Stanford

Spencer Carlton Barnes

- Ph.D. Student in Mechanical Engineering, admitted Autumn 2022
- Masters Student in Mechanical Engineering, admitted Spring 2024

Bio

BIO

I am currently a Mechanical Engineering graduate student at Stanford University pursuing a PhD. At the university, I work as a research assistant in the high-temperature gas dynamics laboratory. My current work involves novel concepts in laser spectroscopy. I pride myself in being self-motivated, detail oriented, and a team player.

Publications

PUBLICATIONS

- **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.
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- **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.
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- **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.
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- **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

- **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
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- **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)
- **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)
- **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
- **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