Stanford

Ronald Hanson

Clarence J. and Patricia R. Woodard Professor of Mechanical Engineering

Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrative Contact**

  Tasha Jackson - Thermosciences Group Administrator

  Email tashaja1@stanford.edu

  Tel (650) 721-3276

Bio

BIO

Professor Hanson has been an international leader in the development of laser-based diagnostic methods for combustion and propulsion, and in the development of modern shock tube methods for accurate determination of chemical reaction rate parameters needed for modeling combustion and propulsion systems. He and his students have made several pioneering contributions that have impacted the pace of propulsion research and development worldwide. During his career at Stanford, Professor Hanson has successfully managed over 150 research contracts and grants, with a total value well over $75 million. He and his students have authored over 1450 publications.

Professor Hanson is a fellow of American Society of Mechanical Engineers, American Institute of Aeronautics and Astronautics, and the Optical Society of America. He has received the Egerton Gold Medal and is an Inaugural Fellow of the Combustion Institute, and has been elected to the National Academy of Engineering. He is also an Inaugural Distinguished Fellow of the International Shock Wave Institute and the winner of the R. Soloukhin Medal from the Institute for Dynamics of Explosions and Reactive Systems. He is, perhaps, most happy about the recognition that his students have received for their publications, including Best Paper Awards from the AIAA Ground Test Conference, AIAA Propellant and Combustion Section, and the Combustion Institute Silver Medal. Recent awards include the 2023 Julius Springer Award for Applied Physics, a 2023 AIAA SciTech Outstanding Paper Award, and the selection as an Inaugural Distinguished Fellow from the The International Shock Wave Institute in 2022.

Professor Hanson has graduated over 125 Ph.D. candidates and supervised over 20 postdoctoral scholars and research associates. Thirty-four of his students have gone on to become professors including: Ferris (Princeton), Varghese (University of Texas at Austin), Louge (Cornell University), Kirby (Cornell University), Wooldridge (University of Michigan), Mertens (Trinity College), Song (Yonsei University), Rossmann (Lafayette College), Sanders (University of Wisconsin-Madison), Ben-Yakar (University of Texas at Austin), Webber (University of Texas at Austin), Oehlschlaeger (Rensselaer Polytechnic Institute), Ma (University of Virginia), Koch (Trine University), Lee (University of Illinois Urbana-Champaign), Rothamer (University of Wisconsin-Madison), Petersen (Texas A&M), Seitzman (Georgia Tech), Linne (University of Edinburgh), Yoo (SUNY Buffalo), Porter (Colorado School of Mines), Liu (University of Washington), Vasu (University of Central Florida), Ren (Chinese University of Hong Kong), Rieker (University of Colorado Boulder), Farooq (KAUST), Goldenstein (Purdue University), Spearrin (University of California at Los Angeles), Sun (Tongji University), Chao (Tsinghua

University), Wang (Peking University), and Shao (Beijing Institute of Technology). He is currently supervising approximately 30 M.S. and Ph.D. graduate students.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Member, Bio-X
- Affiliate, Precourt Institute for Energy

