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: 3.975 / 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

2020 SEAS Award for Excellence
2020 Britt and Eli Harari Fellowship
2018 Sayre Award
2017 King Peh Kwoh 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. (2020). "Dynamics and Chemical Mode Analysis of Plasma Thermal-Chemical Instability". *Plasma Sources Science and Technology*, 2020, Under Review.

[2] **Zhong, H.**, Yan, C., Teng, C. C., Chen, T., Wysocki, G., & Ju, Y. (2020). "Kinetic Studies of Excited Singlet Oxygen Atom O(^{1}D) Reactions with Ethanol". *International Journal of Chemical Kinetics*, 2020, Under Review.

[3] **Zhong, H.**, Teng, C. C., Yan, C., Ma, G., Wysocki, G., & Ju, Y. (2020). "Kinetic Study of Reaction C_2H_5 + HO_2 in a Photolysis Reactor with Time-Resolved Faraday Rotation Spectroscopy". *Proceedings of the Combustion Institute*, *2020*.

[4] **Zhong, H.**, Mao, X., Rousso, A., Patrick, C., Yan, C., ... & Ju, Y. (2020). "Kinetic Study of Plasma-assisted N-dodecane/O_2/N_2 Pyrolysis and Oxidation in a Nanosecond-pulsed Discharge". *Proceedings of the Combustion Institute*, *2020*.

[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. (2020) " Time-resolved HO_2 detection with Faraday rotation spectroscopy in a photolysis reactor". *Optics Express*, 2020, Under Review.

[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*, *2020*.

[8] Yan, C., Teng, C. C., Chen, T., **Zhong, H.**, Rousso, A., ... & Ju, Y. (2020). "Kinetic Study of Excited Singlet Oxygen Atom O (^{1}D) Reactions with Acetylene.". *Combustion and Flame*, *212*, *135-141*.

[9] Teng, C. C., Yan, C., **Zhong, H.**, Rousso, A., ... & Wysocki, G. (2018) "HO_2 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*.

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RESEARCH

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 (^{1}D) 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(^{1}D) Reactions with Alcohols". Oral. 15th Internatinal 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.