

Krupa Ramasesha

Principal Investigator, Experimental Chemical Physics

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EDUCATION

Ph.D., Physical Chemistry, Massachusetts Institute of Technology, Cambridge, MA 2013
Dissertation: *Dynamics of Water and Aqueous Protons Studied Using Ultrafast Multi-Dimensional Infrared Spectroscopy*

B.S., Chemistry, University of Wisconsin-Madison, Madison, WI 2006
Honors in Major
Honors Thesis: "Studies on Photoisomerization Dynamics and Bimolecular Halogen Reactions using Transient Electronic Absorption Spectroscopy"

RESEARCH EXPERIENCE

Sandia National Laboratories, Livermore, CA 2015-present
Principal Member of Technical Staff 2022-present
Senior Member of Technical Staff 2016-2022

- Leading a research program in ultrafast science with the goal of understanding photoinduced energy and charge transfer dynamics in gas phase and condensed phase systems on femtosecond to nanosecond time scales. Established capabilities in high harmonic generation and ultrafast soft X-ray core-level spectroscopy, ultrafast broadband infrared spectroscopy using plasma-based source of supercontinuum infrared pulses, and ultrafast ultraviolet/visible transient absorption spectroscopy.
- Applying diverse ultrafast probes to comprehensively investigate electronic excited state dynamics in gas-phase molecules that exhibit strong spin-orbit coupling and complex nuclear wavepacket dynamics. Of interest are organometallic complexes, biochromophores such as organic heterocycles and disulfide-containing molecules, and atmospherically relevant molecules. We employ ultrafast infrared spectroscopy to monitor vibrational dynamics, ultrafast soft X-ray spectroscopy to monitor electron dynamics, and ultrafast electron diffraction to monitor structural dynamics. Our work reveals excited state mechanisms that mediate photodissociation and conformational change in these molecules.
- Leading efforts to investigate photoinduced charge and energy transfer dynamics between plasmonic metals and self-assembled monolayers using probes of vibrational and electronic dynamics. These efforts are yielding new insights into the influence of electronic properties of the molecules and the mode of excitation on the observed dynamics.
- Leading efforts in understanding vibrational energy transfer dynamics in energetic materials using ultrafast broadband infrared spectroscopy, which is providing unprecedented molecular level view of chemical processes that contribute to reaction initiation. Through studies of vibrational dynamics at ambient conditions and under static pressure loading in a diamond anvil cell, our work reveals the role of intermolecular interactions in mediating energy transfer that influences the shock-to-detonation transition in these materials.

- Investigated exciton dynamics in organic donor-acceptor co-crystal semiconductors and charge-transfer initiated dynamics in Prussian Blue analogs using ultrafast spectroscopy.
- Collaborating with several theoretical and experimental research groups nationally and internationally.
- Led and contributed to successful proposals to U.S. Department of Energy/Basic Energy Sciences and the Laboratory-Directed Research and Development Program.
- Successful user proposals to SLAC National Accelerator Laboratory's Mega-electron-Volt Ultrafast Electron Diffraction (MeV-UED) facility, LBNL's Molecular Foundry, and the National Science Foundation National eXtreme Ultrafast Science (NeXUS) facility.

Post-Doctoral Appointee

2015-2016

- Investigated hydrocarbon radical reactions kinetics relevant to combustion and atmospheric chemistry using multiplexed photoionization mass spectrometry, with a focus on reactions of $O(^3P)$ with cyclic unsaturated hydrocarbons. Performed experiments at the Advanced Light Source synchrotron at the Lawrence Berkeley National Lab.

Post-Doctoral Research Scholar, University of California, Berkeley

2013-2015

- Performed the first attosecond X-ray transient absorption spectroscopy to study electron dynamics in semiconductors. Our work on silicon revealed the fundamental time scales associated with carrier-carrier interactions and carrier-phonon interactions following strong-field excitation of the bandgap. Performed extensive data analysis to extract key features associated with carrier dynamics.

