

PRESENTATION LIST OF CHRISTOPHER S. GOLDENSTEIN

INVITED PRESENTATIONS

24. **C. S. Goldenstein**, V. Radhakrishna, R. Tancin, and J. Gilvey, Characterization of non-Boltzmann CN behind strong shocks in CH₄-N₂ via broadband, ultraviolet laser absorption spectroscopy, *NASA Ames Division Seminar*, Mountain View, CA. September 26, 2022.
23. **C.S. Goldenstein**, C. Schwartz, G. C. Mathews, Characterization of post-detonation fireballs at 1 MHz via laser absorption spectroscopy measurements of temperature, pressure, CO and CO₂, *IEEE RAPID*, Miramar Beach, FL. September 13, 2022.
22. **C. S. Goldenstein**, C. Schwartz, G. C. Mathews, MHz laser absorption spectroscopy diagnostics for temperature, pressure, and species measurements in post-detonation fireballs of energetic materials, *Optica Imaging and Applied Optics Congress, Laser Applications to Chemical, Security and Environmental Analysis (LACSEA)*, Vancouver, BC. July 13, 2022.
21. **C. S. Goldenstein**, MHz laser absorption spectroscopy diagnostics for temperature, pressure, and species measurements in post-detonation fireballs of energetic materials, *Gordon Research Conference on The Confluence of Science- and Machine-Based Learning Approaches in Energetic Materials Research*, Manchester, NH. June 30, 2022.
20. **C. S. Goldenstein** and R. Mitchell Spearrin, Laser absorption imaging of temperature and species in the mid-wave infrared, *AIAA SciTech 2022 Forum*, San Diego, CA
19. **C.S. Goldenstein**, Advancements in high-bandwidth laser-absorption diagnostics for combustion of energetic materials, *Frontiers in Mechanical Engineering and Sciences*, Virtual Seminar. October 16th, 2020.
18. **C.S. Goldenstein**, Vishnu Radhakrishna, G.C. Mathews, R.J. Tancin, Ultrafast laser-absorption spectroscopy for multi-parameter measurements in fireballs of energetic materials, *IEEE RAPID*, Virtual Event due to Covid-19. August 11, 2020.
17. **C.S. Goldenstein**, High-speed infrared diagnostics for characterizing combustion gases, *CCDC Army Research Laboratory*, Aberdeen Proving Ground, MD. August 11, 2019.
16. **C.S. Goldenstein**, R.J. Tancin, G.C. Mathews, and M. Ruesch, Mid-infrared laser-absorption diagnostics for characterizing combustion gases of energetic materials, *Los Alamos National Laboratory: Detonation Physics Group Seminar*, Los Alamos, NM. July 17, 2019.
15. **C.S. Goldenstein**, R.J. Tancin, G.C. Mathews, and M. Ruesch, High-speed infrared-laser-absorption diagnostics for characterizing combustion of energetic materials, *Purdue Energetic Materials Summit 2019*, West Lafayette, IN. May 22, 2019.
14. **C.S. Goldenstein**, G.B. Rieker, P. Wcislo, Advanced lineshapes in LAS diagnostics for combustion and propulsion, *AFOSR Workshop on High-Pressure Spectroscopy of HC Combustion*, Arlington, VA. April 15-16, 2019.
13. **C.S. Goldenstein** and R.M. Spearrin, Spectroscopy and database issues relevant to the combustion community, *AFOSR Workshop on High-Pressure Spectroscopy of HC Combustion*, Arlington, VA. April 15-16, 2019.
12. **C.S. Goldenstein** and G.C. Mathews, Wavelength-modulation spectroscopy for MHz thermometry and H₂O sensing, *Technische Universität Darmstadt*, Darmstadt, Germany. September 25, 2018.
11. **C.S. Goldenstein** and G.C. Mathews, Wavelength-modulation spectroscopy in the near-GHz regime for high-speed thermometry and species sensing, *OSA Imaging and Applied Optics Congress, Laser Applications to Chemical, Security and Environmental Analysis (LACSEA)*, Orlando, FL. June 26, 2018.
10. **C.S. Goldenstein**, Laser-absorption sensors for characterizing practical combustors, *Purdue Symposium on Applied Spectroscopy and Photonics*, West Lafayette, IN, September 16, 2017

