.M.; Douberly, G.E.; and Duncan, M.A. "Infrared spectroscopy of size-selected protonated molecular clusters: $(N_2)_2H^+$, $(CO)_2H^+$, and $(O_2)_2H^+$ " 64th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 22-26, 2009.

25. Douberly, G.E. "Spectroscopy of molecular clusters in 0.4 kelvin helium nanodroplets" XXI Dynamics of Molecular Collisions Meeting, Snowbird, UT. July 5-10, 2009.
26. Morrison, A.; Douberly, G.E. "Thermochemistry of small biomolecules in helium droplet nanoreactors" 238th ACS National Meeting, Washington, DC. August 16-20, 2009.
27. Morrison, A.M.; Flynn, S.D.; Liang, T.; Douberly, G.E. "Hydrocarbon radicals isolated in helium nanodroplets" 65th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 21-25, 2010.
28. Morrison, A.M.; Flynn, S.D.; Liang, T.; Douberly, G.E. "Stark spectroscopy of CH₃F solvated in helium nanodroplets" 65th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 21-25, 2010.
29. Flynn, S.D.; Morrison, A.M.; Liang, T.; Douberly, G.E. "Infrared laser spectroscopy of (HCl)_m-(H₂O)_n clusters in helium nanodroplets" 65th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 21-25, 2010.
30. Morrison, A.M.; Liang, T.; Flynn, S.D.; Douberly, G.E. "Spectroscopy and reactions of hydrocarbon radicals in helium nanodroplets" 2010 Molecular and Ionic Clusters Conference. Toukamachi, Niigata, Japan. September 5-10, 2010.
31. Morrison, A.M.; Flynn, S.D.; Liang, T.; Douberly, G.E. "Hydrocarbon radicals isolated in helium nanodroplets" 62nd Southeast Regional Meeting of the American Chemical Society (SERMACS) New Orleans, LA. December 1-4, 2010.
32. Flynn, S.D.; Morrison, A.M.; Liang, T.; Douberly, G.E. "Infrared laser spectroscopy of (HCl)_m-(H₂O)_n clusters in helium nanodroplets" 62nd Southeast Regional Meeting of the American Chemical Society (SERMACS) New Orleans, LA. December 1-4, 2010.
33. Liang, T.; Morrison, A.M.; Flynn, S.D.; Douberly, G.E. "Infrared laser spectroscopy and *ab initio* calculations of Al-(CO)_n clusters in helium nanodroplets" 62nd Southeast Regional Meeting of the American Chemical Society (SERMACS) New Orleans, LA. December 1-4, 2010.
34. Morrison, A.M.; Liang, T.; Flynn, S.D.; Douberly, G.E. "Spectroscopy and dynamics of non-equilibrium molecular clusters in helium nanodroplets" 482nd Heraeus Seminar: Helium Nanodroplets – Confinement for Cold Molecules and Cold Chemistry. Bad Honnef, Germany. May 29 to June 1, 2011.
35. Flynn, S.D.; Morrison, A.M.; Liang, T.; Douberly, G.E. "Non-cyclic isomers of (H₂O)₄ in helium nanodroplets: infrared spectroscopy and *ab initio* calculations"

- 66th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 20-24, 2011.
36. Liang, T.; Morrison, A.M.; Flynn, S.D.; Douberly, G.E. "Rovibrational spectroscopy of aluminum carbonyl clusters in helium nanodroplets" 66th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 20-24, 2011.
 37. Morrison, A.M.; Douberly, G.E. "Experimental Thermochemistry of gas phase cytosine tautomers" 66th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 20-24, 2011.
 38. Morrison, A.M.; Liang, T.; Douberly, G.E. "Automatic tuning of an Aculight optical parametric oscillator" 66th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 20-24, 2011.
 39. Douberly, G.E. "Hydrocarbon Radical Reactions in Helium Nanodroplets" International Symposium on Free Radicals. Port Douglas, Australia. July 24-29, 2011.
 40. Flynn, S.D.; Douberly, G.E. "Helium Nanodroplet Isolation of Ionic Liquid Vapor: Infrared Laser Spectroscopy of [EMIM][Tf₂N]" 67th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 17-22, 2012.
 41. Raston, P.L.; Liang, T.; Flynn, S.D.; Morrison, A.M.; Douberly, G.E. "Infrared Spectroscopy of OH and OH-C₂H₂ embedded in Helium Nanodroplets" 67th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 17-22, 2012.
 42. Morrison, A.M.; Douberly, G.E. "On the Outcome of the Reactions between Hydrocarbon radicals and O₂ in Helium Nanodroplets" 67th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 17-20, 2012.
 43. Liang, T.; Raston, P.L.; Douberly, G.E. "Probing trans-HOOO/DOOO and HOOO-(O₂)_n Clusters: A HENDI Approach" 67th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 17-22, 2012.
 44. Liang, T.; Raston, P.L.; Douberly, G.E. "Anomalous Λ-doubling in the infrared spectrum of the hydroxyl radical in helium nanodroplets" 68th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-21, 2013.
 45. Liang, T.; Raston, P.L.; Douberly, G.E. "Helium nanodroplet isolation spectroscopy and ab initio calculations of HO₃-(O₂)_n clusters (n=0-4)" 68th Ohio