Graduate Research Assistant, Massachusetts Institute of Technology

2006-2012

- Performed ultrafast nonlinear infrared spectroscopy (2D IR and pump-probe) to understand hydrogen bonding dynamics of water and its role in aqueous proton transfer in acids and bases on femtosecond to picosecond timescales. Our work revealed that hydrogen bond switching was accompanied by reorientation of water molecules and that inter- and intramolecular vibrations in water are strongly coupled. In acids and bases, our work shed light on the lifetimes of various configurations of solvated hydroxide or solvated protons as well as the proton transfer mechanisms in liquid water.
- Developed broadband 2D IR spectroscopy using a plasma-driven source of ultrashort supercontinuum infrared pulses. This new source overcame spectral bandwidth limitations of conventional femtosecond infrared sources, allowing simultaneous probing of vibrations ranging from a few hundred cm^{-1} to 4000 cm^{-1} , significantly advancing our understanding of global vibrational energy transfer.

Undergraduate Researcher, University of Wisconsin-Madison

2003-2006

- Performed transient UV/visible absorption spectroscopy on femtosecond to microsecond timescales to understand halide radical reactions and photo-isomerization dynamics of *cis*-stilbene in solution.

SELECTED AWARDS AND HONORS

- Fulbright U.S. Scholar Award / Fulbright-NAWI Graz Visiting Professorship, 2025-2026
- U.S. Department of Energy Early Career Research Award, 2022

- The Journal of Physical Chemistry and the American Chemical Society Physical Chemistry Division Lectureship Award, 2022
- MIT Department of Chemistry's Morse Travel Award to present a talk at the International Conference on Ultrafast Phenomena 2010, Snowmass, CO
- Lester Wolfe Graduate Fellowship, MIT Department of Chemistry and G. R. Harrison Spectroscopy Laboratory, 2008
- C. P. Chu and Y. Lai Graduate Fellowship, MIT Department of Chemistry, 2008
- MIT Presidential Graduate Fellowship, 2006
- Hertz Fellowship Finalist, 2006
- National Science Foundation Graduate Research Fellowship, Honorable Mention, 2006, 2007
- American Chemical Society Daniel Shirk Award for Outstanding Undergraduate Research, Department of Chemistry, UW-Madison, 2006
- Hypercube Scholar: Scholastic Achievement in Chemistry, UW-Madison, 2006
- Wisconsin Section American Chemical Society Award for Excellence in Physical Chemistry, 2005
- Wisconsin/Hilldale Undergraduate/Faculty Research Fellowship (with Professor F. Fleming Crim), UW-Madison, 2005-06
- Walter W. and Young-Ja C. Toy Scholarship, UW-Madison, 2005-06
- Andrew Dorsey Memorial Scholarship, UW-Madison, 2004
- Walter W. and Young-Ja C. Toy Summer Research Fellowship, UW-Madison, 2004
- GE Fund Global Student/Teacher Achievement and Recognition (STAR) Award, 2002

PROFESSIONAL SERVICE

Memberships

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| Editorial Advisory Board, The Journal of Chemical Physics | 2023-2025 |
| Editorial Advisory Board, The Journal of Physical Chemistry A/B/C | 2023-2025 |
| International Advisory Committee of the International Symposium on Molecular Spectroscopy | 2022-2025 |
| Proposal Review Panel, Linac Coherent Light Source (LCLS), SLAC National Accelerator Laboratory | |
| American Physical Society | |
| American Chemical Society | |
| Phi Eta Sigma National Honor Society | |

Journal Articles Reviewed

Nature Chemistry
 Journal of the American Chemical Society
 Nature Communications
 The Journal of Physical Chemistry Letters
 The Journal of Chemical Physics
 The Journal of Physical Chemistry A
 The Journal of Physical Chemistry B
 Physical Chemistry Chemical Physics
 Photochem

Grant Proposals Reviewed

U.S. Department of Energy Office of Science, Basic Energy Sciences

Atomic, Molecular and Optical Science Program

Gas Phase Chemical Physics Program

Condensed Phase and Interfacial Molecular Science Program

U.S. Department of Energy Office of Science Early Career Research Program

Air Force Office of Scientific Research

Office of Naval Research, Multidisciplinary University Research Initiatives (MURI) Program