HONORS AND AWARDS

- Julius Springer Award for Applied Physics, Springer Publishing (2023)
- SciTech Outstanding Paper Award, American Institute of Aeronautics and Astronautics (2023)
- Dedicated Issue of Combustion and Flame, Combustion Institute (2021)
- Inaugural Distinguished Fellow, International Shock Wave Institute (2021)
- Outstanding Paper Award, Measurement Science and Technology (2021)
- 100th Beacon Distinguished Lecture, Tsinghua University (2020)
- Distinguished Lecture Award, Pratt and Whitney (2019)
- Distinguished Paper, 37th Comb. Symp., Combustion Institute (2018)
- Inaugural Fellow, The Combustion Institute (2018)
- Energy Systems Award, American Institute of Aeronautics and Astronautics (2016)
- Hue-Shen Tsien Professorship, China Academy of Science, Inst. of Mechanics (2016)
- David Goodwin Memorial Lecture, California Institute of Technology (2015)
- Milton Van Dyke Award, American Physical Society (2015)
- Honorary Professorship, Xi'an Jiaotong University, China (2014)
- Honorary Professorship, Northwestern Polytechnic University, China (2014)
- Arch T. Colwell Award, Society of Automotive Engineers (2013)
- Outstanding Paper of 2013, Journal of Measurement, Science and Technology (2013)
- Most-cited Paper Award, Combustion and Flame (2012)
- Top 20 Most Published Author (Past 50 years), Applied Optics (2012)
- Best Paper in Propellants and Combustion, American Institute of Aeronautics and Astronautics (2011)
- Crocco Lecture, Princeton (2011)
- Fowler Lecture, Texas A&M (2011)
- R.I. Soloukhin Award, Institute for the Dynamics of Explosions and Reactive Systems (2011)
- A. Hottel Memorial Lecture, 33rd International Combustion Symposium (2010)
- Senior Scientist Award, Alexander von Humboldt Foundation (2010)
- Alfred Egerton Gold Medal of the Combustion Institute, Combustion Institute (2008)
- Propellants and Combustion Award, American Institute of Aeronautics and Astronautics (2005)
- Fellow, American Society of Mechanical Engineers (2004)
- Elected to National Academy of Engineering, National Academy of Engineering (2002)
- Silver Medal, Combustion Institute (2002)
- Best Paper of 2000, Journal of Measurement Science and Technology (2000)

- Best Paper Award, Ground Test Conference (AIAA) (1997)
- Fellow, American Institute of Aeronautics and Astronautics (1997)
- Aerodynamic Measurement Technology Award, American Institute of Aeronautics and Astronautics (1996)
- Clarence and Patricia Woodard Professor of Mechanical Engineering, Stanford University (1994)
- Fellow, Optical Society of America (1990)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Inaugural Fellow, The Combustion Institute (2018 - present)
- Fellow, American Society of Mechanical Engineers (2004 - present)
- Elected Member, National Academy of Engineering (2002 - present)
- Fellow, American Institute of Aeronautics and Astronautics (1997 - present)
- Fellow, Optical Society of America (1990 - present)

PROFESSIONAL EDUCATION

- M.Sc., Arizona State University , Mechanical Engineering (1965)
- B.S., Oregon State University , Mechanical Engineering (1961)
- Ph.D., Stanford University , Aeronautics and Astronautics (1968)

LINKS

- http://hanson.stanford.edu/: http://hanson.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Professor Hanson has been an international leader in the development of laser-based diagnostic methods for combustion and propulsion, and in the development of modern shock tube methods for accurate determination of chemical reaction rate parameters needed for modeling combustion and propulsion systems. He and his students have made several pioneering contributions that have impacted the pace of propulsion research and development worldwide. During his career at Stanford, Professor Hanson has successfully managed over 100 research contracts and grants, with a total value well over $50 million. He and his students have authored over 1200 publications.

Teaching

COURSES

2025-26

- Optical Diagnostics and Spectroscopy: ME 364 (Win)
- Optical Diagnostics and Spectroscopy Laboratory: ME 367 (Spr)
- Thermofluids, Energy, and Propulsion Research Seminar: ME 390A (Aut)

2024-25

- Nonequilibrium Processes in High-Temperature Gases: ME 362B (Win)
- Optical Diagnostics and Spectroscopy Laboratory: ME 367 (Spr)

2023-24

- Optical Diagnostics and Spectroscopy: ME 364 (Win)
- Optical Diagnostics and Spectroscopy Laboratory: ME 367 (Spr)

2022-23

- Nonequilibrium Processes in High-Temperature Gases: ME 362B (Win)
- Optical Diagnostics and Spectroscopy Laboratory: ME 367 (Spr)
- Thermofluids, Energy, and Propulsion Research Seminar: ME 390A (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Andy Huynh

Postdoctoral Faculty Sponsor

Miguel Figueroa Labastida

Doctoral Dissertation Advisor (AC)

