

Hongtao Zhong

Ph.D. Candidate Advanced Combustion and Propulsion Lab hongtaoz@princeton.edu Homepage

EDUCATION

PRINCETON UNIVERSITY

PH.D. IN MECHANICAL AND
AEROSPACE ENGINEERING
Sept 2017 - Present | Princeton, NJ
Cum. GPA: 3.95 / 4.0

TSINGHUA UNIVERSITY

B.E. IN ENERGY AND POWER
ENGINEERING
Sept 2013 - Jun 2017 | Beijing
Department of Thermal Engineering
B.EC. IN ECONOMICS
Sept 2014 - Jun 2017 | Beijing
School of Economics and Management
Cum. GPA: 90 / 100

AWARDS

2021 GRADUATE SCHOOL
TEACHING AWARD
2020 SEAS AWARD FOR
EXCELLENCE
2020 BRITT AND ELI HARARI
FELLOWSHIP
2018 SAYRE AWARD
2017 KING PEH KWONG
FELLOWSHIP
2016 TSINGHUA ACADEMIC
SCHOLARSHIP
2014 CHINESE NATIONAL
SCHOLARSHIP

TEACHING

MAE 335 FLUID DYNAMICS
2020 Fall
MAE 426 ROCKET AND
AIR-BREATHING PROPULSION
TECHNOLOGY
2020 Spring
MAE 221 THERMODYNAMICS
2019 Fall
MAE 340 INDEPENDENT WORK
2019 Spring

EXPERIENCE

UNIVERSITY OF CAMBRIDGE
Jul 2016 - Aug 2016 | Cambridge, UK
RESEARCH ASSISTANT
LUND UNIVERSITY
Mar 2016 - Jun 2016 | Lund, Sweden
EXCHANGE STUDENT

RESEARCH

THERMAL-CHEMICAL INSTABILITY OF WEAKLY IONIZED PLASMA

May 2018 - Present | Advised by Prof. Yiguang Ju and Dr. Mikhail Shneider

LASER DIAGNOSTICS AND KINETIC STUDIES IN FUEL OXIDATION

Mar 2018 - Present | Advised by Prof. Yiguang Ju

PUBLICATIONS

- [1] **Zhong, H.**, Shneider, M. N., Mao, X., & Ju, Y. (2021). "Dynamics and Chemical Mode Analysis of Plasma Thermal-Chemical Instability". *Plasma Sources Science and Technology*.
- [2] **Zhong, H.**, Yan, C., Teng, C. C., Chen, T., Wysocki, G., & Ju, Y. (2021). "Kinetic Studies of Excited Singlet Oxygen Atom O(¹D) Reactions with Ethanol". *International Journal of Chemical Kinetics*.
- [3] **Zhong, H.**, Teng, C. C., Yan, C., Ma, G., Wysocki, G., & Ju, Y. (2020). "Kinetic Study of Reaction C₂H₅ + HO₂ in a Photolysis Reactor with Time-Resolved Faraday Rotation Spectroscopy". *Proceedings of the Combustion Institute*.
- [4] **Zhong, H.**, Mao, X., Rousso, A., Patrick, C., Yan, C., ... & Ju, Y. (2020). "Kinetic Study of Plasma-assisted N-dodecane/O₂/N₂ Pyrolysis and Oxidation in a Nanosecond-pulsed Discharge". *Proceedings of the Combustion Institute*.
Recognized as the **Distinguished Paper** of the New Concepts Colloquium at the 38th International Symposium on Combustion
- [5] **Zhong, H.**, Shneider, M. N., Mokrov, M. S., & Ju, Y. (2019). "Thermal-Chemical Instability of Weakly Ionized Plasma in a Reactive Flow". *Journal of Physics D: Applied Physics*, 52(48), 484001.
- [6] Teng, C. C., Yan, C., Rousso, A., **Zhong, H.**, ... & Wysocki, G. (2021) "Time-resolved HO₂ detection with Faraday rotation spectroscopy in a photolysis reactor". *Optics Express* 29(2): 2769-2779.
- [7] Yan, C., Yang, X., Zhao, H., **Zhong, H.**, Ma, G., ... & Ju, Y. (2020). "Controlled Dy-doping to Nickel-rich Cathode Materials in High Temperature Aerosol Synthesis". *Proceedings of the Combustion Institute*.
- [8] Yan, C., Teng, C. C., Chen, T., **Zhong, H.**, Rousso, A., ... & Ju, Y. (2020). "Kinetic Study of Excited Singlet Oxygen Atom O(¹D) Reactions with Acetylene". *Combustion and Flame*, 212, 135-141.
- [9] Teng, C. C., Yan, C., **Zhong, H.**, Rousso, A., ... & Wysocki, G. (2018) "HO₂ Radical Measurements in a Photolysis Reactor using Line-Locked Faraday Rotation Spectroscopy". In *Optics and Photonics for Energy and the Environment* (pp. EW3A-6). *Optical Society of America*.
- [10] Fan, L., McGrath, D., ..., **Zhong, H.**, & Hochgreb, S. (2018). "Laser-induced incandescence particle image velocimetry (LII-PIV) for two-phase flow velocity measurement". *Experiments in Fluids*, 59(10), 156.