The American Chemical Society Petroleum Research Fund

Swiss National Science Foundation

Laboratory-Directed Research and Development Program, Advanced Science and Technology
Investment Area

Conference Organization

- Nonadiabatic Chemical Dynamics–Theory and Experiments Focus Session at the *American Physical Society Global Summit*, Denver, CO, March 2026
- Power Hour at the *Gordon Research Conference on Multiphoton Processes*, Smithfield, RI, June 2024
- Spectroscopy Meets Chemical Dynamics mini symposium at the *International Symposium on Molecular Spectroscopy*, Urbana, IL, June 2022

PUBLICATIONS

Peer-Reviewed Articles (†equal contribution)

36. D. R. Carlson, S. Bandaranayake, **K. Ramasesha**; Table-Top Core-to-Valence Transient Absorption Spectroscopy of Ultrafast Gas-Phase Chemical Dynamics, *under review* (2026) [Invited, *Annual Review of Physical Chemistry*]
35. **K. Ramasesha**, D. R. Carlson, S. Bandaranayake; Ultrafast Photochemistry of Gas-Phase Transition Metal Carbonyls, *Chemical Physics Reviews* **6**, 021307 (2025) [Invited Review, *Featured Cover Article*]
34. V. Rishi, N. C. Cole-Filipiak, **K. Ramasesha**, L. M. McCaslin; Excited State Electronic Structure of Dimethyl Disulfide Involved in Photodissociation at ~200 nm, *Physical Chemistry Chemical Physics* **26**, 23986 (2024)
33. J. Troß†, J. E. Arias-Martinez†, K. Carter-Fenk, N. C. Cole-Filipiak, P. Schrader, L. M. McCaslin, M. Head-Gordon, **K. Ramasesha**; Femtosecond core-level spectroscopy reveals involvement of triplet states in the photodissociation of gas-phase Fe(CO)₅, *Journal of the American Chemical Society* **146** (32), 22711-22723 (2024)
32. N. C. Cole-Filipiak, J. Troß, P. Schrader, L. M. McCaslin, **K. Ramasesha**; Ultrafast production of NiCO and Ni following 197 nm photodissociation of nickel tetracarbonyl, *ACS Physical Chemistry Au (Letter)*, **4** (6), 605-609 (2024) [Invited, *Ultrafast Spectroscopy of Chemical Transformations Special Issue*]
31. W. P. Bassett, R. Knepper, A. S. Tappan, **K. Ramasesha**; High throughput initiation threshold characterization of BNFF, *AIP Conference Proceedings*, **3066** (1), 480002 (2024)