- State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-21, 2013.
46. Raston, P.L.; Liang, T.; Obi, E.I.; Douberly, G.E. "Infrared spectroscopy and tunneling dynamics of the vinyl radical in ^4He Nanodroplets" 68th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-21, 2013.
 47. Raston, P.L.; Moradi, C.P.; Agarwal, J.; Turney, J.M.; Schaefer, III H.F.; Douberly, G.E. "The Ethyl radical in superfluid helium nanodroplets: rovibrational spectroscopy and ab initio computations" 68th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-21, 2013.
 48. Obi, E.I.; Douberly, G.E. "Rovibrational spectroscopy of the OH-O₃ and C₂H₄-O₃ complexes in ^4He nanodroplets" 68th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-21, 2013.
 49. Moradi, C.P.; Douberly, G.E. "Spectroscopy of the CH₃-HCl complex in helium nanodroplets" 68th Ohio State University International Symposium on Molecular Spectroscopy. Columbus, OH. June 16-21, 2013.
 50. Liang, T.; Raston, P.L.; Douberly, G.E. "Helium Nanodroplet Isolation Spectroscopy and ab initio Computations of HO₃-(O₂)_n Clusters (n=0-4)" Dynamics of Molecular Collisions 2013. Granlibakken, CA. July 7-12, 2013.
 51. Moradi, C.P.; Liang, T.; Raston, P.L.; Douberly, G.E. "Helium Nanodroplet Isolation Spectroscopy and Ab Initio Calculations of HO-(O₂)_n Clusters (n=0-5)" International Symposium on Free Radicals. Potsdam, Germany. July 21-26, 2013.
 52. Moradi, C.P.; Liang, T.; Raston, P.L.; Douberly, G.E. "Hydrocarbon Radicals in Superfluid Helium Nanodroplets: Rovibrational Spectroscopy and Ab Initio Calculations" International Symposium on Free Radicals. Potsdam, Germany. July 21-26, 2013.
 53. Leavitt, C.M.; Moradi, C.P.; Stanton, J.F.; Douberly, G.E. "Helium Nanodroplet Isolation and Rovibrational Spectroscopy of Hydroxymethylene" 69th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 16-20, 2014.
 54. Liang T.; Raston P.L.; Douberly, G.E. "Infrared Laser Stark Spectroscopy and Ab Initio Computations of the OH-CO complex" 69th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 16-20, 2014.
 55. Moradi, C.P.; Leavitt, C.M.; Acrey, B.W.; Douberly, G.E. "Infrared Laser Spectroscopy of the Helium-Solvated Allyl and Allyl Peroxy Radicals" 69th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 16-20, 2014.

56. Leavitt, C.M.; Raston, P.L.; Moody, G.; Shirley, C.; Douberly, G.E. "Vibrational Spectroscopy and Gas-Phase Thermochemistry of the Model Dipeptide N-Acetyl Glycine Methyl Amide" 69th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 16-20, 2014.
57. Douberly, G.E.; Moradi, C.P. "On the Stark Effect in Open Shell Complexes Exhibiting Partially Quenched Electronic Angular Momentum" 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
58. Brice, J.T.; Leavitt, C.M.; Moradi, C.P.; Douberly, G.E.; Hernandez, F.J.; Pino, G.A. "Infrared Laser Spectroscopy and ab initio Computations of OH-(D₂O)_N Complexes in Helium Nanodroplets" 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
59. Moradi, C.P.; Broderick, B.M.; Agarwal, J.; Schaefer, H.F.; Douberly, G.E. "Vibrational-Torsional Coupling Revealed in the Infrared Spectrum of He-Solvated n-Propyl Radical" 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
60. Leavitt, C.M.; Brice, J.T.; Douberly, G.E.; Hernandez, F.J.; Pino, G.A. "Infrared Laser Stark Spectroscopy of the OH-CH₃OH Complex Isolated in Superfluid Helium Droplets" 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
61. Broderick, B.M.; Moradi, C.P.; Douberly, G.E.; McCaslin, L.; Stanton, J.F. "Reactive Intermediates in ⁴He Nanodroplets: Infrared Laser Stark Spectroscopy of Dihydroxycarbene" 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
62. Moradi, C.P.; Douberly, G.E. "Infrared Laser Stark Spectroscopy of the Pre-reactive Cl-HCl Complex Formed in Superfluid ⁴He Droplets" 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
63. Kaufmann, M.; Broderick, B.M.; Douberly, G.E. "Helium Nanodroplet Infrared Spectroscopy of the Tropylium Radical" 70th International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 21-26, 2015.
64. Broderick, B.M.; Moradi, C.P.; McCaslin, L.; Stanton, J.F.; Douberly, G.E. "Reactive Intermediates in ⁴He Nanodroplets: Infrared Laser Stark Spectroscopy of Dihydroxycarbene" 33rd International Symposium on Free Radicals. Olympic Valley, CA. August 2-7, 2015.
65. Brice, J.T.; Leavitt, C.M.; Moradi, C.P.; Hernandez, F.J.; Pino, G.A.; Douberly, G.E. "Infrared Laser Spectroscopy and Ab Initio Computations of OH(D₂O)_N Complexes in Helium Nanodroplets" 33rd International Symposium on Free Radicals. Olympic Valley, CA. August 2-7, 2015.

