

Carlos R. Baiz

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Education and Academic Positions

University of Texas at Austin Associate Professor of Chemistry W. T. Doherty Professorship in Chemistry Department of Chemistry	Austin, TX 2021-Present
University of Texas at Austin Assistant Professor of Chemistry Department of Chemistry	Austin, TX 2015-2021
University of Chicago NIH Ruth L. Kirschstein Postdoctoral Fellow Department of Chemistry and James Franck Institute Advisor: Prof. Andrei Tokmakoff	Chicago, IL 2013-2015
Massachusetts Institute of Technology Postdoctoral Fellow Department of Chemistry Advisor: Prof. Andrei Tokmakoff	Cambridge, MA 2011-2013
University of Michigan Ph.D. - Physical Chemistry Department of Chemistry Advisor: Prof. Kevin J. Kubarych Thesis: Investigating ultrafast condensed-phase chemical dynamics with coherent multidimensional spectroscopy	Ann Arbor, MI 2006-2011
Michigan Technological University B.S. Chemistry, <i>Magna Cum Laude</i> Advisor: Prof. Bahne C. Cornilsen	Houghton, MI 2002-2005

Awards/Recognition

Dreyfus Teacher-Scholar Award Camille and Henry Dreyfus Foundation	2021
NIH Permanent Panel Member Biophysics and Biochemistry of Membranes (BBM)	2021
Sloan Research Fellowship Alfred P. Sloan Foundation	2021
Cottrell Scholars Award Research Corporation of the Advancement of Science	2020
Paper of the Year Biophysical Journal Biophysical Society	2020
NIH Outstanding Investigator Award (R35)	2019

National Institutes of Health NSF CAREER Award	2019
National Science Foundation ACS Petroleum Research Fund Doctoral New Investigator	2018
American Chemical Society Teaching Excellence Award	2018
College of Natural Sciences, University of Texas at Austin Ruth L. Kirschstein National Research Service Award (F32)	2013-2015
National Institutes of Health Kasimir Fajans "Best Thesis" Award	2015
Department of Chemistry, University of Michigan Rackham Predoctoral Fellowship	2010-2011
Rackham Graduate School, University of Michigan Excellence in Research Fellowship	2009
Department of Chemistry, University of Michigan Outstanding Graduate Student Instructor Award	2008
Rackham Graduate School, University of Michigan	

Courses Taught

Physical Chemistry for Life Sciences Majors –Introductory Physical Chemistry course covering thermodynamics, chemical kinetics and selected topics in biophysics.	Fall 2016, 2017, 2018, Spring 2021
Foundations of Chemistry I –First-Semester introductory chemistry course for honors students.	Fall 2021
Advanced Physical Chemistry (Time-dependent Quantum Mechanics and Spectroscopy) Second semester graduate course on time-dependent quantum mechanics and modern non-linear spectroscopy.	Spring 2016, 2017, 2018
Molecular Biophysics Upper-level undergraduate course on modern biophysics: Protein structure, dynamics, biological membranes, modern techniques.	Spring 2019, 2020

Graduate Students and Postdocs Mentored

Name	Position	Period	Current Position
Xiaobing Chen	Postdoc; Ph.D. Louisiana State University (Daniel Kuroda)	2021-Present	UT Austin
Sean C. Edington	Postdoc; Ph.D. at Princeton Univ. (Steven Bernasek)	2015-2018	Postdoctoral Researcher, Yale University
Kwang-Im Oh	Postdoc; Ph.D. at Korea University (Minhaeng Cho)	2016-2020	Research Associate, Gyengsang National University, Korea

Euihyun Lee	Postdoc; Ph.D. Korea University (Minhaeng Cho)	2020-Present	UT Austin
Sunayana Mitra	Postdoc; Ph.D. University of Pittsburgh (Sean Garrett-Roe)	2021-Present	UT Austin
Ravi Kumar Venkatraman	Postdoc; Ph.D. Indian Institute of Science (Siva Umapathy)	2019-2020	Research Scientist, Indian Institute of Science Education and Research
Sherry You	Postdoc; Ph.D. University of North Carolina (Joanna Atkin)	2019-Present	UT Austin
Eman Alasadi	Graduate Student	2021-Present	UT Austin
Ziareena Al Mualem	Graduate Student	2019-Present	UT Austin
Chris P. Baryames	Graduate Student	2016-2021	Postdoctoral Fellow with Prof. Linda Columbus, University of Virginia
Jennifer C. Flanagan	Graduate Student	2015-2020	Postdoctoral Researcher, with Prof. Sarah Veatch University of Michigan
Paul Garrett	Graduate Student	2019-Present	UT Austin
Ji-Yeon Kim	Graduate Student	2016-2019	Process Engineer, LAM Research
Stephanie Liu	Graduate Student	2018-2021	Associate Scientist II, WuXi AppTec
Joseph Shirley	Graduate Student	2019-Present	UT-Austin
Mason L. Valentine	Graduate Student	2015-2021	Postdoctoral Fellow with Prof. Wei Xiong, University of California San Diego
Cong Xu	Graduate Student (Physics)	2021-Present	UT Austin

Research Interests

Interfacial environments in lipid Membranes: Lipid membranes create heterogeneous environments between the hydrophobic and hydrophilic regions. These interfacial environments support a wide range of biochemical processes but are not well understood from a molecular perspective. We develop ultrafast spectroscopies to directly access the hydrogen bond dynamics within the ~1 nm interface in lipid membranes.

Water dynamics in cytosol-like environments: The cytosol is a crowded environment with about 30% of the volume occupied by proteins. The dynamics of water in the interior of the cell are, therefore, different from the dynamics of bulk water. We investigate the effect of crowding on the hydrogen-bond network structures and dynamics using ultrafast 2D IR spectroscopy and atomistic simulations.

Interfacial dynamics in heterogeneous surfactants: Surfactants are used in everyday household and industrial applications. Common surfactant compositions contain thousands of different compounds. These mixtures produce highly heterogeneous interfaces between hydrophobic and hydrophilic environments. We investigate the interfacial properties of these heterogeneous interfaces in the full “real-world” complexity using a combination of ultrafast spectroscopy and molecular dynamics simulations.

Hydrogen bond networks in cryopreservation solutions: The typical life of a human organ outside the body is six hours. Give that organ transplantation demand outstrips supply by five-fold. The need to store organs is evident. The only feasible route to organ storage is through cryopreservation, but ice crystal formation is toxic to cells. We investigate the hydrogen-bonding environments in cryopreservation solutions designed to prevent ice crystal formation. Our goal is to understand the ice-inhibition and toxicity mechanisms of these solutions at the molecular level.

Synergistic Activities

Course Development: 1. Developed a curriculum for a graduate course in Advanced Physical Chemistry at UT-Austin. The course covers time-dependent quantum mechanics with emphasis on applications to modern non-linear spectroscopy. 2. Developed a curriculum for a course in Molecular Biophysics. Topics covered include protein structure and folding, membranes, and ion channels.