RESEARCH (CONTINUED)

PRESENTATIONS

- [1] "Stability Analysis of Thermal-Chemical Instability in a Weakly Ionized Plasma". Oral. AIAA Scitech 2021 Forum, Virtual (01/2021)
- [2] "2D Modeling of Controlled Non-equilibrium Plasma for $H_2/O_2/N_2$ Ignition using a Hybrid Nanosecond and DC Discharge ". Oral. AIAA Scitech 2021 Forum, Virtual (01/2021)
- [3] "Contraction and Stability of the Positive Column of a Self-sustained Glow Discharge in a Reactive Mixture". Oral. 73rd Annual Gaseous Electronics Conference, Virtual (10/2020)
- [4] "Thermal-Chemical Plasma Instability in a Reacting Flow". Oral. AIAA Scitech 2020 Forum, Orlando, FL (01/2020)
- [5] "Dynamic Contraction of the Positive Column of a Self-sustained Glow Discharge in a Reacting Flow". Oral. 72nd Annual Gaseous Electronics Conference, College Station, TX (11/2019)
- [6] "An Analysis of a New Thermal-Chemical Mechanism for Plasma Combustion Instability in Plasma Assisted Ignition". Oral. 11th US National Combustion Meeting, Pasadena, CA (03/2019)
- [7] "Kinetic Studies of Excited Singlet Oxygen Atoms $O(^1D)$ Reactions with Fuels in Plasma Assisted Combustion". Oral. AIAA Scitech 2019 Forum, San Diego, CA (01/2019)
- [8] "Direct Measurements of Branching Ratios of $O(^1D)$ Reactions with Alcohols". Oral. 15th International Conference on Fluid Dynamics, Sendai, Japan (11/2018)

ACTIVITIES

ACSSPU CHINESE LUNCH EVENT

May 2018 - May 2019 | Princeton

Organized weekly Chinese Lunch Event (1, 600 person-times participation).

ALMGREN MEMORIAL MAYDAY RUNNING RACE

May, 2019 | Princeton

Participated as a member of Princeton ACSSPU Team (Ranked 4 / 8)

TSINGHUA SIYUAN PROGRAM

May, 2014 - May, 2017 | Beijing, Shaanxi & Shanghai, China

Participated and Trained in social services with the theme of "Receive Help, Self-Help and Help Others".

SUMMER SERVICE AND LEARNING PROGRAM (SSLP) IN RURAL CHINA

Jul, 2014 | Inner Mongolia & Hebei, China

Offered voluntary teaching to middle schools and primary schools in rural areas of China.