66. Brice, J.T.; Douberly, G.E. "Mid-infrared signatures of hydroxyl containing water clusters: Infrared laser spectroscopy of OH-H₂O and OH(D₂O)_n (n=1-3)" The 67th Southeastern and 71st Southwest Regional Meeting of the American Chemical Society. Memphis, TN. November 4-7, 2015.
67. Douberly, G.E. "On the Stark effect in open shell complexes exhibiting partially quenched electronic angular momentum" *Developments in Spectroscopic Investigation of Intermolecular Interactions and Dynamics of Molecular Clusters*; 2015 Pacifichem, Honolulu, Hawaii. December 15-16, 2015.
68. Douberly, G.E. "Infrared laser spectroscopy and ab initio computations of OH-(D₂O)_N complexes in helium nanodroplets" *Quantum Fluid Clusters*; 2015 Pacifichem, Honolulu, Hawaii. December 19-20, 2015.
69. Brown, A.R.; Broderick, B.M.; Leavitt, C.M.; Moradi, C.P.; Douberly, G.E.; McCaslin, L.; Stanton, J.F. "Reactive Intermediates in He Nanodroplets: Infrared Laser Stark Spectroscopy of Hydroxymethylene, Dihydroxycarbene, and Hydroxymethoxycarbene" Gordon Research Conference on *Molecular and Ionic Clusters*. Ventura, CA. January 17-22, 2016.
70. Brice, J.T.; Moradi, C.P.; Douberly, G.E. "On the Stark and Zeeman Effects in Open Shell Complexes Exhibiting Partially Quenched Electronic Angular Momentum: Infrared Laser Spectroscopy of OH-C₂H₂" Gordon Research Conference on *Molecular and Ionic Clusters*. Ventura, CA. January 17-22, 2016.
71. Franke, P.; Brice, J.T.; Leavitt, C.M.; Hernandez, F.J.; Pino, G.A.; Douberly, G.E. "Infrared Spectroscopy of OH·-CH₃OH: Hydrogen-Bonded Intermediate Along the Hydrogen Abstraction Reaction Path" Gordon Research Conference on *Molecular and Ionic Clusters*. Ventura, CA. January 17-22, 2016.
72. Pullen, G.T.; Moradi, C.P.; Douberly, G.E.; Sibert, E.L. "Infrared Laser Spectroscopy of the *n*-propyl and *i*-propyl Radicals in Helium Droplets: Significant Bend-Stretch Coupling Revealed in the CH stretch Region" Gordon Research Conference on *Molecular and Ionic Clusters*. Ventura, CA. January 17-22, 2016.
73. Moradi, C.P.; Douberly, G.E.; Tabor, D.P.; Sibert, E. "Infrared Laser Spectroscopy of the *n*-propyl and *i*-propyl Radicals in Helium Droplets: Significant Bend-Stretch Coupling Revealed in the CH stretch Region" 71st International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 20-24, 2016.
74. Brown, A.R.; Brice, J.T.; Douberly, G.E. "Infrared Spectrum of Fulvenallene and Fulvenallenyl" 71st International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 20-24, 2016.
75. Franke, P.R.; Moradi, C.P.; Kaufmann, M.; Xie, C.; Guo, H.; Douberly, G.E. "Two-center Three-electron Bonding in CINH₃ revealed via Helium Droplet

- Infrared Spectroscopy: Entrance Channel Complex along the $\text{Cl} + \text{NH}_3 \rightarrow \text{ClNH}_2 + \text{H}$ Reaction” 71st International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 20-24, 2016.
76. Douberly, G.E. “Infrared Zeeman Spectroscopy of Radicals in Helium Droplets” 33rd Symposium on Chemical Physics. University of Waterloo, Waterloo, Ontario, Canada. November 4-6, 2016.
 77. Franke, P.R.; Tabor, D.; Moradi, C.P.; Douberly, G.E.; Agarwal, J.; Schaefer, H.F.; Sibert, E.L. “Infrared Laser Spectroscopy of the *n*-propyl and *i*-propyl Radicals: Stretch-Bend Fermi Coupling in the Alkyl CH Stretch Region” 2017 *Pacific Conference on Spectroscopy and Dynamics*. Asilomar, CA. January 19-22, 2017.
 78. Pullen, G.T.; Franke, P.R.; Douberly, G.E.; Lee, Y.P. “Infrared Spectra of the *n*-propyl and *i*-propyl Radicals in Solid Para-Hydrogen” 72nd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 19-23, 2017.
 79. Brown, A.R.; Franke, P.R.; Douberly, G.E. “Infrared Spectrum of the Cyclobutyl Radical in He Droplets” 72nd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 19-23, 2017.
 80. Franke, P.R.; Douberly, G.E. “The $\text{O}_2 + \text{Ethyl}$ Reaction in Helium Nanodroplets: Infrared Spectroscopy of the Ethyl Peroxy Radical” 72nd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 19-23, 2017.
 81. Bunn, H.; Raston, P.; Douberly, G.E. “Laser Spectroscopy of Vinyl Alcohol Embedded in Helium Droplets” 72nd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 19-23, 2017.
 82. Brice, J.T.; Douberly, G.E. “ $\text{O}(^3\text{P})$ Doped Helium Droplets” 72nd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 19-23, 2017.
 83. Brown, A.R.; Franke, P.R.; Douberly, G.E. “Infrared Spectrum and Ring-opening Pathway of the Cyclobutyl Radical” 34th International Symposium on Free Radicals. Hayama, Japan. August 27 – September 1, 2017.
 84. Franke, P.R.; Douberly, G.E. “The Ethyl + O_2 Reaction in Helium Nanodroplets: Infrared Spectroscopy of the Ethyl Peroxy Radical” Gordon Research Conference on Molecular and Ionic Clusters. Barga, Italy. February 25 – March 2, 2018.
 85. Brown, A.R.; Franke, P.R.; Douberly, G.E. “Infrared Spectrum and Ring-opening Pathway of the Cyclobutyl Radical” 3rd Conference on Cold and Controlled Molecules and Ions. Athens, GA. March 25-29, 2018.