Educational Software: Contributed an article on “Interactive tools for teaching Fourier Transforms” to the inaugural issue of the journal *The Biophysicist* (Biophysical Society). Contributed open-source software to perform 2D Fourier Transforms of images captured from a computer webcam and built a lesson plan around the software.
<https://doi.org/10.35459/tbp.2019.000102>

Diversity and Inclusion: Organizer of “SPURS” (Student Preview of University Research and Scholarship) program for undergraduate chemistry students. Similar to a graduate recruiting weekend but targeted at students in their junior year. Students visit campus, meet with faculty, and participate in Q/A sessions with current graduate students. This program has a strong diversity component and is primarily focused on students from undergraduate institutions without strong research programs. 8 students participated in 2019. This program is funded by the NSF CAREER Award.

Student Mental Health and Wellbeing: Designed a program to address the mental health needs of current graduate students at UT-Austin. The program consists of developing surveys, and organizing seminars, student activities, and longer-term programs with the goal of lowering stress, anxiety, and increase student happiness and wellbeing, which will translate into greater student success. This program is funded by the Cottrell Scholars Award

Outreach: Hosted high-school and undergraduate research students as part of the Welch Summer Scholars Program and NSF REU program at UT-Austin. Students spend 6 weeks in the lab learning to collect and analyze data and present their results at a department-wide symposium.

Conferences/Workshops Organized:

- International Conference on Coherent Multidimensional Spectroscopy, Austin TX (Co-organized with Prof. Sean Roberts, June 21-24, 2022, cmds2022.org).
- American Chemical Society Southwest Regional Meeting, Symposium “Uncovering Chemical Structure & Dynamics with Light” (Co-organized with Prof. Sean Roberts), November 2021)

- Telluride Workshop on Vibrational Dynamics (Co-organized with Prof. Neil Hunt, June 27-July 01, 2021)
- Telluride Workshop on Cryopreservation grand challenges: fundamental molecular science to applications (co-organized with Prof. Nancy Levinger, July 19-23, 2021)
- ACS Symposium "Biophysical Chemistry in Complex Environments" (Co-organized with Prof. Angel Garcia, ACS National Meeting, Fall 2020, San Francisco, CA).
- Co-organized and co-hosted the first Southwest Ultrafast Conference (Spring 2016) at UT-Austin with Prof. Sean Roberts (UT-Austin). The conference brought together researchers in the Mountain West and Great Plains States in the field of ultrafast optics and spectroscopy with 100+ attendees (~65 students and postdocs), and 16 speakers.
- Co-Organized a Membrane Biophysics Symposium ("membrane day") at UT-Austin (April 2016) together with Prof. Ron Elber and Prof. Lauren Webb.

Research Funding

Active:

Dreyfus Teacher-Scholar Award Camille and Henry Dreyfus Foundation	08/21 \$100,000 direct
National Science Foundation (PI: Baiz, Co-PI: Elber, Senning) Understanding Highly Heterogeneous Biological Membranes This project seeks to characterize the lipid-water interface in multi-component biological membranes using a combination of IR spectroscopy and enhanced-sampling MD simulations.	07/21 - 06/23 \$825,372 total
MURI (PI: Neal Devaraj) Army Research Office MURI: Self-Assembly of Hybrid Synthetic Organelles We will investigate the molecular properties of artificial membranes.	06/20-06/22 \$200,000 (Baiz)
NSF Major Research Instrumentation (PI: Roberts, Co-I: Baiz, Batteas) National Science Foundation Development of a Sub-diffraction Limited Microscope for Imaging Ultrafast Dynamics from the Visible to Mid-infrared Spectral Range This project will seek to build an ultrafast microscope for imaging vibrational and electronic dynamics in biological systems and materials at the nanometer length scale..	07/20-06/23 \$ 1,005,604 total
Cottrell Scholars Award (Baiz) Research Corporation for the Advancement of Science (RCSA) Molecular dynamics at heterogeneous oil-water interfaces & A new approach to addressing the mental health needs of graduate students The goal of this project is to investigate the effect of oil viscosity on interfacial dynamics in water.	07/20-07/23 \$100,000 direct
Research Grant (Baiz) The Elizabeth Crook and Marc Lewis Foundation Understanding the mechanism of cryoprotectant toxicity neutralization The goal of this project was to characterize the toxicity mechanisms of compounds used for cell cryopreservation (DMSO and amides).	09/16 - 12/21 \$84,000/yr direct

F-1891 (Baiz) 06/19 - 05/22
Welch Foundation Research Grant \$240,000 direct
Studies in biophysical chemistry: applications of ultrafast infrared spectroscopy
The goal of this project is to study protein folding mechanisms and coupled mechanisms of conformational change and pKa changes within residues of a short peptide (pH low insertion peptide, pHLIP).

National Science Foundation (PI: Baiz) 01/19 - 12/23
CAREER: Ultrafast hydrogen-bond dynamics in crowded heterogeneous environments
\$604,291 total
This project seeks to establish the role of macromolecular crowding on protein dynamics.

National Institutes of Health (R35, PI: Baiz) 07/19 - 06/24
Protein structure and dynamics in ultraheterogeneous environments \$1,023,424 total
This project seeks to characterize the structure and thermodynamics of proteins in environments that resemble the cytosol via 2D IR spectroscopy and molecular dynamics simulations.

Completed:

National Science Foundation (PI:Baiz, Co-I: Ron Elber) 07/18 - 06/2
Understanding Highly Heterogeneous Biological Membranes \$596,588 total
This project seeks to characterize the lipid-water interface in multi-component biological membranes using a combination of IR spectroscopy and enhanced-sampling MD simulations.

American Chemical Society, Petroleum Research Fund (Baiz) 09/18-08/20
Interfacial solvation in reverse micelles: Ultrafast 2D IR spectroscopy of surfactants
\$110,000 direct
This project seeks to study interfacial hydrogen-bond dynamics in reverse micelles.