30. J. H. Hack, N. H. C. Lewis, S. Knight, W. B. Carpenter, L. De Marco, **K. Ramasesha**, A. Tokmakoff; Generation and Implementation of Continuum Infrared Pulses for Broadband Detection in 2D IR Spectroscopy, *Journal of Physical Chemistry A* **128** (24), 4901 (2024) [ACS Editors' Choice Article]
29. A. A. Taka, J. E. Reynolds III, N. C. Cole-Filipiak, M. Shivanna, C. J. Yu, P. Feng, M. D. Allendorf, **K. Ramasesha**, V. Stavila, L. M. McCaslin; Comparing the Structures and Photophysical Properties of Two Charge Transfer Co-crystals, *Physical Chemistry Chemical Physics* **25**, 27065 (2023) [2023 HOT PCCP article]
28. J. Troß[†], K. Carter-Fenk[†], N. C. Cole-Filipiak, P. Schrader, M. Word, L. M. McCaslin, M. Head-Gordon, **K. Ramasesha**; Excited state dynamics during primary C–I homolysis in acetyl iodide revealed by ultrafast core-level spectroscopy, *Journal of Physical Chemistry A* **127** (18), 4103-4114 (2023) [Invited, Early-Career and Emerging Researchers in Physical Chemistry Special Issue Volume 2; highlighted in the Preface of the Virtual Special Issue]
27. A. K. Schnack-Petersen, B. N. C. Tenorio, S. Coriani, P. Decleva, J. Tross, **K. Ramasesha**, M. Coreno, R. Totani, A. Röder; Core spectroscopy of oxazole, *Journal of Chemical Physics* **157** (21), 214305 (2022)
26. N. C. Cole-Filipiak, J. Troß, P. Schrader, L. M. McCaslin, **K. Ramasesha**; Ultrafast infrared transient absorption spectroscopy of gas-phase Ni(CO)₄ photodissociation at 261 nm, *Journal of Chemical Physics* **156** (15), 144306 (2022) [Invited, Emerging Investigators Special Collection]
25. M. Zou, M. F. Vansco, I. O. Antonov, **K. Ramasesha**, B. Rotavera, D. L. Osborn, Y. Georgievski, C. J. Percival, S. J. Klippenstein, C. A. Taatjes, M. I. Lester, R. L. Caravan; Dramatic Conformer-Dependent Reactivity of the Acetaldehyde Oxide Criegee Intermediate with Dimethylamine Via a 1,2-Insertion Mechanism, *Journal of Physical Chemistry A* **126**, 5, 710-719 (2021) [Cover Article]
24. **K. Ramasesha**, J. D. Savee, J. Zádor, D. L. Osborn; A New Pathway for Intersystem Crossing: Unexpected Products in the O(³P) + Cyclopentene Reaction, *Journal of Physical Chemistry A* **125** (45) 9785–9801 (2021) [Invited, 125th Anniversary Special Issue]
23. N. C. Cole-Filipiak, R. Knepper, M. Wood, **K. Ramasesha**; Mode-Selective Vibrational Energy Transfer Dynamics in 1,3,5-Trinitroperhydro-1,3,5-Triazine (RDX) Thin Films, *Journal of Physical Chemistry A* **125** (36) 7788-7802 (2021) [Invited, Daniel Neumark Festschrift]
22. N. C. Cole-Filipiak, J. Troß, P. E. Schrader, L. M. McCaslin, **K. Ramasesha**; Ultraviolet Photodissociation of Gas-Phase Iron Pentacarbonyl Probed with Ultrafast Infrared Spectroscopy, *Journal of Chemical Physics* **154** (13), 134308 (2021) Department of Energy Office of Science Highlight: "Watching Light Breakdown a Model Photocatalyst in Near Real Time"
21. N. C. Cole-Filipiak, R. Knepper, M. Wood, **K. Ramasesha**; Sub-Picosecond to Sub-Nanosecond Vibrational Energy Transfer Dynamics in Pentaerythritol Tetranitrate, *Journal of Physical Chemistry Letters* **11**, 6664-6669 (2020)
20. N. C. Cole-Filipiak, M. Marquez, R. Knepper, R. Harmon, P. Schrader, M. Wood, **K. Ramasesha**; Ultrafast Spectroscopic Studies of Vibrational Energy Transfer in Energetic Materials, *AIP Conference Proceedings* **2272**, 060006 (2020)