86. Daniel Leicht , Gary E. Douberly , Masashi Tsuge , Daniel T. Mauney, J. Philipp Wagner, David C. McDonald II, Yuan-Pern Lee, Michael A. Duncan “Infrared Laser Spectroscopy of the Mass-selected Protonated CO Dimer” 3rd Conference on Cold and Controlled Molecules and Ions. Athens, GA. March 25-29, 2018.
87. Gregory T. Pullen, Peter R. Franke, Gary E. Douberly, Yuan-Pern Lee “Infrared Spectra of Propene in Helium Nanodroplets and Solid *para*-Hydrogen Matrices” 3rd Conference on Cold and Controlled Molecules and Ions. Athens, GA. March 25-29, 2018.
88. Franke, P.R.; Douberly, G.E. “The Ethyl + O₂ Reaction in Helium Nanodroplets: Infrared Spectroscopy of the Ethyl Peroxy Radical” 3rd Conference on Cold and Controlled Molecules and Ions. Athens, GA. March 25-29, 2018.
89. Pullen, G.T.; Franke, P.R.; Douberly, G.E.; Lee, Y.P. “Infrared Spectra of Propene in Helium Nanodroplets and Solid *para*-Hydrogen” 73rd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 18-22, 2018.
90. Brown, A.R.; Brice, J.T.; Franke, P.R.; Douberly, G.E. “An Updated Look at the Infrared Spectrum of Fulvenallene and Fulvenallenyl” 73rd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 18-22, 2018.
91. Franke, P.R.; Douberly, G.E. “Rotamers of Isoprene: Infrared Spectroscopy in Helium Droplets and Ab Initio Thermochemistry” 73rd International Symposium on Molecular Spectroscopy. Champaign-Urbana, IL. June 18-22, 2018.
- 92.

Refereed Publications

(Web of Science: h-index=23, Citations=1639, Average per item=22.76, 6/27/2018)

1. Matsui, H.; Pan, S.; Douberly, G.E. Jr. “Fabrication of nanocrystal tube using peptide tubule as template and its application as signal-enhancing cuvette” *Journal of Physical Chemistry B*. (2001), 105(9), 1683-1686.
2. Matsui, H.; Porrata, P.; Douberly, G.E. Jr. “Protein tubule immobilization on self-assembled monolayers on Au substrates” *Nano Letters*. (2001), 1(9), 461-464.
3. Matsui H.; Douberly, G.E. Jr., “Organization of peptide nanotubes into macroscopic bundles” *Langmuir*. (2001), 17(25), 7918-7922.

4. Matsui, H.; Gologan, B.; Pan, S.; Douberly, G.E. Jr., "Controlled immobilization of peptide nanotube-templated metallic wires on Au surfaces" *European Physical Journal D: Atomic, Molecular and Optical Physics*. (2001), 16(1-3), 403-406.
5. Douberly, G.E. Jr.; Pan, S.; Walters, D.; Matsui, H., "Fabrication of protein tubules: Immobilization of proteins on peptide tubules" *Journal of Physical Chemistry B*. (2001), 105(32), 7612-7618.
6. Douberly, G.E.; Miller, R.E., "The growth of HF polymers in helium nanodroplets: Probing the barriers to ring insertion" *Journal of Physical Chemistry B*. (2003), 107 (19), 4500-4507.
7. Douberly, G.E.; Nauta, K.; Miller, R.E., "The infrared spectrum of acetylene-HF in helium nanodroplets" *Chemical Physics Letters*. (2003), 377(3,4), 384-390.
8. Merritt, J.M.; Douberly, G.E.; Miller, R.E., "Infrared-infrared double resonance spectroscopy of cyanoacetylene in helium nanodroplets" *Journal of Chemical Physics*. (2004), 121(3), 1309-1316.
9. Douberly, G.E.; and Miller, R.E., "The isomers of HF-HCN formed in helium nanodroplets: infrared spectroscopy and *ab initio* calculations" *Journal of Chemical Physics*. (2005), 122, 024306.
10. Douberly, G.E.; Merritt, J.M.; and Miller, R.E., "Infrared-infrared double resonance spectroscopy in helium nanodroplets: photo-induced isomerization" *Physical Chemistry Chemical Physics*. (2005), 7(3), 463-468.
11. Lindsay, C.M.; Douberly, G.E.; and Miller, R.E., "Rotational and vibrational dynamics of H₂O and HDO in helium nanodroplets" *Journal of Molecular Structure*. (2006), 786, 96-104.
12. Choi, M.Y.; Douberly, G.E.; Falconer, T.M.; Lewis, W.K.; Lindsay, C.M.; Merritt, J.M.; Stiles, P.L.; and Miller, R.E., "Infrared spectroscopy of helium nanodroplets: novel methods for physics and chemistry" *International Reviews of Physical Chemistry*. (2006), 25(1-2), 15-75.
13. Paesani, F.; Whaley, K.B.; Douberly, G.E.; and Miller, R.E., "Rovibrational Spectra for the HCCCN-HCN and HCN-HCCCN binary complexes in ⁴He droplets" *Journal of Physical Chemistry A*. (2007), 111(31), 7516-7528.
14. Douberly, G.E.; Merritt, J.M.; and Miller, R.E., "Infrared – infrared double resonance spectroscopy of the isomers of HCN-Acetylene and HCN-Cyanoacetylene in helium nanodroplets" *Journal of Physical Chemistry A*. (2007), 111(31), 7282-7291.
15. Douberly, G.E.; and Miller, R.E., "Rotational dynamics of HCN-M (M=Na, K, Rb, Cs) van-der-Waals complexes formed on the surface of helium nanodroplets" *Journal of Physical Chemistry A*. (2007), 111(31), 7292-7302.