F-1891 (Baiz) 06/16 - 05/20
Welch Foundation Research Grant \$195,000 direct
Studies in biophysical chemistry: applications of ultrafast infrared spectroscopy

Catalyst Grant, College of Natural Sciences, University of Texas at Austin (Co-PI with Prof. Richard Aldrich), \$50,000 direct
Investigating Protein Conformational Dynamics with IR Spectroscopy

Service

Local Service at the University of Texas at Austin:

- College of Natural Sciences Dean Search Consultative Committee (2021)
- Graduate Admissions Committee, Co-chair, Department of Chemistry (2018-2021)
- Department of Chemistry, Safety Committee, Member (Spring 2020-Present)
- Graduate Student and Faculty Joint Well-Being Committee Meeting, Department of Chemistry (2020-Present)
- College of Natural Sciences, Dean's Action Team to Prioritize Diversity and Inclusion Initiatives (Fall 2020)

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- Diversity, Equity, & Inclusion Distinction Award Committee, College of Natural Sciences (2019, 2020)
 - Diversity and Inclusion Committee, College of Natural Sciences, (Spring 2016 -Present)
 - Staff Excellence Awards Committee, College of Natural Sciences (2018-Present)
 - Graduate Admissions Committee, Department of Chemistry (2015-Present)
 - Course and Curriculum Committee, Department of Chemistry (Spring 2016, Fall 2018-Present)
 - UT Membrane Biophysics Symposium, Co-organizer (April 2016)
 - Southwest Ultrafast Laser Conference (June 2016)
 - Faculty Hiring Committee (Fall/Spring 2016)
 - Graduate Awards Committee, College of Natural Sciences (Spring 2016-Present)
 - Undergraduate Fellowships Committee, Department of Chemistry (Spring 2018)

National Service:

- Co-organizer: International Conference on Coherent Multidimensional Spectroscopy, Austin, TX (2022)
- Co-organizer ACS Southwest Regional Meeting, Symposium: Uncovering Chemical Structure & Dynamics with Light (2021)
- On-Site reviewer for DOE CPIMS Program at Lawrence Berkeley National Laboratory (2021)
- Permanent Study Section Member, NIH Biophysics and Biochemistry of Membranes (BBM), 3 panels/year, (2021-2025)
- Panel Member, NSF BIO Chemistry of Life Processes (2021)
- Mail-in Reviewer, DOE Critical Minerals & Materials: Chemical and Materials Sciences Research on Rare Earth and Platinum Group Elements (2021)
- Co-organizer Telluride Workshop on Vibrational Dynamics (2021)
- Co-organizer Telluride Workshop on Cryopreservation Grand Challenges (2021)
- Reviewer, Cottrell Scholars Award (2020)
- Panel member, NIH Biophysics and Biochemistry of Membranes (BBM), 2020
- Member, ACS Physical Chemistry Division Executive Committee (vice-chair Biophysical Subdivision, 2020)
- Co-Organizer, ACS Physical Chemistry Webinar Series (Fall 2020-Spring 2021)
- Symposium Organizer, Biophysical Chemistry in Complex Environments: Convergent Studies of Biomolecular Structure & Dynamics, ACS National Meeting Fall 2020
- Peer Reviewer for scientific journals (76 articles reviewed from November 2016 to April 2020; average of one article every 17 days)
- Panel Member, NIH Macromolecular Structure and Function B Study Section, 2020
- Panel Member NSF CHE (Chemical Structure, Dynamics, and Mechanisms A; CSDM-A), 2020
- Panel Member NSF BIO (Molecular and Cell Biophysics), 2019
- Panel Member NIH, Macromolecular Structure and Function B Study Section, 2018

- Panel Member NIH, Biophysics and Biochemistry of Membranes Study Section, 2017
- Member, Biophysical Society Publications Committee, 2017–Present
- Mail-in reviewer for: CPIMS (DOE); BBM (NIH); DOE (SBIR); Army Research Office; NSF (CLP), ACS PRF, Various international funding agencies.
- Organized Ultrafast Symposium at Frontiers in Optics and Laser Science (American Physical Society, Optical Society of America Joint Conference), November 2016
- Member: American Chemical Society, Biophysical Society, Optical Society of America, Society of Latin-American Biophysicists (SOBLA), American Physical Society

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Publications

Google Scholar: <http://scholar.google.com/citations?user=T0dpJS0AAAAJ>

*denotes undergraduate researcher

1. Xiao You, Euihyun Lee, Cong Xu, Carlos R. Baiz, "Molecular Mechanism of Cell Membrane Protection by Sugars: A Study of Interfacial H-bond Networks" *Journal of Physical Chemistry Letters*, In Press (2021)
2. Bosmat Refaeli, Stephanie Liu, Reuben Hiller, **Carlos R. Baiz** and Daniel Khananshvili, "Structure-functional arrays underlying the ion-coordination variances and kinetic divergences in NCX orthologs", *Cell Calcium*, In Press(2021)
3. Stephanie Liu, Emily R. Featherston, Joseph A. Cotruvo, Jr., and **Carlos R. Baiz**, "Lanthanide-dependent coordination interactions in lanmodulin: a 2D IR and molecular dynamics simulations study", *Physical Chemistry Chemical Physics*, In Press (2021)
4. Mason L. Valentine, Ziareena A. Al-Mualem, Carlos R. Baiz, "Pump Slice Amplitudes: A Simple and Robust Method for Connecting 2D IR and FTIR Spectra, *Journal of Physical Chemistry A*, 125, 6498 (2021)
5. Christopher P Baryames, Paul Garrett, and **Carlos R. Baiz**, "Bursting the bubble: a molecular understanding of surfactant-water interfaces", *Journal of Chemical Physics*, 154, 170901 (2021)
6. Xiao You, Joseph C. Shirley, Euihyun Lee, **Carlos R. Baiz**, "Short- and long-range crowding effects on water's hydrogen bond networks", *Cell Reports Physical Science*, 100419 (2021)
7. Sean C. Edington, Stephanie Liu, and **Carlos R. Baiz**, "Infrared spectroscopy probes ion binding geometries", *Methods in Enzymology*, Volume 651 Pages 157-191, (2021)
8. Mason L. Valentine, Maya Waterland*, Arman Fatizadeh, Ron Elber, and **Carlos R. Baiz**, "Interfacial Dynamics in Lipid Membranes: the Effects of Headgroup Structure", *Journal of Physical Chemistry B*, 125, 5, 1343 (2021)
9. Christopher P. Baryames, Emily Ma*, and **Carlos R. Baiz**, "Ions slow water dynamics at non-ionic surfactant interfaces", *Journal of Physical Chemistry*, 124, 52, 11895 (2020)
10. Jennifer C. Flanagan, Mason L. Valentine, and **Carlos R. Baiz**, "Ultrafast Dynamics at lipid-water interfaces", *Accounts of Chemical Research*, 53,9, 1860 (2020)
11. Arman Fathizadeh, Mason Valentine, **Carlos R. Baiz**, Ron Elber, "Phase Transition in a Heterogeneous Membrane: Atomically Detailed Picture", *Journal of Physical Chemistry Letters*, 11, 13, 5263 (2020)
12. **Carlos R. Baiz**, Bartosz Blasiak, Jens Bredenbeck, Minhaeng Cho* (corresponding author), Jun-Ho Choi, Steven A. Corcelli, Arend G. Dijkstra, Chi-Jui Feng, Sean Garrett-