Sarah Baird, Spencer Barnes, Pujan Biswas, Thien Bui, Dylan Drescher, Zev Granowitz, Andrew Klingberg, Konstantinos Kotsarinis, Nathan Laing, Jin Lee, Chengze Li, Devin Merrell, Alka Panda, Padmanabha Prasanna Simha, Lauren Simitz

Master's Program Advisor

Abdullah Alhussain, Sam Chen, Luca De Donno, Nathaniel Giessner, Gavin Miller, Sam Xie

Doctoral (Program)

Gibson Clark, Atticus Cummings, Thomas Wooldridge

Publications

PUBLICATIONS

- **Applications of hydrazine for the study of NH2 kinetics-II: Self-reaction of NH2 radicals** *COMBUSTION AND FLAME*
  Rault, T. M., Simha, P., Streicher, J. W., Strand, C. L., Hanson, R. K.
  2026; 288
- **Effect of pre-flame reaction extent on the dynamics of outwardly expanding dimethyl ether (DME) laminar flames in the NTC region** *COMBUSTION AND FLAME*
  Zheng, L., Figueroa-Labastida, M., Wei, C., Hanson, R. K.
  2026; 289
- **Applications of Hydrazine for the study of NH2 kinetics-I: N2H4 pyrolysis reactions** *COMBUSTION AND FLAME*
  Rault, T. M., Simha, P., Streicher, J. W., Strand, C. L., Hanson, R. K.
  2026; 288
- **Direct Laser Absorption Measurements of NH3-Relevant Pyrolysis Reactions.** *The journal of physical chemistry. A*
  Rault, T. M., Clees, S., Merrell, D. P., Hanson, R. K.
  2026
- **Multi-parameter, kHz rate spectrally resolved NO PLIF in a supersonic jet** *OPTICS LETTERS*
  Barnes, S. C., Lee, J., Clees, S., Vandervort, J. A., Strand, C. L., Hanson, R. K.
  2026; 51 (4): 957-960
- **Experimental Measurement of the Rate Coefficient for OCS + M, with M = Ar, He, N2, CO2 in a Shock Tube Using Laser Absorption Spectroscopy.** *The journal of physical chemistry. A*
  Panda, A., Biswas, P. A., Simitz, L. V., Streicher, J. W., Strand, C. L., Hanson, R. K.
  2026
- **Laser Absorption Spectroscopy Studies of the Cyano Radical for Titan Entry Kinetics** *JOURNAL OF THERMOPHYSICS AND HEAT TRANSFER*
  Chang, E., Merrell, D. P., Streicher, J. W., Hanson, R. K.

2026

- **Collision induced absorption in HITRAN2024: Enhanced and improved data for atmospheric and planetary studies** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
  Terragni, J., Gordon, I. E., Adkins, E. M., Boulet, C., Campargue, A., Chistikov, D., Finenko, A., Finkenzeller, H., Fleurbaey, H., Hargreaves, R. J., Hanson, R. K., Hartmann, J., Klingberg, et al
  2025; 347

- **Vibrational-state-resolved relaxation and chemistry of carbon monoxide and nitrogen mixtures from 2000-10 250 K probing carbon monoxide in the ground to twelfth excited vibrational levels (vol37, 096112 , 2025)** *PHYSICS OF FLUIDS*
  Streicher, J. W., Merrell, D. P., Strand, C. L., Hanson, R. K., Aiken, T. T., Andrienko, D. A., Boyd, I. D.
  2025; 37 (12)

- **Ring-amplified shock tube for variable-gain, multi-wavelength absorption spectroscopy** *OPTICS EXPRESS*
  Strand, C. L., Merrell, D., Thoeny, A., Streicher, J. W., Hanson, R. K.
  2025; 33 (20): 42653-42676

- **High temperature collisional broadening of the oxygen A-band for partners O₂, N₂, and Ar** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
  Merrell, D. P., Thoeny, A., Strand, C. L., Hanson, R. K.
  2026; 348