16. Merritt, J.M.; Douberly, G.E.; Stiles, P.L.; and Miller, R.E., "Infrared spectroscopy of pre-reactive Aluminum-, Gallium-, and Indium-HCN entrance channel complexes solvated in helium nanodroplets" *Journal of Physical Chemistry A*. (2007), 111(49), 12304-12316.
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18. Douberly, G.E.; Ricks, A.M.; Ticknor, B.W.; and Duncan, M.A., "The structure of protonated acetone and its dimer: Infrared photodissociation spectroscopy from 800 to 4000 cm^{-1} ," *Physical Chemistry Chemical Physics*, (2008), 10, 77-79.
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23. Ricks, A.M.; Bakker, J.M.; Douberly, G.E.; and Duncan, M.A., "Infrared spectroscopy of $\text{Co}^+(\text{CO})_n$ complexes in the gas phase" *Journal of Physical Chemistry A*, (2009), 113, 4701-4708.
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25. Stiles, P.L.; Douberly, G.E.; and Miller, R.E., "High-resolution spectroscopy of Mg-HF and Mg-(HF)₂ solvated in helium nanodroplets" *Journal of Chemical Physics*, (2009), 130, 184313.
26. Douberly, G.E.; and Miller, R.E., "Vibrational dynamics of the linear and bent isomers of HF-N₂O trapped in 0.4 K helium nanodroplets" *Chemical Physics*, (2009), 361, 118-124.

27. Douberly, G.E.; Ricks, A.M.; and Duncan, M.A., "Infrared spectroscopy of perdeuterated protonated water clusters in the vicinity of the clathrate cage structure" *Journal of Physical Chemistry A*, (2009), 113, 8449-8453.
28. Ricks, A.M.; Douberly, G.E.; and Duncan, M.A., "Infrared spectroscopy of protonated naphthalene and its relevance for the unidentified infrared bands" *Astrophysical Journal*, (2009), 702, 301-306.
29. Ricks, A.M.; Douberly, G.E.; and Duncan, M.A., "Infrared Spectroscopy of the protonated nitrogen dimer: The complexity of shared proton vibrations" *Journal of Chemical Physics*, (2009), 131, 104312.
30. Ricks, A.M.; Douberly, G.E.; Schleyer, P.v.R.; and Duncan, M.A., "Infrared spectroscopy of protonated ethylene: The nature of proton binding in the non-classical structure" *Chemical Physics Letters*, (2009), 480, 17-20.
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32. Douberly, G.E.; Stiles, P.L.; Miller, R.E.; Schmied, R.; and Lehmann, K.K., "(HCN)_m-M_n (M=K, Ca, Sr): Vibrational excitation induced solvation and desolvation of dopants in and on helium nanodroplets" *Journal of Physical Chemistry A*, (2010), 114, 3391-3402.
33. Douberly, G.E.; Walters, R.S.; Cui, J.; Jordon, K.D.; and Duncan, M.A., "Infrared spectroscopy of small protonated water clusters, $H^+(H_2O)_n$ (n=2-5): Isomers, argon tagging, and deuteration" *Journal of Physical Chemistry A*, (2010), 114, 4570-4579.
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35. Morrison, A.M.; Flynn, S.D.; Liang, T.; Douberly, G.E., "Infrared spectroscopy of (HCl)_m(H₂O)_n clusters in helium nanodroplets: Definitive assignments in the HCl stretch region" *Journal of Physical Chemistry A*, (2010), 114, 8090-8098.
36. Liang, T.; Flynn, S.D.; Morrison, A.M.; Douberly, G.E., "Quantum cascade laser spectroscopy and photo-induced chemistry of Al-(CO)_n clusters in helium nanodroplets" *Journal of Physical Chemistry A*, (2011), 115, 7437-7447.
37. Morrison, A.M.; Agarwal, J.; Schaefer, III H.F.; Douberly, G.E., "Infrared laser spectroscopy of the CH₃OO radical formed from the reaction of CH₃ and O₂ within a helium nanodroplet" *Journal of Physical Chemistry A*, (2012), 116, 5299-5304.

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39. Raston, P.L.; Liang, T.; Douberly, G.E., "Infrared spectroscopy of HOOO and DOOO in ^4He nanodroplets" *Journal of Chemical Physics*, (2012), 137, 184302.
40. Morrison, A.M.; Raston, P.L.; Douberly, G.E., "Rotational relaxation dynamics of the methyl radical in helium nanodroplets" *Journal of Physical Chemistry A*, (2013), 117, 11640-11647.
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42. Morrison, A.M.; Liang, T.; Douberly, G.E., "Automation of an 'Aculight' continuous-wave Optical Parametric Oscillator" *Review of Scientific Instruments*, (2013), 84, 013102.
43. Raston, P.L.; Liang, T.; Douberly, G.E., "Anomalous Λ -doubling in the infrared spectrum of the hydroxyl radical in helium nanodroplets" *Journal of Physical Chemistry A*, (2013), 117, 8103-8110.
44. Raston, P.L.; Liang, T.; Douberly, G.E., "Infrared spectroscopy and tunneling dynamics of the vinyl radical in ^4He Nanodroplets" *Journal of Chemical Physics*, (2013), 138, 174302.
45. Raston, P.L.; Agarwal, J.; Turney, J.M.; Schaefer, III H.F.; Douberly, G.E., "The Ethyl radical in superfluid helium nanodroplets: Rovibrational spectroscopy and ab initio computations" *Journal of Chemical Physics*, (2013), 138, 194303.
46. Obi, E.I.; Leavitt, C.M.; Raston, P.L.; Moradi, C.P.; Flynn, S.D.; Vaghjiani, G.L.; Boatz, J.A.; Chambreau, S.D.; Douberly, G.E., "Helium Nanodroplet Isolation and Infrared Spectroscopy of the Isolated Ion- Pair 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide" *Journal of Physical Chemistry A*, (2013), 117, 9047-9056.
47. Moradi, C.P.; Morrison, A.M.; Klippenstein, S.J.; Goldsmith, C.F.; Douberly, G.E., "The propargyl + O_2 reaction in helium droplets: entrance channel barrier or not?" *Journal of Physical Chemistry A*, (2013), 117, 13626-13635.
48. Gomez, L.F.; Sliter, R.; Skvortsov, D.; Hoshina, H.; Douberly, G.E.; Vilesov, A.F., "Infrared spectra in the 3 μm region of ethane and ethane clusters in He droplets" *Journal of Physical Chemistry A*, (2013), 117, 13648-13653.
49. Raston, P.L.; Douberly, G.E., "Rovibrational spectroscopy of formaldehyde in helium nanodroplets" *Journal of Molecular Spectroscopy*, (2013), 292, 15-19.