19. R. Chhantyal-Pun, R. J. Shannon, D. P. Tew, R. L. Caravan, M. Duchi, C. Wong, A. Ingham, C. Feldman, M. R. McGillen, M. A. H. Khan, I. O. Antonov, B. Rotavera, **K. Ramasesha**, D. L. Osborn, C. A. Taatjes, C. J. Percival, D. E. Shallcross, A. J. Orr-Ewing; Experimental and Computational Studies of Criegee Intermediate Reactions with NH_3 and CH_3NH_2 , *Physical Chemistry Chemical Physics* **21**, 14042-14052 (2019)
18. R. L. Caravan, M. A. H. Khan, J. Zádor, L. Sheps, I. O. Antonov, B. Rotavera, **K. Ramasesha**, K. Au, M.-W. Chen, D. Rösch, D. L. Osborn, C. Fittschen, C. Schoemaeker, M. Duncianu, A. Grira, S. Dusanter, A. Tomas, C. J. Percival, D. E. Shallcross, C. A. Taatjes; The reaction of hydroxyl and methylperoxy radicals is not a major source of atmospheric methanol, *Nature Communications* **9**, 4343 (2018)
17. **K. Ramasesha**, S. R. Leone, D. M. Neumark; Real-time probing of electron dynamics using attosecond time-resolved spectroscopy, *Annual Review of Physical Chemistry* **67**, 41-63 (2016)
16. L. J. Borja, M. Zürich, C. D. Pemmaraju, M. Schultze, **K. Ramasesha**, A. Gandman, J. S. Prell, D. Prendergast, D. M. Neumark, S. R. Leone; Extreme Ultraviolet Transient Absorption of Solids from Femtosecond to Attosecond timescales, *Journal of the Optical Society of America B* **33**, C57 (2016)
15. M. Thämer, L. De Marco, **K. Ramasesha**, A. Mandal, A. Tokmakoff; Characterization of the Zundel proton complex in liquid water by ultrafast IR spectroscopy, *Science* **350**, 78 (2015)
14. M. Schultze[†], **K. Ramasesha**[†], S. C. D. Pemmaraju, S. Sato, D. Whitmore, A. Gandman, J. S. Prell, L. J. Borja, D. Prendergast, K. Yabana, D. M. Neumark, S. R. Leone; Attosecond band-gap dynamics in silicon, *Science* **346**, 6215, 1348-1352 (2014)
13. A. Mandal, **K. Ramasesha**, L. De Marco, A. Tokmakoff; Collective Vibrations of Water-Solvated Hydroxide Ions Investigated with Broadband 2DIR Spectroscopy, *Journal of Chemical Physics* **140**, 204508 (2014)
12. **K. Ramasesha**[†], L. De Marco[†], A. Mandal, A. Tokmakoff; Water vibrations have strongly mixed intra- and inter-molecular character, *Nature Chemistry* **5**, 935 (2013)
11. L. De Marco, **K. Ramasesha**, A. Tokmakoff; Experimental Evidence of Fermi Resonances in Isotopically Dilute Water from Ultrafast Broadband IR Spectroscopy, *Journal of Physical Chemistry B* **117** (49), 15319 (2013)
10. **K. Ramasesha**, L. De Marco, A. D. Horning, A. Mandal, A. Tokmakoff; A phenomenological approach to modeling chemical dynamics for nonlinear and two-dimensional spectroscopy, *Journal of Chemical Physics* **136** (13), 134507 (2012)
9. **K. Ramasesha**, S. T. Roberts, R. A. Nicodemus, A. Mandal, A. Tokmakoff; Ultrafast 2D IR Anisotropy of Water Reveals Reorientation during Hydrogen-Bond Switching, *Journal of Chemical Physics* **135** (5), 054509 (2011)
8. S. T. Roberts, **K. Ramasesha**, P. B. Petersen, A. Mandal, A. Tokmakoff; Proton Transfer in Concentrated Aqueous Hydroxide Visualized Using Ultrafast Infrared Spectroscopy, *Journal of Physical Chemistry A* **115** (16), 3957-3972 (2011)
7. S. T. Roberts, J. J. Loparo, **K. Ramasesha**, A. Tokmakoff; A Fast-Scanning Fourier Transform 2D IR Interferometer, *Optics Communications* **284** (4), 1062-1066 (2011)
6. **K. Ramasesha**, R. A. Nicodemus, S. T. Roberts, A. Mandal, A. Tokmakoff; Orientational dynamics of water probed with 2D-IR Anisotropy Measurements, *Ultrafast Phenomena XVII*, Chergui, M.; Jonas, D.; Riedle, E.; Schoenlein, R.; Taylor, A., (Oxford University Press, 2010), pp. 454-456