- **Laminar flame speed measurements and laser absorption characterization of high-temperature, premixed ethane-air flames** *APPLICATIONS IN ENERGY AND COMBUSTION SCIENCE*
  Ferris, A. M., Girard, J. J., Susa, A. J., Hanson, R. K.
  2025; 24

- **Vibrational-state-resolved relaxation and chemistry of carbon monoxide and nitrogen mixtures from 2000-10 250 K probing carbon monoxide in the ground to twelfth excited vibrational levels** *PHYSICS OF FLUIDS*
  Streicher, J. W., Merrell, D. P., Strand, C. L., Hanson, R. K., Aiken, T. T., Andrienko, D. A., Boyd, I. D.
  2025; 37 (9)

- **IR-HyChem: Towards modeling the high-T combustion behavior of aviation fuels using infrared spectra** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Biswas, P., Boddapati, V., Klingberg, A. R., Panda, A., Wang, H., Hanson, R. K.
  2025; 41

- **Laser-absorption sensor suite for crank-angle-resolved, in situ measurements in the exhaust of a high-performance internal combustion engine-I: temperature and H2O** *APPLIED OPTICS*
  Clees, S., Santos, J. P., Vandervort, J. A., Strand, C. L., Hanson, R. K., Ghonim, A., French, B., Gilmour, A., Ferlet, X.
  2025; 64 (19): 5499-5508

- **Laser-absorption sensor suite for crank-angle-resolved, in situ measurements in the exhaust of a high-performance internal combustion engine-II: CO, CO2, and unburned hydrocarbons** *APPLIED OPTICS*
  Vandervort, J. A., Clees, S., Santos, J. P., Strand, C. L., Hanson, R. K., Ghonim, A., French, B., Gilmour, A., Ferlet, X.
  2025; 64 (19): 5509-5518

- **Direct measurement of the NH₃+OH reaction rate behind incident and reflected shock waves** *COMBUSTION AND FLAME*
  Zaczek, L. T., Clees, S., Hanson, R. K.
  2025; 277

- **Spatially-resolved atomic oxygen absorption and emission measurements in the Hypersonic Materials Environmental Test System** *APPLIED PHYSICS B-LASERS AND OPTICS*
  Schwartz, T., Splinter, S. C., Rodrigues, N. S., Danehy, P. M., Samuels, K. E., Kostyk, C. B., Hanson, R. K.
  2025; 131 (6)

- **Temperature and Enthalpy Characterization of NASA Arcjet Using Oxygen and Nitrogen Absorption** *JOURNAL OF THERMOPHYSICS AND HEAT TRANSFER*
  Finch, P. M., Granowitz, Z. N., Strand, C. L., Hanson, R. K., MacDonald, M. E., Hui, F. C. L., Gokcen, T.
  2025