9. **C.S. Goldenstein**, G.C. Mathews, and Y. Zhou, Single-ended infrared laser-absorption sensing of gas properties, in: *OSA Advanced Photonics Congress*, New Orleans, LA, July 24, 2017 <https://doi.org/10.1364/SENSORS.2017.SeM3E.1>
8. **C.S. Goldenstein**, Laser-absorption diagnostics for characterizing dynamic combustion events, *Purdue Energetic Materials Summit*, West Lafayette, IN. May 22, 2017.
7. **C.S. Goldenstein**, R.M. Spearrin, J.B. Jeffries, and R.K. Hanson, Infrared laser-absorption sensing for combustion flows, *13th Atmospheric Spectroscopy Applications and HITRAN Conference*, Reims, France. August 24, 2016.
6. **C.S. Goldenstein** and R.K. Hanson, High-fidelity absorption spectroscopy models for improved measurements of gas temperature and composition, *Stanford University High Temperature Gasdynamics Laboratory Seminar*, Stanford, CA. December 2, 2015.
5. **C.S. Goldenstein**, and R.K. Hanson, Laser absorption spectroscopy for high-fidelity, calibration-free measurements of gas properties at high temperatures, *Harvard-Smithsonian Center for Astrophysics Seminar*, Cambridge, MA. August 17, 2015.
4. **C.S. Goldenstein**, J.B. Jeffries, R.K. Hanson, Recent advancements in wavelength-modulation spectroscopy applied to hostile combustion systems, *Gordon Research Conference on Laser Diagnostics in Combustion*, Waterville Valley, NH. August 13, 2015.
3. **C.S. Goldenstein**, V.A. Miller, R.K. Hanson, IR laser-induced fluorescence of CO₂ for imaging gas properties, *Stanford University High Temperature Gasdynamics Laboratory Seminar*, Stanford, CA. April 1, 2015.
2. **C.S. Goldenstein**, J.B. Jeffries, R.K. Hanson, Laser-absorption sensors for characterizing hostile energy systems, *Purdue University Mechanical Engineering Seminar*, West Lafayette, IN. February 23, 2015.
1. **C.S. Goldenstein**, R.M. Spearrin, J.B. Jeffries, R.K. Hanson, Calibration-free laser-absorption sensors for time-resolved gas properties in combustion engines, *Argonne National Laboratory Transportation Research Division Seminar*, Darien, IL. August 28, 2014.

CONFERENCE PRESENTATIONS WITH PUBLICATIONS

26. G. C. Mathews, M. Gomez, C. J. Schwartz, A. A. Egel, R. W. Houim, S.F. Son, M. Arienti, A. D. Thompson, M. Welliver, D. R. Guildenbecher, and **C. S. Goldenstein**, Experimental and synthetic laser-absorption-spectroscopy measurements of temperature, pressure, and CO at 1 MHz for evaluation of post-detonation fireball models, *Proceedings of the Combustion Institute*, Vancouver, BC. July, 2022.
25. G. C. Mathews, M. Gomez, C. J. Schwartz, S.F. Son, **C. S. Goldenstein**, and D. R. Guildenbecher, Laser-absorption-spectroscopy measurements of temperature, pressure, and CO at 1 MHz in post-detonation fireballs, *AIAA SciTech 2022 Forum*, San Diego, CA, AIAA 2022-0288 (2022) doi.org/10.2514/6.2022-0288
24. V. Radhakrishna, R. J. Tancin, and **C. S. Goldenstein**, Ultrafast-laser-absorption imaging for 1D measurements of temperature and CN via the ultraviolet B²Σ⁺ ← X²Σ⁺ bands, *AIAA SciTech 2022 Forum*, San Diego, CA, AIAA 2022-1524 (2022) doi.org/10.2514/6.2022-1524
23. M.D. Ruesch, J. J. Gilvey, **C. S. Goldenstein**, K. A. Daniel, C. R. Downing, K. P. Lynch, J. L. Wagner, Mid-infrared laser-absorption-spectroscopy measurements of temperature, pressure, and NO X²Π_{1/2} at 500 kHz in shock-heated air, *AIAA SciTech 2022 Forum*, San Diego, CA, AIAA 2022-1526 (2022) doi.org/10.2514/6.2022-1526
22. Z. Chang, R. J. Tancin, V. Radhakrishna, R.P. Lucht, and **C. S. Goldenstein**, Broadband, mid-infrared laser-absorption measurements of temperature, CH₄, and C₃H₈ in flames, in: *AIAA Propulsion and Energy 2021 Forum*, Virtual Event AIAA 2021-3625 (2021) doi.org/10.2514/6.2021-3625
21. G. C. Mathews, J. W. Stiborek, and **C. S. Goldenstein**, Infrared laser-induced fluorescence with a continuous-wave optical parametric oscillator, in: *CLEO: Laser Science to Photonic Applications*, 2021