- Roe, Nien-Hui Ge, Magnus W. Hanson-Heine, Jonathan D. Hirst, Thomas la Cour Jansen, Kijeong Kwac, Kevin J. Kubarych, Casey H. Londergan, Hiroaki Maekawa, Mike Reppert, Shinji Saito, Santunu Roy, James L. Skinner, Gerhard Stock, John E. Straub, Megan C. Thielges, Keisuke Tominaga, Andrei Tokmakoff, Hajime Torii, Lu Wang, Lauren J. Webb, and Martin T. Zanni, "Vibrational Frequency Map, Vibrational Spectroscopy, and Intermolecular Interaction", *Chemical Reviews*, 120, 15, 7152 (2020)
13. Ravi K. Venkatraman, and Carlos R. Baiz, "Ultrafast dynamics at the lipid-water interface: DMSO modulates H-bond lifetimes", *Langmuir*, 36, 23, 6502 (2020)
 14. Kwang-Im Oh, and **Carlos R. Baiz**, "Perspective: Molecular Heterogeneity in Aqueous Cosolvent Systems", *Journal of Chemical Physics*, 152, 190901(2020)
 15. Jennifer C. Flanagan, Alfredo E. Cardenas, **Carlos R. Baiz**, "Ultrafast spectroscopy of lipid-water interfaces: transmembrane crowding drives H-bond dynamics", *Journal of Physical Chemistry Letters*, 11, 10, 4093 (2020)
 16. Ji Yeon Kim, Philip Liu, Michael J. Maher, Devon Callan*, Christopher M. Bates, Matthew C. Carlson, Yusuke Asano, Gregory Blachut, Charles T. Rettner, Joy Y. Cheng, Daniel F. Sunday, R. Joseph Kline, Daniel P. Sanders, Nathaniel A. Lynd, Christopher J. Ellison, C. Grant Willson, and **Carlos R. Baiz**, "Spatial Control of Self-Assembled Block Copolymer Domain Orientation and Alignment on Photo-Patterned Surfaces", *ACS Applied Materials and Interfaces*, 12, 20, 23399 (2020)
 17. Christopher Baryames and **Carlos Baiz**, "Slow oil, slow water: long-range dynamic coupling across a liquid-liquid interface", *Journal of the American Chemical Society*, 142, 18, 8063 (2020)
 18. Kwang-Im Oh, Xiao You, Jennifer C. Flanagan, and **Carlos R. Baiz**, "Liquid-liquid phase separation produces fast H-bond dynamics in DMSO-water mixtures", *Journal of Physical Chemistry Letters*, 11, 5, 1903-1908 (2020)
 19. Mason L. Valentine, Alfredo Cardenas, Ron Elber, and **Carlos R. Baiz**, "Calcium-Lipid Interactions Observed with Isotope-Edited Infrared Spectroscopy", *Biophysical Journal*, 118, 11, 2694 (2020)
 20. **Carlos R. Baiz**, "Interactive Tools for Teaching Fourier Transforms", *The Biophysicist (Inaugural Issue)*, 1, 4, (2020).
 21. Kwang-Im Oh, and **Carlos R. Baiz**, "Empirical S=O stretch vibrational frequency map", *Journal of Chemical Physics (Invited)*, 151, 234107 (2019)
 22. Jennifer C. Flanagan, and **Carlos R. Baiz**, "Ultrafast pH-jump 2D IR spectroscopy", *Optics Letters*, 44,20, 4937-4940, (2019)
 23. Christopher P. Baryames, Morgan Teel*, and **Carlos R. Baiz**, "Interfacial H-bond dynamics in reverse micelles: the role of surfactant heterogeneity", *Langmuir*, 35, 11463-11470 (2019)
 24. Sean C. Edington, D. Brent Halling, Suzanna Bennett*, Thomas R. Middendorf, Richard W. Aldrich and **Carlos R. Baiz**, "Non-additive Effects of Binding Site Mutations in Calmodulin", *Biochemistry*, 58, 24, 2730-2739 (2019)
 25. Jennifer C. Flanagan and **Carlos R. Baiz**, "Site-Specific Peptide Probes Detect Buried Water in a Lipid Membrane", *Biophysical Journal*, 116 (9) 1692, (2019), Cover Article, [Article of the year.](#)

26. Mason L. Valentine, Alfredo E. Cardenas, Ron Elber, and **Carlos R. Baiz** "Physiological Calcium Concentrations Slow Dynamics at the Lipid-Water Interface", *Biophysical Journal*, 115 (8), 1451, (2018)
27. Sean C. Edington, and **Carlos R. Baiz**, "Vibrational Relaxation in EDTA is ion dependent", *Journal of Physical Chemistry A*, 122, 32, 6585-6592 (2018)
28. Kwang-Im Oh, and Carlos R. Baiz, "Crowding Stabilizes DMSO – Water Hydrogen-bonding Interactions", *Journal of Physical Chemistry B*, 122 (22), 5984, (2018)
29. Sean C. Edington, Andrea Gonzalez*, Thomas R. Middendorf, D. Brent Halling, Richard W. Aldrich, and **Carlos R. Baiz**, "Coordination to lanthanide ions distorts binding site conformation in calmodulin", *Proceedings of the National Academy of Sciences*, 115 (14), E3126-E3134 (2018).
30. Kwang-Im Oh, Kavya Rajesh*, John F. Stanton, **Carlos R. Baiz** "Quantifying Hydrogen-Bond Populations in Dimethyl Sulfoxide/Water Mixtures", *Angewandte Chemie International Edition*, 56, 38, 11375-11379 (2017) – Cover Article
31. Sean Coleman Edington, Jennifer C. Flanagan, and **Carlos R. Baiz**, "An Empirical IR Frequency Map for Ester C=O Stretching Vibrations", *Journal of Physical Chemistry A*, 120, 3888-3896 (2016)

Prior to UT-Austin

32. Xin-Xing Zhang, Kevin C Jones, Ann Fitzpatrick, Chunte Sam Peng, Chi-Jui Feng, **Carlos R Baiz**, Andrei Tokmakoff, "Studying Protein–Protein Binding Through T-Jump Induced Dissociation: Transient 2D IR Spectroscopy of Insulin Dimer", *J. Phys. Chem. B*, 120, 5134-5145 (2016)
33. Paul Stevenson, Christoph Götz, **Carlos R. Baiz**, Jasper Akerboomf, Andrei Tokmakoff and Alipasha Vaziri, "Visualizing KcsA conformational changes upon ion binding by atomistic modeling of infrared spectroscopy" *J. Phys. Chem. B*, 119, 5824–5831 (2015)
34. **Carlos R. Baiz**, and Andrei Tokmakoff "Structural Disorder of Folded Proteins: Isotope-Edited 2D IR Spectroscopy and Markov State Modeling" *Biophys J.* 108, 7, 1747-1757 (2015)
35. **Carlos R. Baiz**, Denise Schach, and Andrei Tokmakoff, "Ultrafast 2D IR microscopy" *Optics Express*, 22, 18724 (2014)
36. **Carlos R. Baiz**, Yu-Shan Lin, Chunte Sam Peng, Kyle A. Beauchamp, Vincent A. Voelz, Vijay S. Pande, and Andrei Tokmakoff "A Molecular Interpretation of 2D IR Protein Folding Experiments with Markov State Models", *Biophysical Journal*, 106, 1359 (2014)
37. Chunte Sam Peng, **Carlos R. Baiz**, Andrei Tokmakoff, "Direct observation of ground-state lactam-lactim tautomerization using temperature-jump transient 2D IR spectroscopy", *Proc. Nat. Acad. Sci.* 110, 9243-9248 (2013)
38. Bowu Luan, Bing Shan, **Carlos R. Baiz**, Andrei Tokmakoff, and Daniel P. Raleigh, "Cooperative Cold Denaturation: The Case of the C-Terminal Domain of Ribosomal Protein L9", *Biochem.* 52, 2402-2409 (2013)
39. **Carlos R. Baiz**, Mike Reppert, and Andrei Tokmakoff, "Amide I Two-Dimensional Infrared Spectroscopy: Methods for Visualizing the Vibrational Structure of Large Proteins", *J. Phys. Chem. A.* 117, 5955-5961 (2013)