- **Simultaneous spatially resolved temperature, pressure, and velocity measurements in high-enthalpy gas environments using spectrally resolved laser-induced fluorescence of potassium vapor (vol 131, 4, 2025)** *APPLIED PHYSICS B-LASERS AND OPTICS*
  Vandervort, J. A., Barnes, S. C., Clees, S., Strand, C. L., Hanson, R. K.
  2025; 131 (4)
- **A laser-absorption diagnostic for O₂ concentration and temperature using a portable, tunable UV laser system** *APPLIED PHYSICS B-LASERS AND OPTICS*
  Barnes, S. C., Clees, S., Vandervort, J. A., Rault, T. M., Streicher, J. W., Strand, C. L., Hanson, R. K.
  2025; 131 (4)
- **Simultaneous spatially resolved temperature, pressure, and velocity measurements in high-enthalpy gas environments using spectrally resolved laser-induced fluorescence of potassium vapor** *APPLIED PHYSICS B-LASERS AND OPTICS*
  Vandervort, J. A., Barnes, S. C., Clees, S., Strand, C. L., Hanson, R. K.
  2025; 131 (3)
- **Measurements of high-temperature H2 laminar flame speeds across a wide range of pressure and Ar dilution for improved comparative evaluation of chemical kinetic models** *INTERNATIONAL JOURNAL OF HYDROGEN ENERGY*
  Figueroa-Labastida, M., Zheng, L., Streicher, J. W., Hanson, R. K.
  2025; 102: 411-429
- **Development and demonstration of a two-color nitric oxide vibrational temperature diagnostic using spectrally-resolved ultraviolet laser absorption** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
  Barnes, S. C., Streicher, J. W., Krish, A., Hanson, R. K.
  2025; 332
- **LT-HyChem- A physics-based chemical kinetic modeling approach for low-temperature oxidation of real fuels I: Rationale, methodology, and application to a simple fuel mixture** *COMBUSTION AND FLAME*
  Choudhary, R., Biswas, P., Boddapati, V., Wang, H., Hanson, R. K.
  2025; 271
- **Second-generation in-situ TDLAS sensor for supersonic gas measurements in a shock tube**
  Schwartz, T., Strand, C. L., Hanson, R. K., Kostyk, C. B., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2025
- **Simultaneous point measurements of temperature, pressure, and velocity using spectrally resolved laser-induced fluorescence of atomic potassium vapor in air**
  Vandervort, J. A., Kotsarinis, K., Strand, C. L., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2025
- **Shock Tube ARAS Measurements of N(²D) and N(²P) in 5100K to 6400K Nitrogen-Argon Mixtures**
  Granowitz, Z. N., Drescher, D., Merrell, D. P., Streicher, J. W., Strand, C. L., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2025
- **Freestream Multi-species and Near-body Atomic Oxygen Measurements in the T5 Shock Tunnel by Tunable Diode Laser Absorption Spectroscopy**
  Schwartz, T., Drescher, D., Barnes, S. C., Ferretti, M., Strand, C. L., Hanson, R. K., Luo, Y., Yu, W. M., Gutierrez, J., Feasey, W., Austin, J. M., Hornung, H. G., Gross, et al
  AMER INST AERONAUTICS & ASTRONAUTICS.2025
- **Experimental and computational assessment of O₂ and NO individual vibrational states in reflected shock flows**
  Andrienko, D. A., Boyd, I. D., Streicher, J. W., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2025
- **Understanding the impact of cycloalkane additives on the combustion of HEFA jet fuel** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Panda, A., Klingberg, A., Hanson, R. K.
  2025; 41
- **A shock tube study of chaperon efficiencies for the NH3+M-NH2+H + M reaction during ammonia pyrolysis** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Simha, P., Rault, T. M., Clees, S., Streicher, J. W., Strand, C. L., Hanson, R. K.
  2025; 41