50. Liang, T.; Magers, D.B.; Raston, P.L.; Allen, W.D.; Douberly, G.E., "Dipole moment of the HOOO radical: Resolution of a structural enigma" *Journal of Physical Chemistry Letters*, (2013), 4, 3584-3589.
51. Leavitt, C.M.; Moradi, C.P.; Acrey, B.W.; Douberly, G.E., "Infrared laser spectroscopy of the helium-solvated allyl and allyl peroxy radicals" *Journal of Chemical Physics*, (2013), 139, 234301.
52. Raston, P.L.; Liang, T.; Douberly, G.E., "Observation of the $Q(3/2)$ Λ -doublet transitions for $X^2\Pi_{3/2}$ OD in Helium Nanodroplets" *Molecular Physics*, (2014), 112, 301-303.
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54. Raston, P.L.; Douberly, G.E.; Jäger W. "Single and Double Resonance Spectroscopy of Methanol Embedded in Superfluid Helium Nanodroplets" *Journal of Chemical Physics*, (2014), 141, 044301.
55. Leavitt, C.M.; Moore, K.B.; Raston, P.L.; Agarwal, J.; Moody, G.H.; Shirley, C.C.; Schaefer, H.F.; Douberly, G.E. "Liquid Hot NAGMA Cooled to 0.4 Kelvin: Benchmark Thermochemistry of a Gas-Phase Peptide" *Journal of Physical Chemistry A*, (2014), 118, 9692-9700.
56. Douberly, G.E.; Raston, P.L.; Liang, T.; Marshall, M.D. "Infrared Rovibrational Spectroscopy of OH-C₂H₂ in ⁴He nanodroplets: Parity Splitting due to Partially Quenched Electronic Angular Momentum" *Journal of Chemical Physics*, (2015), 142, 134306.
57. Broderick, B.M.; McCaslin, L.; Moradi, C.P.; Stanton, J.F.; Douberly, G.E. "Reactive Intermediates in ⁴He Nanodroplets: Infrared Laser Stark Spectroscopy of Dihydroxycarbene" *Journal of Chemical Physics*, (2015), 142, 144309.
58. Moradi, C.P.; Douberly, G.E. "On the Stark effect in open shell complexes exhibiting partially quenched electronic angular momentum: Infrared laser Stark spectroscopy of OH-C₂H₂, OH-C₂H₄, and OH-H₂O" *Journal of Molecular Spectroscopy*, (2015), 314, 54-62.
59. Moradi, C.P.; Douberly, G.E. "Infrared Laser Spectroscopy of the L-shaped Cl-HCl Complex Formed in Superfluid ⁴He Nanodroplets" *Journal of Physical Chemistry A*, (2015), 119, 12028-12035.
60. Hernandez, F.J.; Brice, J.T.; Leavitt, C.M.; Pino, G.A.; Douberly, G.E. "Infrared Spectroscopy of OH·CH₃OH: Hydrogen-Bonded Intermediate Along the Hydrogen Abstraction Reaction Path" *Journal of Physical Chemistry A*, (2015), 119, 8125-8132.

61. Broderick, B.M.; Moradi, C.P.; Douberly, G.E. "Infrared Laser Stark Spectroscopy of Hydroxymethoxycarbene in ^4He Nanodroplets" *Chemical Physics Letters*, (2015), 639, 99-104.
62. Hernandez, F.J.; Brice, J.T.; Leavitt, C.M.; Liang, T.; Raston, P.L.; Pino, G.A.; Douberly, G.E. "Mid-Infrared Signatures of Hydroxyl Containing Water Clusters: Infrared Laser Stark Spectroscopy of $\text{OH-H}_2\text{O}$ and $\text{OH}(\text{D}_2\text{O})_n$ ($n=1-3$)" *Journal of Chemical Physics*, (2015), 143, 164304.
63. Moradi, C.P.; Xie, C.; Kaufmann, M.; Guo, H.; Douberly, G.E. "Two-center three-electron bonding in ClNH_3 revealed via helium droplet infrared laser Stark spectroscopy: Entrance channel complex along the $\text{Cl} + \text{NH}_3 \rightarrow \text{ClNH}_2 + \text{H}$ reaction" *Journal of Chemical Physics*, (2016), 144, 164301.
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65. Brice, J.T.; Liang, T.; Raston, P.L.; McCoy, A.B.; Douberly, G.E. "Infrared Stark and Zeeman spectroscopy of OH-CO : The entrance channel complex along the $\text{OH} + \text{CO} \rightarrow \text{trans-HOCO}$ reaction pathway" *Journal of Chemical Physics*, (2016), 145, 124310.
66. Franke, P.R.; Tabor, D.; Moradi, C.P.; Douberly, G.E.; Agarwal, J.; Schaefer, H.F.; Sibert, E.L. "Infrared Laser Spectroscopy of the *n*-propyl and *i*-propyl Radicals: Stretch-Bend Fermi Coupling in the Alkyl CH Stretch Region" *Journal of Chemical Physics*, (2016), 145, 224304.
67. Douberly, G.E.; Miller, R.E.; Xantheas, S.S. "Formation of Exotic Networks of Water Clusters in Helium Droplets Facilitated by the Presence of Neon Atoms" *Journal of the American Chemical Society*, (2017), 139, 4152-4156.
68. Straatsma C.J.E.; Fabrikant, M.I.; Douberly, G.E.; Lewandowski, H.J. "Production of Carbon Clusters C_3 to C_{12} with a Cryogenic Buffer-Gas Beam Source" *Journal of Chemical Physics*, (2017), 147, 124201.
69. Raston, P.L.; Obi, E.I.; Douberly, G.E. "Infrared Spectroscopy of the Entrance Channel Complex Formed Between the Hydroxyl Radical and Methane in Helium Nanodroplets" *Journal of Physical Chemistry A*, (2017), 121, 7597-7602.
70. Brown, A.R.; Franke, P.R.; Douberly, G.E. "Helium Nanodroplet Isolation of the Cyclobutyl, 1-Methylallyl and Allylcarbinyl Radicals: Infrared Spectroscopy and Ab Initio Computations" *Journal of Physical Chemistry A*, (2017), 121, 7576-7587.
71. Brice, J.T.; Franke, P.R.; Douberly, G.E. "Sequential Capture of $\text{O}(^3\text{P})$ and HCN by Helium Nanodroplets: Infrared Spectroscopy and Ab Initio Computations of