40. Jessica M. Anna, **Carlos R. Baiz**, Matthew R. Ross, Robert McCanne & Kevin J. Kubarych, "Ultrafast equilibrium and non-equilibrium chemical reaction dynamics probed with multidimensional infrared spectroscopy", *Int. Rev. Phys. Chem.* 31 (3), 367 (2012)
41. **Carlos R. Baiz**, Chunte S. Peng, Michael E. Reppert, Kevin C. Jones, and Andrei Tokmakoff, "Coherent two-dimensional infrared spectroscopy: Quantitative analysis of protein secondary structure in solution", *Analyst*, 137, 1793-1799 (2012)
42. **Carlos R. Baiz**, Kevin J. Kubarych, Eitan Geva and Edwin L. Sibert III, "Local-mode approach to modeling multidimensional infrared spectra of metal carbonyls", *J. Phys. Chem. A*. 115 (21), 5354 ,(2011)
43. **Carlos R. Baiz**, Kevin J. Kubarych, and Eitan Geva, "Molecular Theory and Simulation of Coherence Transfer in Metal Carbonyls and Its Signature on Multidimensional Infrared Spectra" *J. Phys. Chem. B*, 115 (18), 5322, (2011)
44. **Carlos R. Baiz**, and Kevin J. Kubarych and Eitan Geva, "Ultrabroadband Detection of an Infrared Continuum by Chirped-Pulse Upconversion" *Optics Letters*, 36 (2), 187, (2011)
45. John T. King, **Carlos R. Baiz** and Kevin J. Kubarych. "Solvent-Dependent Spectral Diffusion in a Hydrogen Bonded "Vibrational Aggregate"" *J. Phys. Chem. A*. 114 (39), 10590 (2010).
46. **Carlos R. Baiz** and Kevin J. Kubarych, "Ultrafast Transient Vibrational Stark Spectroscopy: Exploring Excited-State Charge-Transfer by Measuring the Solvent Response", *J. Amer. Chem. Soc (Comm)*, 132 (37), 12784-12785 (2010)
47. **Carlos R. Baiz**, Robert McCanne, and Kevin J. Kubarych, "Transient vibrational echo versus transient absorption spectroscopy: A direct experimental and theoretical comparison", *Applied Spectroscopy*, 64 (9), 1037-1044 (2010)
48. Jessica. M. Anna, Matthew. J. Nee, **Carlos. R. Baiz**, Robert. McCanne, Kevin. J. Kubarych, "Measuring Absorptive Two-Dimensional Infrared Spectra Using Chirped-Pulse Upconversion Detection", *J. Opt. Soc. Am. B*, 27, 382-393 (2010)
49. **Carlos R. Baiz**, Robert McCanne, and Kevin J. Kubarych, "Structurally Selective Geminate Rebinding Dynamics of Solvent-Caged Radicals Studied with Nonequilibrium Infrared Echo Spectroscopy", *J. Amer. Chem. Soc*, 131 (38), 13590, (2009) – Featured as a cover article in C&EN News.
50. **Carlos R. Baiz**, Porscha L. McRobbie, Nicholas K. Preketes, Kevin J. Kubarych, and Eitan Geva, "Two-Dimensional Infrared Spectroscopy of Dimanganese Decacarbonyl and Its Photoproducts: An Ab Initio Study", *J. Phys. Chem. A*, 113 (35), 9617, (2009)
51. **Carlos R. Baiz**, Robert McCanne, Matthew J. Nee, and Kevin J. Kubarych, "Orientational dynamics of transient molecules measured by non-equilibrium two-dimensional infrared spectroscopy", *J. Phys. Chem A*, 113 (31), 8907, (2009)
52. **Carlos R. Baiz**, Porscha L. McRobbie, Jessica M. Anna, Eitan Geva, and Kevin J. Kubarych, "Two-dimensional Spectroscopy of Metal Carbonyls", *Accounts of Chemical Research*, 42 (9), 1395, (2009)
53. **Carlos R. Baiz**, Sarah J. Ledford, Kevin J Kubarych, and Barry D. Dunietz, "Beyond 7-Azaindole: Conjugation Effects on Intermolecular Double Hydrogen-atom Transfer Reactions", *J. Phys. Chem A.*, 113 (17), 4862, (2009)

54. **Carlos R. Baiz**, Matthew J. Nee, Robert McCanne, and Kevin J. Kubarych, "Ultrafast non-equilibrium Fourier-transform two-dimensional infrared spectroscopy", *Optics Letters*, 33, 2533, (2008)
55. Matthew J. Nee, **Carlos R. Baiz**, Jessica M. Anna, Robert McCanne, and Kevin J. Kubarych, "Multilevel vibrational coherence transfer and wavepacket dynamics probed with multidimensional IR spectroscopy", *J. Chem. Phys.* 129, 084503. (2008)
56. **Carlos R. Baiz**, Matthew J. Nee, Robert McCanne, Jessica M. Anna, and Kevin J. Kubarych, "Triggered-exchange Two-dimensional Infrared Spectroscopy of Metal Carbonyl Photodissociation Dynamics", Proceedings of the 16th International Conference on Ultrafast Phenomena, Stresa, Italy. (2008)
57. Matthew J. Nee, **Carlos R. Baiz**, Jessica M. Anna, Robert McCanne, and Kevin J. Kubarych, "Vibrational Coherence Transfer in Metal Carbonyls: Solvent Dependence of Coherence Lifetimes Studied with MDIR", Proceedings of the 16th International Conference on Ultrafast Phenomena, Stresa, Italy. (2008)
58. **Carlos R. Baiz** and Barry D. Dunietz, "Theoretical Studies of Conjugation Effects on Excited State Intramolecular Hydrogen-Atom Transfer Reactions in Model Systems", *J. Phys. Chem. A*, 111 (40), 10139, (2007)