- **A Rapidly Tunable Laser System for Measurements of NH2 at 597 nm Behind Reflected Shock Waves.** *Sensors (Basel, Switzerland)*
  Clees, S., Barnes, S. C., Rault, T. M., Strand, C. L., Hanson, R. K.
  2024; 24 (24)
- **Measurement of hydrogen and nitrogen via collision-induced infrared absorption** *INTERNATIONAL JOURNAL OF HYDROGEN ENERGY*
  Wei, C., Klingberg, A., Strand, C. L., Hanson, R. K.
  2024; 93: 364-373
- **Collisional broadening and pressure shift coefficients for the potassium D1 and D2 transitions in oxygen and carbon dioxide at high temperatures** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
  Vandervort, J. A., Kotsarinis, K., Barnes, S. C., Strand, C. L., Hanson, R. K.
  2024; 328
- **A Rapidly Tunable Laser System for Measurements of NH₂ at 597 nm Behind Reflected Shock Waves** *SENSORS*
  Clees, S., Barnes, S. C., Rault, T. M., Strand, C. L., Hanson, R. K.
  2024; 24 (24)
- **New insights into the effect of molecular structure on stable intermediate formation during the pyrolysis of normal and branched alkanes - II: Impact of carbon number and degree of branching** *FUEL*
  Boddapati, V., Biswas, P., Panda, A., Klingberg, A. R., Hanson, R. K.
  2024; 373
- **New insights into the effect of molecular structure on stable intermediate formation during the pyrolysis of normal and branched alkanes - I: Multi-species time history measurements** *FUEL*
  Boddapati, V., Biswas, P., Panda, A., Klingberg, A. R., Hanson, R. K.
  2024; 373
- **Effect of elevated temperatures (550-860 K) on the laminar flame speeds of methane/hydrogen blends** *FUEL*
  Figueroa-Labastida, M., Zheng, L., Streicher, J. W., Hanson, R. K.
  2024; 372
- **Shock-Layer Measurements in T5 Shock Tunnel Hypersonic Flows Around a Cylinder Model** *AIAA JOURNAL*
  Finch, P. M., Girard, J. J., Schwartz, T., Strand, C. L., Hanson, R. K., Yu, W. M., Austin, J. M., Hornung, H. G., Gross, T., Schwartzentruber, T. E.
  2024
- **Experimental temperature- and pressure-dependent absorbance cross sections and a pseudo-line-list model for methyl formate near 5.7 . 7 µm** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
  Su, W., Ding, Y., Strand, C. L., Hanson, R. K.
  2024; 327
- **Experimental measurements of n-heptane flame speeds behind reflected shock waves with variable extents of pre-flame auto-ignition chemistry** *COMBUSTION AND FLAME*
  Zheng, L., Figueroa-Labastida, M., Streicher, J. W., Ferris, A. M., Hanson, R. K.
  2024; 266
- **A laser diagnostic for lineshape-based gas temperature and pressure measurements targeting a single atomic potassium absorption transition** *APPLIED PHYSICS B-LASERS AND OPTICS*
  Vandervort, J. A., Schwartz, T., Barnes, S. C., Strand, C. L., Hanson, R. K.
  2024; 130 (7)
- **Ammonia/hydrogen laminar flame speed measurements at elevated temperatures** *INTERNATIONAL JOURNAL OF HYDROGEN ENERGY*
  Figueroa-Labastida, M., Zheng, L., Streicher, J. W., Hanson, R. K.
  2024; 63: 1137-1146
- **Experimental and numerical investigation of shock wave-based methane pyrolysis for clean H₂ production** *SHOCK WAVES*
  Ferris, A. M., Biswas, P., Choudhary, R., Hanson, R. K.
  2024
- **High-temperature laminar flame speed measurements of ammonia/ methane blends behind reflected shock waves** *COMBUSTION AND FLAME*
  Figueroa-Labastida, M., Zheng, L., Streicher, J. W., Hanson, R. K.