20. G. C. Mathews , M. G. Blaisdell, A. I. Lemcherfi, C. D. Slabaugh, and **C. S. Goldenstein**, High-bandwidth laser-absorption measurements of temperature, pressure, CO, and H₂O in the annulus of a rotating detonation rocket engine, in: *AIAA SciTech 2021 Forum*, Virtual Event, AIAA 2021-0418 (2021) doi.org/10.2514/6.2021-0418
19. M. D. Ruesch, S. F. Son, and **C. S. Goldenstein**, Characterization of aluminum-lithium composite-propellant flames via laser absorption spectroscopy, in: *AIAA SciTech 2021 Forum*, Virtual Event, AIAA 2021-1969 (2021) doi.org/10.2514/6.2021-1969
18. R. J. Tancin, M. D. Ruesch, S. F. Son, R. P. Lucht, and **C. S. Goldenstein**, Ultrafast-laser-absorption-spectroscopy measurements of temperature and CO in high-pressure, multi-phase propellant flames, in: *AIAA SciTech 2021 Forum*, Virtual Event, AIAA 2021-0719 (2021) doi.org/10.2514/6.2021-0719
17. V. Radhakrishna, R. J. Tancin, G. C. Mathews, R. P. Lucht, and **C. S. Goldenstein**, Single-shot ultrafast-laser-absorption measurements of temperature, CO, NO, and H₂O in HMX fireballs, in: *AIAA SciTech 2021 Forum*, Virtual Event, AIAA 2021-0722 (2021) doi.org/10.2514/6.2021-0722
16. A. J. McDonald, R. J. Tancin, M. D. Ruesch, and **C. S. Goldenstein**, Spectrally resolved, 1D, mid-infrared imaging of temperature, CO₂, and HCl in AP-HTPB propellant flames, in: *AIAA SciTech 2021 Forum*, Virtual Event, AIAA 2021-0723 (2021) doi.org/10.2514/6.2021-0723
15. M. S. McClain, M. D. Ruesch, R. J. Tancin, C. Dennis, **C. S. Goldenstein** and S. F. Son, Characterization of the melt layer of ammonium perchlorate single crystals, in: *AIAA Propulsion and Energy 2020 Forum*, AIAA 2020-3902 (2020) [doi/10.2514/6.2020-3902](https://doi.org/10.2514/6.2020-3902)
14. R. J. Tancin, V. Radhakrishna, Z. Chang, M. Gu, R. P. Lucht, and **C. S. Goldenstein**, Ultrafast laser-absorption spectroscopy in the mid-infrared for measuring temperature and species in combustion gases, in: *AIAA SciTech 2020 Forum*, Orlando, FL, AIAA 2020-0517 (2020) doi.org/10.2514/6.2020-0517
13. M. D. Ruesch, G. C. Mathews, M. G. Blaisdell, S. F. Son, and **C. S. Goldenstein**, Scanned-wavelength-modulation spectroscopy in the mid-infrared for measurements of temperature and CO in aluminized composite-propellant flames, *AIAA SciTech 2020 Forum*, Orlando, FL, AIAA 2020-0527 (2020) doi.org/10.2514/6.2020-0527
12. G. C. Mathews and **C. S. Goldenstein**, Wavelength-modulation-spectroscopy diagnostics for characterizing metallized and halogenated fireballs of energetic materials, in: *AIAA SciTech 2020 Forum*, Orlando, FL, AIAA 2020-0301 (2020) doi.org/10.2514/6.2020-0301
11. R. J. Tancin, R. M. Spearrin, and **C. S. Goldenstein**, Mid-infrared laser-absorption imaging of temperature and CO in laminar flames, in: *11th U.S. National Combustion Meeting*, Pasadena, CA, (2019)
10. G. C. Mathews and **C.S. Goldenstein**, Wavelength-modulation spectroscopy for MHz thermometry and H₂O sensing in combustion gases of energetic materials, in: *AIAA Scitech 2019 Forum*, San Diego, CA, AIAA 2019-1609 (2019). doi.org/10.2514/6.2019-1609
9. **C.S. Goldenstein**, G.C. Mathews, and Y. Zhou, Single-ended infrared laser-absorption sensing of gas properties, in: *OSA Advanced Photonics Congress*, New Orleans, LA, (2017) <https://doi.org/10.1364/SENSORS.2017.SeM3E.1>
8. I.A. Schultz, **C.S. Goldenstein**, J.B. Jeffries, R.K. Hanson, R.D. Rockwell, C.P. Goynes, Spatially-resolved TDLAS measurements of temperature, H₂O column density, and velocity in a direct-connect scramjet combustor, in: *52nd Aerospace Sciences Meeting*, AIAA 2014-1241 (2014).
7. I.A. Schultz, **C.S. Goldenstein**, C.L. Strand, J.B. Jeffries, R.K. Hanson, C.P. Goynes, Hypersonic scramjet testing via TDLAS measurements of temperature and column density in a reflected shock tunnel, in: *52nd Aerospace Sciences Meeting*, AIAA 2014-0389 (2014).
6. **C.S. Goldenstein**, I.A. Schultz, R.M. Spearrin, J.B. Jeffries, R.K. Hanson, Diode laser measurements of temperature and H₂O for monitoring pulse detonation combustor performance, in: *24th Int. Colloq. Dyn. Explos. React. Syst.*, Taiwan, (2013).