Other Research Products:

Vibrational Spectroscopy for Quantitative Measurement of Analytes

Carlos R. Baiz, Kevin C. Jones and Andrei Tokmakoff

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An Introduction to Protein 2D IR Spectroscopy

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2013

Invited Talks and Department Seminars

1. *St. Edwards University, Department of Chemistry (October 2021)
2. Baylor University, Department of Chemistry (October 2021)
3. University of Wisconsin-Madison, Department of Chemistry (October 2021)
4. Wintergreen Conference in Experimental Physical Chemistry, Wintergreen VA (September 2021)
5. Biophysics Research Interest Group, UT Austin (September 2021)
6. Telluride Workshop on Cryopreservation Grand Challenges, Telluride CO (July 2021)
7. Telluride Workshop on Vibrational Dynamics, Telluride CO (July 2021)
8. Telluride Workshop on Chemistry in Complex Environments (June 2021)
9. Time-Resolved Vibrational Spectroscopy, Virtual Meeting (June 2021)
10. Early Career Symposium at Time-Resolved Vibrational Spectroscopy, Expert Talk, (June 2021)
11. University of California San Diego, Department of Chemistry (May 2021)

12. Texas A&M University, Department of Chemistry (April 2021)
13. Tulane University, Department of Chemistry (April 2021)
14. University of Florida, Department of Chemistry (March 2021)
15. University of Pittsburgh, Department of Chemistry (February 2021)
16. (**RESCHEDULED, 2021**) International Chemical Congress of Pacific Basin Societies (PacifiChem), Honolulu, Hawaii (December 2020)
17. Massachusetts Institute of Technology, Department of Chemistry (December 2020)
18. Stanford University, Department of Chemistry (November 2020).
19. *Claremont Colleges Consortium (Harvey Mudd, Pomona, Scripps, Pitzer and Claremont McKenna) Seminar Series, (November 2020).
20. Bioelectricity Seminar Series, UT Austin, (September 2020)
21. University of Pennsylvania, Department of Chemistry (July 2020).
22. (**RESCHEDULED; SUMMER 2022**) GRC Vibrational Spectroscopy, Smithfield, RI, (August 2020)
23. (**CANCELLED**) Coherent Multidimensional Spectroscopy, Chicago IL (July 2020)
24. (**CANCELLED**) Telluride Workshop on Advances of Multidimensional Vibrational Spectroscopy in Water, Biology and Materials Science, Telluride CO (July 2020)
25. (**VIRTUAL**) Telluride Workshop on Interfacial Molecular and Electronic Structure and Dynamics, Virtual Workshop (June 2020)
26. (**CANCELLED**) Northwestern University, Department of Chemistry (May 2020)
27. (**CANCELLED**) University of Houston, Department of Chemistry (April 2020)
28. (**CANCELLED**) University of Texas at Austin, Computational Biophysics Symposium (March 2020)
29. (**CANCELLED**) Louisiana State University, Department of Chemistry (March 2020)
30. Biophysical Society Annual Meeting, San Diego, CA (February 2020)
31. University of Colorado, Department of Chemistry (January 2020)
32. Colorado State University, Department of Chemistry (January 2020)
33. University of Minnesota, Department of Chemistry (November 2019)
34. ACS Southwest Regional Meeting, El Paso, TX (November 2019)
35. University of Nevada-Reno, Department of Chemistry (October 2019)
36. University of Texas San Antonio, Department of Physics Colloquium (September 2019)
37. Vibrational Dynamics Workshop, Telluride, CO (July 2019)
38. Chemistry and Dynamics in Complex Environments, Telluride, CO (June 2019)
39. American Chemical Society Spring Meeting, Orlando, FL (Apr 2019)
40. ACS Southwest Meeting, Little Rock, AR (November 2018)
41. *Trinity University, Chemistry Department, San Antonio, TX (October 2018)
42. *Texas State University, Department Seminar, San Marcos, TX (October 2018)
43. Telluride Vibrational Dynamics Workshop, Telluride, CO (July 2018)

44. Gordon Research Conference on Vibrational Spectroscopy, Discussion Leader, University of New England (July 2018)
 45. Chemical Biophysics Symposium, University of Toronto, Toronto, ON – keynote speaker (Apr 2018)
 46. Telluride Vibrational Dynamics Workshop, Telluride, CO (July 2017)
 47. American Chemical Society Spring Meeting, San Francisco, CA (April 2017)
 48. *Trinity University, Physics Department, San Antonio, TX, (April 2017)
 49. University of Rochester, Department Symposium, Rochester NY (March 2017)
 50. *Xavier University, New Orleans, LA (February 2017)
 51. Frontiers in Optics and Laser Science (OSA/APS), Rochester NY (October 2016)
 52. Southwest Ultrafast Conference, Austin, TX (June 2016)
 53. Biophysics Symposium, University of Texas at Austin (April 2016)
 54. Nonlinear Dynamics Colloquium, Department of Physics, University of Texas at Austin (April 2016)
 55. Fajans Award Seminar, Department of Chemistry, University of Michigan (April 2016)
 56. Atomic, Molecular, and Optical Physics Colloquium, Department of Physics, University of Texas at Austin (September 2015)
- *Graduate recruiting seminars

Conference Presentations

1. Carlos R. Baiz, "Long-range interactions determine water structure and dynamics in crowded solutions", American Chemical Society National Meeting, Atlanta, GA (2021)
2. Carlos R. Baiz, Telluride Workshop on Cryopreservation Grand Challenges, Telluride CO (2021)
3. Carlos R. Baiz, Telluride Workshop on Vibrational Dynamics, Telluride CO (2021)
4. Carlos R. Baiz, Telluride Workshop on Chemistry in Complex Environments (2021)
5. Carlos R. Baiz, "Hydrogen-bond networks and ultrafast dynamics in crowded environments", Time-Resolved Vibrational Spectroscopy, Virtual Meeting (2021)
6. Early Career Symposium at Time-Resolved Vibrational Spectroscopy, "Liquid-liquid phase separation in lipid membranes", Expert Talk, (June 2021)
7. Carlos R. Baiz, "Dynamic Coupling across a Liquid-Liquid Interface", Telluride Interfacial Molecular and Electronic Structure and Dynamics, Telluride, CO (2020)
8. Carlos R. Baiz, "Dynamics at Heterogeneous Interfaces: Ultrafast Spectroscopy of Soap", Telluride Summer Lecture Series, Telluride, CO (2020)
9. Carlos R. Baiz, "Cryoprotectants disrupt hydrogen-bond networks at the lipid-water interface", Biophysical Society National Meeting, San Diego, CA (2020)
10. Carlos R. Baiz, "Site-specific peptide probes detect buried water in a lipid membrane", Biophysical Society Awards Symposium, San Diego, CA (2020)
11. Carlos R. Baiz, "Characterizing hydrogen bonding in cryoprotectant mixtures", Society for Cryobiology Annual Meeting, San Diego, CA (2019)