2024; 261

- **Measurements of methane laminar flame speeds at temperatures up to 1320 K** *COMBUSTION AND FLAME*
  Figueroa-Labastida, M., Zheng, L., Streicher, J. W., Hanson, R. K.
  2024; 261
- **Shock-tube laminar flame speed measurements of ammonia/airgon mixtures at temperatures up to 771K** *COMBUSTION AND FLAME*
  Figueroa-Labastida, M., Zheng, L., Ferris, A. M., Obrecht, N., Callu, C., Hanson, R. K.
  2024; 260
- **Development of a vapor-based method for seeding alkali metals in shock tube facilities** *SHOCK WAVES*
  Vandervort, J. A., Barnes, S. C., Strand, C. L., Hanson, R. K.
  2024; 34 (1): 61-67
- **Predicting the physical and chemical properties of sustainable aviation fuels using elastic-net-regularized linear models based on extended-wavelength FTIR spectra** *FUEL*
  Boddapati, V., Ferris, A. M., Hanson, R. K.
  2024; 356
- **Understanding the impact of molecular structure on the formation of stable intermediates during the pyrolysis of monoalkylated cyclohexanes in a shock tube** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Boddapati, V., Biswas, P., Panda, A., Klingberg, A. R., Hanson, R. K.
  2024; 40 (1-4)
- **Evaluation of thermal relaxation and extinction of nitric oxide via a master equation model**
  Andrienko, D. A., Boyd, I. D., Streicher, J. W., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Vibrational-State-Resolved Oxygen and Nitric Oxide Time-History Measurements in Shock-Heated, High-Temperature Air**
  Streicher, J. W., Barnes, S. C., Krish, A., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **High-Frequency Static Pressure Measurements in the T5 Reflected Shock Tunnel**
  Yu, W. M., Luo, Y., Austin, J. M., Hornung, H. G., Finch, P. M., Schwartz, T., Strand, C. L., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Simulations of Non-Equilibrium Air Chemistry Compared To Hypersonic Wind Tunnel Experiments**
  Gross, T. J., Torres, E., Schwartzentruber, T. E., Finch, P. M., Girard, J. J., Schwartz, T., Granowitz, Z. N., Strand, C. L., Hanson, R. K., Yu, W. M., Austin, J. M., Hornung, H. G., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Near-Infrared Measurements of Cyano Radical Number Density and Temperature using Rapidly Scanned Tunable Diode Laser Spectroscopy**
  Chang, E., Merrell, D. P., Streicher, J. W., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Demonstration of UV Rotational, Vibrational Temperature and Speciation Diagnostics for the Cyano-Radical in Methane-Nitrogen Mixtures**
  Merrell, D. P., Chang, E., Krish, A., Finch, P. M., Streicher, J. W., Hanson, R. K., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Fiber-coupled optical probe for laser absorption diagnostics in shock tube experiments with high concentrations of non-monatomic species** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Wei, C., Knubben, J. C., Strand, C. L., Hanson, R. K.
  2024; 40 (1-4)
- **Measurements and a new correlation of methanol laminar flame speeds at temperatures up to 916 K and elevated pressures behind reflected shock waves** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Zheng, L., Figueroa-Labastida, M., Streicher, J., Hanson, R. K.
  2024; 40 (1-4)
- **Simultaneous OH and OH* measurements during NH₃ oxidation in a shock tube** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*

Clees, S., Rault, T. M., Zaczek, L. T., Hanson, R. K.
2024; 40 (1-4)

- **Towards characterizing the effect of sustainable gasoline additives on the low-T reactivity of n-heptane using CO speciation in a shock tube** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Biswas, P., Boddapati, V., Hanson, R. K.
  2024; 40 (1-4)
- **Multi-speciation and ignition delay time measurements of ammonia oxidation behind reflected shock waves** *COMBUSTION AND FLAME*
  Rault, T. M., Clees, S., Figueroa-Labastida, M., Barnes, S. C., Ferris, A. M., Obrecht, N., Callu, C., Hanson, R. K.
  2024; 260
- **Spectroscopic modeling and measurements of the CN Violet and Red systems for the development of nonequilibrium temperature and speciation diagnostics** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
  Krish, A., Finch, P. M., Merrell, D. P., Streicher, J. W., Hanson, R. K.
  2023; 311
- **Laser Absorption Sensor Targeting Potassium for Hypersonic Velocity, Temperature, and Enthalpy Measurements** *AIAA JOURNAL*
  Schwartz, T., Finch, P. M., Strand, C. L., Hanson, R. K., Luo, Y., Yu, W. M., Austin, J. M., Hornung, H. G.
  2023
- **On the use of extended-wavelength FTIR spectra for the prediction of combustion properties of jet fuels and their constituent species** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Boddapati, V., Ferris, A. M., Hanson, R. K.
  2023; 39 (1): 1347-1355
- **Measurements of propane-O 2-Ar laminar flame speeds at temperatures exceeding 1000 K in a shock tube** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Susa, A. J., Zheng, L., Hanson, R. K.
  2023; 39 (2): 1793-1802
- **Simultaneous side-wall-schlieren and -emission imaging of autoignition phenomena in conventional and constrained-reaction-volume shock-tube experiments** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
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