5. R. A. Nicodemus, **K. Ramasesha**, S. T. Roberts, A. Tokmakoff; Hydrogen-bond rearrangements in Water Probed with Temperature-Dependent 2D IR, *Journal of Physical Chemistry Letters* **1** (7), 1068-1072 (2010)
4. S. T. Roberts, **K. Ramasesha**, A. Tokmakoff; Structural Rearrangements in Water viewed through Two-Dimensional Infrared Spectroscopy, *Accounts of Chemical Research* **42** (9), 1239-1249 (2009)
3. S. T. Roberts, P. B. Petersen, **K. Ramasesha**, A. Tokmakoff, I. S. Ufimtsev, T. J. Martinez; Observation of Zundel-like transition state during proton transfer in aqueous hydroxide solutions, *Proceedings of the National Academy of Sciences USA* **106** (36), 15154-15159 (2009)
2. S. T. Roberts, P. B. Petersen, **K. Ramasesha**, A. Tokmakoff; "The dynamics of aqueous hydroxide ion transport probed via ultrafast vibrational echo experiments" *Ultrafast Phenomena XVI*, Corkum, P.; Silvestri, S. D.; Nelson, K. A.; Riedle, E.; Schoenlein, R. W., (Springer: Berlin, 2009), pp 481-483.
1. P. B. Petersen, S. T. Roberts, **K. Ramasesha**, D. G. Nocera, A. Tokmakoff; Ultrafast N-H Vibrational Dynamics of Cyclic Doubly Hydrogen-Bonded Homo- and Heterodimers, *Journal of Physical Chemistry B* **112** (42), 13167-13171 (2008)

Scientific Reports

6. L. M. McCaslin, K. Ramasesha, V. Stavila, M. Allendorf, A. A. Taka, M. Shivanna, J. E. Reynolds III, S. Bandaranayake, N. C. Cole-Filipiak, P. Schrader; A Bottom-Up Approach to Rational Design of Crystalline Materials: Investigation of Vibronic Coherences Underlying Exciton Dynamics in Semiconductors; *SAND2024-13843*; Sandia National Labs (SNL-CA), Livermore, CA (United States): 2024
5. D. Robinson, M. Foster, C. Bennett, A. Bhandarkar, E. Fuller, V. Stavila, C. Spataru, R. Krishnakumar, N. Cole-Filipiak, P. Schrader, **K. Ramasesha**, M. Allendorf, A. Talin; Proton-Tunable Analog Transistor for Low Power Computing; *SAND2022-13079*; Sandia National Labs (SNL-CA), Livermore, CA (United States): 2022
4. N. C. Cole-Filipiak, P. Schrader, T. S. Luk, **K. Ramasesha**; Femtosecond Reflectance Spectroscopy for Energetic Material Diagnostics; *SAND2021-11613*; Sandia National Labs (SNL-CA), Livermore, CA (United States): 2021
3. **K. Ramasesha**, J. Tross, P. Schrader, L. Sheps, K. Au; Table-Top High Photon Energy Sources for Chemical Dynamics Investigations; *SAND2021-11333*; Sandia National Labs (SNL-CA), Livermore, CA (United States): 2021
2. **K. Ramasesha**, M. Wood, N. C. Cole-Filipiak, R. Knepper; Experimental and Theoretical Studies of Ultrafast Vibrational Energy Transfer Dynamics in Energetic Materials; *SAND2020-10403*; Sandia National Labs (SNL-CA), Livermore, CA (United States): 2020
1. C. J. Kliewer, J. C. Hewson, B. D. Patterson, T. L. Courtney, **K. Ramasesha**, N. Mecker, M. Linne; Understanding Soot Development and Thermal Stratification in Combustion Engines through Hyperspectral Non-linear Optical Diagnostics Development; *SAND2018-12506*; Sandia National Labs (SNL-CA), Livermore, CA (United States): 2018

PRESENTATIONS

Invited Talks

38. Discussion Leader, Gordon Research Conference on Molecular Interactions and Dynamics, Easton, MA, July 2026
37. Chemistry Seminar, Clemson University, Clemson, SC, September 2025