12. Carlos R. Baiz, "Interfacial H-bond dynamics in reverse micelles: the role of surfactant heterogeneity", Telluride Workshop on Vibrational Dynamics, Telluride, CO (2019)
13. Carlos R. Baiz, "Investigating complex heterogeneity at interfaces", Telluride Workshop on Complex Environments, Telluride, CO (2019)
14. Carlos R. Baiz, "Probe-dependent vibrational dynamics in heterogeneous mixtures", American Chemical Society National Meeting, Orlando, FL (2019)
15. Carlos R. Baiz, "Ion-dependent binding-site configurations in EF-hand proteins measured with ultrafast infrared spectroscopy", Biophysical Society National Meeting, Baltimore, MD (2019)
16. Carlos R. Baiz, "Probe-dependent ultrafast dynamics in heterogeneous mixtures" ACS Southwest Regional Meeting, Little Rock, AR, (2018)
17. Carlos R. Baiz, "Biophysical Studies of Proteins and Membranes with 2D IR Spectroscopy", Telluride Workshop on Multidimensional Vibrational Spectroscopy, Telluride, CO (2018)
18. Carlos R. Baiz, "Investigating ion-binding with 2D IR spectroscopy", International Conference on Coherent Multidimensional Spectroscopy (CMDS), Seoul, South Korea (2018)
19. Carlos R. Baiz "Investigating lipid membranes with ultrafast two-dimensional infrared spectroscopy", Chemical Biophysics Symposium, University of Toronto (2018)
20. Carlos R. Baiz "Ultrafast two-dimensional infrared spectroscopy of disordered surfactant interfaces", American Chemical Society National Meeting, New Orleans, LA (2018)
21. Carlos R. Baiz "Ultrafast 2D IR spectroscopy of lipid membranes: Experiments and simulations", American Chemical Society National Meeting, New Orleans, LA (2018)
22. Carlos R. Baiz, "Investigating Lipid-Water Interfaces with Vibrational Spectroscopy", Telluride Workshop on Vibrational Dynamics, Telluride, CO (2017)
23. Carlos R. Baiz, "Investigating lipid membrane interfaces with 2D IR spectroscopy", American Chemical Society Annual Meeting, San Francisco, CA (2017)
24. Carlos R. Baiz, "Ultrafast Methods for Investigating Structure and Dynamics of Biological Systems", Frontiers In Optics/Laser Science, Rochester, NY (2016)
25. Carlos R. Baiz, "Investigating the dynamics of interfacial ester carbonyls in lipid bilayers", 8th International Conference on Coherent Multidimensional Spectroscopy, Groningen, the Netherlands (2016)
26. Carlos R. Baiz, "Investigating the dynamics of interfacial ester carbonyls in lipid bilayers", Southwest Ultrafast Conference, Austin, TX (2016)
27. Carlos R. Baiz "Developing a spectroscopic toolkit for investigating dynamics at the bilayer interface", UT Membrane Symposium, Austin, TX (2016)

Baiz Group Student/Postdoc Presentations:

1. Xiao You, Origin of Sugars for Membrane Protection: An Ultrafast Study of the H-Bond Network at the Lipid-Water Interface, American Chemical Society Southwest Regional Meeting, (2021)
2. Xiao You, Wintergreen Conference on Experimental Physical Chemistry, (2021)

3. Ravi Kumar Venkatraman, "Ultrafast Dynamics at the Lipid-Water Interface: DMSO Modulates H-Bond Lifetimes", Time-Resolved Vibrational Spectroscopy (2021) – Talk
4. Xiao You, "Short- and long-range crowding effects on water's hydrogen bond networks", Time-Resolved Vibrational Spectroscopy (2021) - Talk
5. Jennifer C. Flanagan, "Transmembrane Peptide Insertion Affects Membrane Interfacial Dynamics", Biophysical Society National Meeting, San Diego, CA (2020) - Poster
6. Mason L. Valentine, "Fast Dynamics of Lipid Mixtures Investigated with Vibrational Spectroscopy", Biophysical Society National Meeting, San Diego, CA (2020) - Poster
7. Christopher Baryames, "Interfacial H-bond dynamics in reverse micelles: Role of surfactant heterogeneity", 259th ACS National Meeting, San Diego, CA (2019) - Talk
8. Sean C. Edington, "Ultrafast vibrational spectroscopy reveals non-additive effects of mutation on binding site structure", 258th ACS National Meeting, Orlando, FL (2019) - Poster
9. Jennifer C. Flanagan, "Buried water in a lipid membrane measured with site-specific IR spectroscopy of transmembrane peptides", Biophysical Society National Meeting, Baltimore, MD (2019) - Talk
10. Mason Valentine, "Dynamic Effects of Calcium on Membranes Containing Phosphatidylserines", Biophysical Society National Meeting, Baltimore, MD (2019) - Poster
11. Kwang-Im Oh, Korean Chemical Society, Daegu, Korea (2018) - Poster
12. Sean C. Edington, "Probing ion coordination and energy exchange in chelate complexes with ultrafast vibrational spectroscopy", 256th ACS National Meeting, Boston MA (2018) - Talk
13. Sean C. Edington, "Revealing ion- and mutation-dependent structure and dynamics in calmodulin's ion binding sites with ultrafast vibrational spectroscopy", 256th ACS National Meeting, Boston MA (2018) - Poster
14. Kwang-Im Oh, "C=O vibrations probe the solvation dynamics of DMSO/water binary mixtures at varying temperatures", International Conference on Coherent Multidimensional Spectroscopy (CMDs), Seoul, Korea (2018) - Poster
15. Sean C. Edington, "Mapping binding conformation and energy exchange in chelate complexes", GRC Vibrational Spectroscopy 2018 - Talk
16. Jennifer Flanagan "Computational and spectroscopic studies of pH (Low) insertion peptides in lipid membranes", 255th ACS National Meeting, New Orleans, LA (2018)– Talk
17. Sean C. Edington, "Probing ion-dependent changes to calmodulin binding site conformation with FTIR and ultrafast 2DIR spectroscopy", 255th ACS National Meeting, New Orleans, LA(2018)– Talk
18. Chris Baryames, "Hydrogen bond populations and dynamics in sorbitan surfactant reverse micelles", 255th ACS National Meeting, New Orleans, LA (2018)– Talk
19. Kavya Rajesh, "Lysozyme denaturation in DMSO mixtures: A study on cryopreservation", 255th ACS National Meeting, New Orleans, LA (2018)– Talk