5. R.M. Spearrin, **C.S. Goldenstein**, J.B. Jeffries, R.K. Hanson, Mid-infrared laser absorption diagnostics for detonation studies, in: *29th Int. Symp. Shock Waves*, Madison, (2013).
4. I.A. Schultz, **C.S. Goldenstein**, J.B. Jeffries, R.K. Hanson, TDL absorption sensor for in situ determination of combustion progress in scramjet ground testing, in: *28th Aerodyn. Meas. Technol. Gr. Testing, Flight Test. Conf.*, AIAA 2012-2654 (2012).
3. **C.S. Goldenstein**, I.A. Schultz, J.B. Jeffries, R.K. Hanson, TDL absorption sensor for temperature measurements in high-pressure and high-temperature gases, in: *50th AIAA Aerosp. Sci. Meet.*, AIAA 2012-1061 (2012).
2. I.A. Schultz, **C.S. Goldenstein**, J.B. Jeffries, R.K. Hanson, Tunable diode laser diagnostic for scramjet combustion flows, in: *7th US National Meeting of the Combustion Institute*, Atlanta, CA, 2011.
1. **C.S. Goldenstein**, I.A. Schultz, J.B. Jeffries, R.K. Hanson, Tunable diode laser absorption sensor for measurements of temperature and water concentration in supersonic flows, in: *49th AIAA Aerosp. Sci. Meet.*, AIAA 2011-1094 (2011).