36. International Conference on Electronic Structure and Spectroscopy, Berkeley, CA, July 2025
35. Telluride Workshop on Vibrational Dynamics, Telluride, CO, June 2025
34. Chemistry Colloquium, Dartmouth College, Hanover, NH, May 2025
33. Departmental Seminar, University of Minnesota-Twin Cities, April 2025
32. Symposium in honor of Professor Daniel Neumark, Berkeley, CA, March 2025
31. Gordon Research Conference on Vibrational Spectroscopy, Smithfield, RI, August 2024
30. National Science Foundation's National Extreme Ultrafast Science (NeXUS) workshop, The Ohio State University, July 2024
29. Gordon Research Conference on Molecular Interactions and Dynamics, Easton, MA, July 2024
28. Gordon Research Conference on Multiphoton Processes, Smithfield, RI, June 2024
27. Keynote speaker, Gordon Research Seminar on Molecular and Ionic Clusters, Ventura, CA, February 2024
26. Physical Chemistry/Chemical Physics Colloquium, University of Colorado, Boulder, January 2024
25. International Conference on Molecular Energy Transfer in Complex Systems, Jaipur, India, November 2023
24. Inorganic and Physical Chemistry Seminar, Indian Institute of Science, Bengaluru, India, November 2023
23. Physical and Theoretical Chemistry Seminar, University of Southern California, September 2023
22. Workshop on Gas-Phase Ultrafast Electron Diffraction, SLAC National Accelerator Laboratory SSRL/LCLS Users' Meeting, September 2023
21. U.S. Department of Energy, Basic Energy Sciences Gas Phase Chemical Physics Principal Investigators' Meeting, Washington, D.C., May 2023
20. Engineering Sciences Research Foundation External Review Board, Sandia National Laboratories, Albuquerque, April 2023
19. Undergraduate Virtual Class Presentation, College of William and Mary, April 2023
18. American Chemical Society National Meeting, Indianapolis, IN, March 2023
17. Physical Chemistry Seminar, University of California-Berkeley, November 2022
16. Physics Colloquium, University of Arizona, October 2022
15. Technical Seminar at Asian Leadership and Outreach Committee Meeting, Sandia National Laboratories, September 2022
14. Award Lecture for the JPC/ACS PHYS Lectureship, American Chemical Society National Meeting, Chicago, IL, August 2022
13. Gas Phase Photochemistry Seminar, SLAC National Accelerator Laboratory, April 2022
12. NW Seminar Series, Sandia National Laboratories, February 2022
11. Physical Chemistry Seminar, Purdue University, November 2021
10. Workshop on Fundamental Science Needs for the Next-Generation Z-Machine, Sandia National Laboratories, June 2021
9. Workshop on Application of X-ray Lasers to Gas Phase Chemical Physics Research, SLAC National Accelerator Laboratory, Stanford, CA, February 2020
8. U.S. Department of Energy, Basic Energy Sciences Gas Phase Chemical Physics Principal Investigators' Meeting, Washington, D.C., May 2019
7. Departmental Seminar, Department of Physics, SUNY Stony Brook, November 2016
6. Departmental Seminar, J.R. Macdonald Laboratory, Department of Physics, Kansas State University, October 2016

5. Departmental Seminar, Solid State and Structural Chemistry Unit, Indian Institute of Science, December 2015
4. Symposium on Molecular Reaction Dynamics, University of Wisconsin, Madison, WI, May 2012
3. Modern Optics and Spectroscopy Seminar, George R. Harrison Spectroscopy Laboratory and Department of Chemistry, Massachusetts Institute of Technology, October 2011
2. Inorganic and Physical Chemistry Seminar, Indian Institute of Science, Bangalore, August 2011
1. Departmental Seminar, New Chemistry Unit, Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, India, August 2011