- the $^3\Sigma$ O-HCN Complex” *Journal of Physical Chemistry A*, (2017), 121, 9466-9473.
72. Franke, P.R.; Douberly, G.E. “The Rotamers of Isoprene: Infrared Spectroscopy in Helium Droplets and Ab Initio Thermochemistry” *Journal of Physical Chemistry A*, (2018), 122, 148-158.
73. Guo, H.; Moradi, C.P.; Douberly, G.E. “Photo-induced reaction upon fundamental H-Cl stretch excitation in helium-solvated CH_3HCl radical” *Journal of Chemical Physics*, (2018), to be submitted.

Teaching Activities

Courses Taught:

Fall 2001	CHM 10L	General Chemistry Laboratory (UNC)	
Spring 2002	CHM 11L	General Chemistry Laboratory (UNC)	
Fall 2008	CHEM 3110 CHEM 8140	Fundamentals of Physical Chemistry 3hr. Physical Chemistry Seminar	1hr.
Spring 2009	CHEM 3600 CHEM 9000	Intro to Research Doctoral Research	
Summer 2009	CHEM 7000	Master's Research	
Fall 2009	CHEM 3110 CHEM 6000 CHEM 7000	Fundamentals of Physical Chemistry 3 hr. Research Group Meeting Master's Research	1 hr.
Spring 2010	CHEM 3512L CHEM 8140 CHEM 6000 CHEM 7000 CHEM 9000	Exp. Methods Laboratory II Physical Chemistry Seminar Research Group Meeting Master's Research Doctoral Research	3 hr. 1 hr. 1 hr.
Summer 2010	CHEM 3600 CHEM 6000 CHEM 7000 CHEM 9000	Intro to Research Research Group Meeting Master's Research Doctoral Research	1 hr.
Fall 2010	CHEM 3110 CHEM 4600	Fundamentals of Physical Chemistry 3 hr. Independent Research	

	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Spring 2011	CHEM 3512L	Exp. Methods Laboratory II	3 hr.
	CHEM 4600	Independent Research	
	CHEM 8140	Physical Chemistry Seminar	1 hr.
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Summer 2011	CHEM 3600	Intro to Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Fall 2011	CHEM 3110	Fundamentals of Physical Chemistry	3 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Spring 2012	CHEM 8960	Molecular Spectroscopy	3 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Summer 2012	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Fall 2012	CHEM 3110	Fundamentals of Physical Chemistry	3 hr.
	CHEM 8140	Physical Chemistry Seminar	1 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Spring 2013	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Summer 2013	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	

	CHEM 9000	Doctoral Research	
Fall 2013	CHEM 3511	Experimental Methods Lab I.	3 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Spring 2014	CHEM 8960	Molecular Spectroscopy	3 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Summer 2014	CHEM 3511	Experimental Methods Lab I.	3 hr.
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Fall 2014	CHEM 3110	Fundamentals of Physical Chemistry	3 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Spring 2015	CHEM 8210	Chemical Applications of Group Theory	3 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Fall 2015	CHEM 3110	Fundamentals of Physical Chemistry	3 hr.
	CHEM 4600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Spring 2016	CHEM 8960	Molecular Spectroscopy	3 hr.
	CHEM 3600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Summer 2016	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 4600	Independent Research	
	CHEM 4000L	Chemistry Internship	

	CHEM 9000	Doctoral Research	
Fall 2016	CHEM 3110	Fundamentals of Physical Chemistry	3 hr.
	CHEM 4000L	Chemistry Internship	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 9000	Doctoral Research	
Spring 2017	CHEM 8960	Molecular Spectroscopy	3 hr.
	CHEM 3600	Independent Research	
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 7000	Master's Research	
	CHEM 9000	Doctoral Research	
Summer 2017	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 9000	Doctoral Research	
Fall 2017	CHEM 3110	Fundamentals of Physical Chemistry	3 hr.
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 9000	Doctoral Research	
Spring 2018	CHEM 8960	Molecular Spectroscopy	3 hr.
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 9000	Doctoral Research	
Summer 2018	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 9000	Doctoral Research	
Fall 2018	CHEM 8920	Thermodynamics and Statistical Mechanics	3 hr.
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 9000	Doctoral Research	
Spring 2019	CHEM 8960	Molecular Spectroscopy	3 hr.
	CHEM 6000	Research Group Meeting	1 hr.
	CHEM 9000	Doctoral Research	

Postdoctoral Fellows Supervised as Major Professor:

Paul L. Raston (Ph.D. David Anderson, University of Wyoming), 2011-2013. Current Position: Assistant Professor, James Madison University, Harrisonburg, VA, USA.

Christopher M. Leavitt (Ph.D. Mark Johnson, Yale University), 2013-2014. Current Position: Intel, Portland, OR, USA.

