Stanford

Tonghun Lee

Professor of Aeronautics and Astronautics

Bio

BIO

Professor Lee's research group is focused on investigating the fundamental physics relevant to next generation aerospace propulsion systems and space entry technologies. Areas of interest include hypersonic propulsion systems, hybrid chemical and electrical propulsion systems, compact UAV propulsion technologies, integration of sustainable aviation fuels, and application of advanced laser & optical diagnostics. His work aims to improve fundamental understanding of high-speed reacting flows while advancing technologies for more efficient and environmentally responsible aerospace systems.

ACADEMIC APPOINTMENTS

- Professor, Aeronautics and Astronautics

HONORS AND AWARDS

- Best Technical Paper, High Speed Airbreathing Propulsion TC, AIAA SciTech 2021 (2021)
- Walter Lempert Best Paper Award, AIAA SciTech 2021 (2021)
- Associate Fellow, AIAA (2020)
- Fellow, American Society of Mechanical Engineers (2020)
- Visiting Scientist Award, Argonne National Laboratory Advanced Photon Source (2017)
- ONR Young Investigator Program Award, Office of Naval Research (2011)
- Presidential Early Career Award for Scientists and Engineers (PECASE), White House (2011)
- SAE Ralph R. Teetor Educational Award, SAE International (2010)
- Air Force Summer Faculty Fellow, Air Force Research Laboratory (2009, 2010, 2011)
- AFOSR Young Investigator Program Award, Air Force Office of Scientific Research (2008)

PROFESSIONAL EDUCATION

- Ph.D., Stanford University , Mechanical Engineering (2006)
- M.S., Stanford University , Mechanical Engineering (2002)
- B.S., Yonsei University , Mechanical Engineering (2000)

Teaching

COURSES

2025-26

- Aircraft and Rocket Propulsion: AA 283 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Advisor (AC)

Jun Hyoung Jo

Orals Evaluator

Yiren Shen

Publications

PUBLICATIONS

- **Numerical Simulation of Oxygen-Enhanced Combustion in an Arc-Heated Scramjet Facility** *AIAA JOURNAL*
  Richardson, S., Edwards, J. R., Gessman, I., Lim, J., Paganini, A., Lee, T.
  2026
- **Mixing enhancement and flame stabilization via mesh insert for supersonic cavity flameholder** *AEROSPACE SCIENCE AND TECHNOLOGY*
  Kang, K., Kato, N., Gessman, I., Beck, A. D., D'agostino, M., Mayhew, E., Lee, T.
  2026; 171
- **3D Evaluation of Porous Zeolite Absorbents Using FIB-SEM Tomography** *INTERNATIONAL JOURNAL OF PRECISION ENGINEERING AND MANUFACTURING-GREEN TECHNOLOGY*
  Bae, K., Kim, J., Son, J., Lee, T., Kang, S., Prinz, F. B., Shim, J.
  2018; 5 (2): 195–99
- **Fuel effects on lean blow-out in a realistic gas turbine combustor** *COMBUSTION AND FLAME*
  Esclapez, L., Ma, P. C., Mayhew, E., Xu, R., Stouffer, S., Lee, T., Wang, H., Ihme, M.
  2017; 181: 82–99
- **Bimetallic Nickel/Ruthenium Catalysts Synthesized by Atomic Layer Deposition for Low-Temperature Direct Methanol Solid Oxide Fuel Cells** *ACS APPLIED MATERIALS & INTERFACES*
  Jeong, H., Kim, J. W., Park, J., An, J., Lee, T., Prinz, F. B., Shim, J. H.
  2016; 8 (44): 30090-30098
- **Experimental evaluation of strategies for quantitative laser-induced-fluorescence imaging of nitric oxide in high-pressure flames (1-60 bar)** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
  Lee, T., Jeffries, J. B., Hanson, R. K.
  2007; 31: 757-764
- **Quantitative temperature measurements in high-pressure flames with multiline NO-LIF thermometry** *APPLIED OPTICS*
  Lee, T., Bessler, W. G., Kronemayer, H., Schulz, C., Jeffries, J. B.
  2005; 44 (31): 6718-6728
- **Strategies for laser-induced fluorescence detection of nitric oxide in high-pressure flames. III. Comparison of A-X excitation schemes** *APPLIED OPTICS*
  Bessler, W. G., Schulz, C., Lee, T., Jeffries, J. B., Hanson, R. K.
  2003; 42 (24): 4922-4936
- **Strategies for laser-induced fluorescence detection of nitric oxide in high-pressure flames. II. A-X(0,1) excitation** *8th Topical Meeting on Laser Applications to Chemical and Environmental Analysis (8th LACEA)*
  Bessler, W. G., Schulz, C., Lee, T., Jeffries, J. B., Hanson, R. K.
  OPTICAL SOC AMER.2003: 2031–42
- **Strategies for laser-induced fluorescence detection of nitric oxide in high-pressure flames. I. A-X(0,0) excitation** *APPLIED OPTICS*
  Bessler, W. G., Schulz, C., Lee, T., Jeffries, J. B., Hanson, R. K.
  2002; 41 (18): 3547-3557