Selected Contributed Talks

9. “Unraveling charge and energy transfer dynamics between plasmonic metals and adsorbates”, S. Bandaranayake, P. Schrader, L. Tan, K. Ramasesha, *International Conference on Electronic Structure and Spectroscopy*, Berkeley, CA, July 2025
8. “Charge Transfer Donor-Acceptor Guests Confined within Metal-Organic Framework Crystals”, M. Shivanna, M. D. Allendorf, A. A. Taka, P. Schrader, K. Ramasesha, L. M. McCaslin, V. Stavila, *Meeting of the Electrochemical Society*, May 2024
7. “Photodissociation of $\text{Fe}(\text{CO})_5$: Insights from femtosecond core-level spectroscopy and theory”, J. Troß, J. Arias-Martinez, K. Carter-Fenk, N. C. Cole-Filipiak, P. Schrader, L. M. McCaslin, M. Head-Gordon, K. Ramasesha, *Meeting of the American Physical Society*, March 2024
6. “Dynamics of Two- and Three-body Dissociation Captured by Core-to-Valence Transient Absorption Spectroscopy”, J. Troß, N. C. Cole-Filipiak, K. Carter-Fenk, J. Arias-Martinez, P. Schrader, L. M. McCaslin, K. Ramasesha, *International Symposium on Molecular Spectroscopy, Spectroscopy Meets Chemical Dynamics mini-symposium*, June 2022
5. “Ultrafast Infrared Transient Absorption of $\text{Ni}(\text{CO})_4$ Photodissociation”, N. C. Cole-Filipiak, J. Troß, P. Schrader, L. McCaslin and K. Ramasesha, *International Conference on Photochemistry and Photobiology*, July 2021
4. “Attosecond time-resolved studies of band gap excitations in semiconductors”, K. Ramasesha, M. Schultze, S. R. Leone, D. M. Neumark, *Meeting of the American Physical Society*, Denver, CO, March 2014
3. “Ultrafast Broadband Infrared Source for Nonlinear Infrared Spectroscopy”, K. Ramasesha, L. De Marco, A. Mandal and A. Tokmakoff, *Meeting of the American Physical Society*, Boston, MA, March 2012
2. “Orientational Dynamics of Water probed with 2D-IR Anisotropy Measurements”, K. Ramasesha, R. A. Nicodemus, S. T. Roberts, A. Mandal and A. Tokmakoff, *17th International Conference on Ultrafast Phenomena*, Snowmass, CO, July 2010
1. “Vibrational Relaxation Studies of cis- and trans-Stilbene using Femtosecond Stimulated Raman Spectroscopy” M. J. Cox, K. Ramasesha, K. A. Zomchek, F. F. Crim, *16th Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics*, Argonne National Laboratories, 2005

Selected Poster Presentations

8. “Impact of Intermolecular Interactions on Ultrafast Vibrational Energy Transfer in Energetic Materials”, D. R. Carlson, N. C. Cole-Filipiak, S. Bandaranayake, P. Schrader, W. Bassett, R.

- Knepper, M. Wood, K. Ramasesha, *Gordon Research Conference on Energetic Materials*, June 2024
7. “Dimethyl Disulfide Dissociation Is Both Ultrafast and Very Slow”, N. C. Cole-Filipiak et al. *SLAC Users Meeting*, September 2021
 6. “Ultrafast Spectroscopic Studies of Vibrational Energy Transfer in Energetic Materials”, N. C. Cole-Filipiak, M. Marquez, R. Knepper, R. Harmon, D. Wiese-Smith, P. E. Schrader, M. Wood, and K. Ramasesha, *21st Biennial Conference of the American Physical Society Topical Group for Shock Compression in Condensed Matter*, Portland, OR, July 2019
 5. “Multiplexed Photoionization Mass Spectrometry studies of the O(³P) + cyclopentene reaction reveal unexpected product channels”, K. Ramasesha, J. D. Savee, J. Zádor, D. L. Osborn, *Gordon Research Conference on Molecular Interactions and Dynamics*, Easton, MA, July 2016
 4. “Aqueous Proton Transfer Dynamics probed with Ultrafast Broadband Infrared Pulses”, K. Ramasesha, L. De Marco, A. Mandal, A. Tokmakoff, *6th International Conference on Coherent Multidimensional Spectroscopy*, Berlin, Germany, July 2012
 3. “Orientational Dynamics of Water studied with 2D-IR Anisotropy Measurements and Molecular Dynamics Simulations”, K. Ramasesha, R. A. Nicodemus, S. T. Roberts, A. Mandal and A. Tokmakoff, *5th International Conference on Coherent Multidimensional Spectroscopy*, Minneapolis, MN, August 2010
 2. “Anisotropy of Water studied using Molecular Dynamics Simulations”, K. Ramasesha, S. T. Roberts, A. Tokmakoff, *14th International Conference on Time-Resolved Vibrational Spectroscopy*, Meredith, NH, May 2009
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