Bernadette Broderick (Ph.D. Arthur Suits, Wayne State University), 2014-2015. Current Position: Research Staff Scientist, University of Missouri, Columbia, MO, USA.

Graduate Students Supervised as Major Professor:

Alexander M. Morrison, M.S., 2008-2012
Steven D. Flynn, M.S., 2009-2013
Caitlyne C. Shirley, M.S., 2011-2014
Tao Liang, Ph.D., 2009-2014
Emmanuel I. Obi, M.S., 2011-2014
Bradley Acrey, M.S., 2011-2014
Christopher P. Moradi, Ph.D., 2011-2016
Joseph T. Brice, present graduate student, 2013-
Peter R. Franke, present graduate student, 2014-
Alaina R. Brown, present graduate student, 2014-
Gregory T. Pullen, present graduate student, 2015-
Kale King, present graduate student, 2016-
Travis Jones, present graduate student, 2016-

Undergraduate Students Supervised in Research:

Sean Marrache (University of Georgia), spring 2009.
Chris Moradi (University of Georgia), summer, fall 2010.
Amanda Westbrook (University of Georgia), summer, fall 2010.
Trey Gunter (University of Georgia), summer, fall 2010.
Parsa Shokoohi (University of Georgia), fall 2010.
Bradley Acrey (University of Georgia), spring 2011.
Emmanuel Obi (University of Georgia), summer 2011.
Grant Moody (University of Georgia), spring 2012-spring 2013. (Honors Thesis)
Chris Harrington (University of Georgia), spring 2012.
Rodrigo Tapia (University of Georgia), fall 2013-spring 2014.
Joseph Tyberg (University of Georgia), fall 2013-fall 2014.
Evan Brakefield (University of Georgia), spring 2014-fall 2014.
Ali Mohammadzadeh (University of Georgia), spring 2014-fall 2014.
Dylan Duggins (University of Georgia), spring-summer 2016.
Brittany Minnick (University of Georgia), summer 2017.
Ty Faulkner (James Madison University), summer 2016, 2017.
Rebekah Soliday (James Madison University), summer 2018.
William White (Georgia Institute of Technology), summer 2018.
Caitlin Bellora (University of Georgia), summer 2018.

High School Students Supervised in Research:

William White, Clarke-Central High School, Athens, GA. Summer 2016

Visiting Graduate Students Supervised in Research:

Federico J. Hernandez (June 21 to October 1, 2014): Instituto de Investigaciones en Físico-Química de Córdoba

Matin Kauffman (April 1 to July 1, 2015): Ruhr Universität Bochum

Other Teaching Activities:

Graduate Faculty, 2008-present.

Coordinator: Summer Undergraduate Research Opportunities (SURO), 2012-present

UGA Center for Teaching and Learning Fellows for Innovative Teaching, 2015-2016

Graduate Student Advisory Committees:

David Osborne, 2009-2013.

Frank Pickard, 2009-2011.

Chris Stoudemayer, 2009-2010.

Beulah Narendrapurapu, 2009-2013.

Ali Saddiqi, 2009-2014.

Pierre Negri, 2009-2012.

Antonio Braithwaite, 2009-2013.

Brandon Magers, 2014

Wayne Mullinax, 2012-2016.

Jonathan Maner, 2011-2017.

Kimberly Reishus, 2010-2014

Al Fischer, 2013-2018.

Andrew Launder, 2014-2017.

Chenyang Li, 2014-2015.

Preston Hoobler, 2015-present

Scott Akin, 2015-2016.

Kevin Moore, 2013-2018.

Timothy Ward, 2014-2018.

David McDonald, 2014-2018.

Jared Weidman, 2016-present.

Walker Jones, 2018-present.

Heather Jaeger, 2009-2010.

Biswajit Bandyopadhyay, 2009-2012.

Bryson Dye, 2009-2012.

Bryan Perdue, 2009-2013.

Alexander Sokolov, 2010-2014.

Justin O'Toole, 2011-2012.

Jonathan Mosely, 2009-2014.

Kimberly Schuldt, 2011-2014.

Kaushik Jagannathan, 2011-2015.

Yudong Qiu, 2011-2015.

Walter Turner, 2013-2017.

Andreas Copan, 2014-2018.

Xiao Wang, 2014-present.

Marissa Estep, 2015-present.

Kevin Murphy, 2015-2018.

Jonathon Vandezande, 2013-2017.

Elizabeth Day, 2014-2018.

Boyi Zhang, 2016-present.

Whitney James Morgan, 2016-present.

Jonathon Misiewicz, 2018-present.

Adam Abbott, 2018-present.

Departmental and University Service

Physical Sciences Journal Committee, Fall 2008.

DOC Graduate Admissions Committee, Fall 2009-Spring 2013.

Addressing Misconceptions in Chemistry Learning Community, 2009-2012.

Peach State Louis Stokes Alliance for Minority Participation (PSLAMP), 2009-2012.

Department of Chemistry Undergraduate Advisor, Spring 2010-present.
Department of Chemistry Undergraduate Advising Committee, 2010-present.
Department of Chemistry IT professional associate hiring committee, October 2011.
Department of Chemistry Undergraduate Curriculum Committee (Chair), 2012-present.
Department of Chemistry Undergraduate Coordinator, May 2013-present.
UGA Chemistry Website Development Committee, September 2014.
DOC Graduate Admissions Committee, Fall 2014-present.
DOC Post-Tenure Review Committee (Henry Schaefer), Spring 2015.
OVPR-Faculty Research Grants Review Committee, March 2016.
DOC Post-Tenure Review Committee (Richard Morrison), Spring 2016.
DOC Post-Tenure Review Committee (Robert Phillips), Spring 2016.
DOC Post-Tenure Review Committee (Vladimir Popik), Spring 2017.
OVPR-Faculty Research Grants Review Committee, March 2017.