20. Jennifer Flanagan, "Computational and Spectroscopic Studies of pH (Low) Insertion Peptides in Lipid Membranes.", XLII Congress of the Brazilian Biophysical Society, Sao Paulo, Brazil - Talk
21. Kavya Rajesh, "Lysozyme Denaturation in DMSO mixtures", AAAS National Meeting, Austin TX, (2018) –Poster
22. Sean C. Edington, "Revealing the dynamics that control protein and biomolecule activity using FTIR and ultrafast 2DIR spectroscopy in combination with molecular dynamics simulations" 254th ACS National Meeting, Washington, DC (2017)– Poster

Prior to UT-Austin:

1. **Carlos R. Baiz**, Denise Schach, and Andrei Tokmakoff, "Mapping Chemical Environments with Two-dimensional Infrared Microscopy", Time Resolved Vibrational Spectroscopy 2015, Madison, WI, (2015) - Poster
2. **Carlos R. Baiz**, Denise Schach and Andrei Tokmakoff, Coherent two-dimensional infrared microscopy, American Physical Society, March Meeting 2015, San Antonio, TX (2015) –Talk
3. **Carlos R. Baiz**, Denise Schach, and Andrei Tokmakoff, Ultrafast two-dimensional infrared (2D IR) microspectroscopy, 7th International Conference on Coherent Multidimensional Spectroscopy, Eugene, OR (2014) – Talk
4. **Carlos R. Baiz** and Andrei Tokmakoff, "Investigating protein dynamics with isotope-edited 2D IR and Markov state models", 7th International Conference on Coherent Multidimensional Spectroscopy, Eugene, OR (2014) – Poster
5. **Carlos R. Baiz**, Yu-Shan Lin, Chunte S. Peng, Kyle A. Beauchamp, Vincent A. Voelz, Vijay S. Pande, and Andrei Tokmakoff, "Investigating protein folding with temperature-jump 2D IR spectroscopy and Markov state models", 9th Midwest Conference on Protein Folding, Assembly and Molecular Motions, University of Notre Dame, IN, (2014) – Talk
6. **Carlos R. Baiz** and Andrei Tokmakoff, "Measuring protein structural heterogeneity with two-dimensional infrared spectroscopy", 58th Annual Meeting of the Biophysical Society, San Francisco, CA (2014) – Poster
7. **Carlos R. Baiz** "Using 2D IR spectroscopy to interrogate protein and peptide conformational heterogeneity", Third Workshop on Molecular Kinetics, Berlin, Germany (2013) – Talk
8. **Carlos R. Baiz**, Chunte Sam Peng, Mike Reppert, Kevin C. Jones, Andrei Tokmakoff "Two dimensional infrared spectroscopy as a probe of protein folding: bridging the gap between experiment and simulation" 57th Annual Meeting of the Biophysical Society, Philadelphia, PA (2013) – Talk
9. **Carlos R. Baiz**, Chunte S. Peng, Mike E. Reppert, Kevin C. Jones, and Andrei Tokmakoff, "Temperature-jump amide-I 2D-IR spectroscopy: a toolkit to study protein dynamics and folding" 6th International Conference on Coherent Multidimensional Spectroscopy, Berlin, Germany (2012) – Talk
10. **Carlos R. Baiz**, Chunte S. Peng, Mike E. Reppert, Kevin C. Jones, and Andrei Tokmakoff, "Investigating Protein Structure and Folding with Temperature-Jump

Multidimensional Infrared Spectroscopy” 26th Annual Symposium of the Protein Society, San Diego, CA (2012) – Poster

11. **Carlos R. Baiz**, Chunte S. Peng, Mike E. Reppert, Kevin C. Jones and Andrei Tokmakoff, “Investigating protein structure and folding with coherent two-dimensional infrared spectroscopy” American Physical Society National Meeting, Boston, MA (2012) – Talk
12. **Carlos R. Baiz**, Kevin C. Jones, Chunte S. Peng, Joshua Lessing, and Andrei Tokmakoff, “Investigating protein folding with ultrafast 2D infrared spectroscopy”, 242nd ACS National Meeting, Denver, CO (2011) – Poster
13. **Carlos R. Baiz**, Porscha L. McRobbie, Kevin J. Kubarych, and Eitan Geva, “A First-Principles Model for Multidimensional Spectroscopy”, 5th International Conference on Coherent Multidimensional Spectroscopy, Minneapolis, MN (2010) – Poster
14. **Carlos R. Baiz**, Robert McCanne, and Kevin J. Kubarych, “Structurally-Sensitive Rebinding Dynamics of Solvent-Caged Radical Pairs: Exploring the Viscosity Dependence”, XVII International Conference on Ultrafast Phenomena, Snowmass Village, CO (2010) – Poster
15. **Carlos R. Baiz**, and Kevin J. Kubarych, “Dynamic Vibrational Stark Spectroscopy: Measuring the Solvent Response in Ultrafast Charge-transfer Reactions” XVII International Conference on Ultrafast Phenomena, Snowmass Village, CO (2010) – Talk
16. **Carlos R. Baiz**, Robert McCanne, and Kevin J. Kubarych “Temperature-dependent vibrational relaxation measured by non-equilibrium 2DIR spectroscopy”, Time-Resolved Vibrational Spectroscopy 2009, Meredith, NH. (2009) – (Presented by KJK)
17. **Carlos R. Baiz**, and Kevin J. Kubarych, “Transient vibrational Stark shifts and solute-to-solvent vibrational energy transfer measured with non-equilibrium photon echo spectroscopy”, Time-Resolved Vibrational Spectroscopy, Meredith, NH. (2009) – Poster
18. **Carlos R. Baiz**, Porscha L. McRobbie, Nicholas K. Preketes, Kevin J. Kubarych, and Eitan Geva, “Ab initio computation of two-dimensional infrared spectra of metal carbonyls”, Q-Chem Workshop, Pittsburgh, PA. (2009) – Poster
19. **Carlos R. Baiz**, Matthew J. Nee, Robert McCanne, Jessica M. Anna, and Kevin J. Kubarych, “Triggered-exchange Two-dimensional Infrared Spectroscopy of Metal Carbonyl Photodissociation Dynamics”, International Conference on Ultrafast Phenomena, Stresa, Italy. (2008) – Talk (Presented by KJK)
20. Matthew J. Nee, **Carlos R. Baiz**, Jessica M. Anna, Robert McCanne, and Kevin J. Kubarych, “Vibrational Coherence Transfer in Metal Carbonyls: Solvent Dependence of Coherence Lifetimes Studied with MDIR” International Conference on Ultrafast Phenomena, Stresa, Italy. (2008) – Poster
21. Bahne C. Cornilsen, Ming Ning, **Carlos Baiz**, Tony N. Rogers, Matthew B. Chye, and Alexander I. Kolesnikov, “Inelastic Neutron Scattering Study of Hydrogen Positions in Nickel Hydroxide Battery Electrode Materials”, ACS Great Lakes Regional Meeting, Milwaukee, WI, USA. (2006) – Poster