CHRISTOPHER B. REUTER
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EDUCATION

Princeton University, Princeton, NJ 2013 – 2019
Ph.D. in Mechanical and Aerospace Engineering
Advisor: Yiguang Ju

University of Virginia, Charlottesville, VA 2009 – 2013
B.S. in Aerospace Engineering, Summa cum Laude
Minors in Engineering Business and Mechanical Engineering

WORK EXPERIENCE

U.S. Naval Research Laboratory, Washington, DC 2022 – present
Title: Research Aerospace Engineer
Roles: Currently leading and contributing to research programs focusing on combustion chemical kinetics, liquid spray combustion, shock-induced combustion, and plasma-assisted combustion with applications to rotating detonation engines, jet engines, and scramjet combustors

U.S. Naval Research Laboratory, Washington, DC 2021 – 2022
Title: American Society for Engineering Education (ASEE) Postdoctoral Fellow
Role: Investigated details of detonation reaction chemistry and spray-shock interactions in supersonic flows
Supervisor: Steven Tuttle

U.S. Air Force Research Laboratory, Wright-Patterson AFB, OH 2019 – 2021
Title: National Research Council (NRC) Research Associate
Role: Researched effects of plasma-assisted combustion via ozone on the combustion enhancement of multicomponent fuel mixtures
Supervisor: Timothy Ombrello

Siemens Energy, Inc., Orlando, FL 2015
Title: University Turbine Systems Research (UTSR) Fellow
Role: Assisted with the testing of a new gas turbine combustor technology by performing data analysis on combustion dynamics and emissions results
Supervisor: Clifford Johnson

UVa Aerospace Research Lab, Charlottesville, VA 2012
Title: Undergraduate Research Assistant
Role: Researched the effects of noise on the TDLAT (tunable diode laser absorption tomography) measurement process in a scramjet combustor
Supervisor: James McDaniel

PEER-REVIEWED JOURNAL PUBLICATIONS

1. C. B. Reuter, S. G. Tuttle, "Interactions between Liquid Sprays and Shock Waves in Underexpanded Flows," *Proceedings of the Combustion Institute* 40 (2024), accepted for publication.
2. C. B. Reuter, T. I. Farouk, S. G. Tuttle, "Preferential Vaporization Effects on the Spray Flame Stabilization Behavior of Jet Fuels," *Fuel*, under review.
3. C. B. Reuter, Z. Wang, W. Xu, Y. Ju, "Effectiveness of Flame Suppressants on Cool Flames and Hot Flames," *Proceedings of the Combustion Institute* 39 (2022) 3755-3763.
4. C. B. Reuter, T. M. Ombrello, S. G. Tuttle, "Can Ozonolysis Reactions Influence Detonations?," *Shock Waves* 32 (2022) 363-371.
5. C. B. Reuter, S. G. Tuttle, "Effects of Vitiation on the Shock-Induced Combustion of Hydrogen-Air Mixtures," *International Journal of Hydrogen Energy* 47 (2022) 12015-12023.

6. C. B. Reuter, T. M. Ombrello, "Numerical Simulations of Ozone Addition to Strained Flames," *Combustion Science and Technology* 194 (2022) 3225-3245.
7. C. B. Reuter, T. M. Ombrello, "A Burner Platform for Ozonolysis-Assisted Flame Propagation," *Energy & Fuels* 35 (2021) 19717-19724.
8. M. Zhou, O. R. Yehia, W. Xu, C. B. Reuter, Z. Wang, C. Yan, B. Jiang, Y. Ju, "The radical index and the effect of oxygen concentration on non-premixed cool flame extinction of large *n*-alkanes," *Combustion and Flame* 231 (2021) 111471.
9. C. B. Reuter, T. M. Ombrello, "Flame Enhancement of Ethylene/Methane Mixtures by Ozone Addition," *Proceedings of the Combustion Institute* 38 (2021) 2397-2407.
10. Y. Murakami, C. B. Reuter, O. R. Yehia, Y. Ju, "Studies of Autoignition-Assisted Nonpremixed Cool Flames," *Proceedings of the Combustion Institute* 38 (2021) 2333-2340.
11. M. Zhou, O. R. Yehia, C. B. Reuter, C. M. Burger, Y. Murakami, H. Zhao, Y. Ju, "Kinetic Effects of NO Addition on n-Dodecane Cool and Warm Diffusion Flames," *Proceedings of the Combustion Institute* 38 (2021) 2351-2360.
12. C. B. Reuter, T. M. Ombrello, "Ozone-Enhanced Flame Propagation of Methane/Ethylene/Air Mixtures at Subatmospheric Pressures," *Journal of Power and Propulsion* 36 (2020) 931-939.
13. Y. Ju, C. B. Reuter, O. R. Yehia, T. I. Farouk, S. H. Won, "Dynamics of Cool Flames," *Progress in Energy and Combustion Science* 75 (2019) 100787.
14. A. G. Novoselov, C. B. Reuter, O. R. Yehia, S. H. Won, M. K. Fu, K. Kokmanian, M. Hultmark, Y. Ju, M. E. Mueller, "Turbulent Nonpremixed Cool Flames: Experimental Measurements, Direct Numerical Simulation, and Manifold-Based Combustion Modeling," *Combustion and Flame* 209 (2019) 144-154.
15. O. R. Yehia, C. B. Reuter, Y. Ju, "Kinetic Effects of n-Propylbenzene on n-Dodecane Counterflow Nonpremixed Cool Flames," *Combustion and Flame* 208 (2019) 262-272.
16. C. B. Reuter, V. R. Katta, O. R. Yehia, Y. Ju, "Transient Interactions between a Premixed Double Flame and a Vortex," *Proceedings of the Combustion Institute* 37 (2019) 1851-1859.
17. E. Lin, C. B. Reuter, Y. Ju, "Dynamics and Burning Limits of Near-Limit Hot, Warm, and Cool Diffusion Flames of Dimethyl Ether at Elevated Pressures," *Proceedings of the Combustion Institute* 37 (2019) 1791-1798.
18. M. Lee, Y. Fan, C. B. Reuter, Y. Ju, Y. Suzuki, "DME/Oxygen Wall-Stabilized Premixed Cool Flame," *Proceedings of the Combustion Institute* 37 (2019) 1749-1756.
19. O. R. Yehia, C. B. Reuter, Y. Ju, "On the Chemical Characteristics and Dynamics of n-Alkane Low-Temperature Multistage Diffusion Flames," *Proceedings of the Combustion Institute* 37 (2019) 1717-1724.
20. C. B. Reuter, S. H. Won, Y. Ju, "Effects of CO_2 Addition on the Turbulent Flame Front Dynamics and Propagation Speeds of Methane/Air Mixtures," *Journal of Engineering for Gas Turbines and Power* 141 (2019) 011503.
21. C. B. Reuter, R. Zhang, O. R. Yehia, Y. Rezgui, Y. Ju, "Counterflow Flame Experiments and Chemical Kinetic Modeling of Dimethyl Ether/Methane Mixtures," *Combustion and Flame* 196 (2018) 1-10.
22. O. R. Yehia, C. B. Reuter, Y. Ju, "Low-Temperature Multistage Diffusion Flames," *Combustion and Flame* 195 (2018) 37-74.
23. C. B. Reuter, M. Lee., S. H. Won, Y. Ju, "Study of the Low-Temperature Reactivity of Large n-Alkanes through Cool Diffusion Flame Extinction," *Combustion and Flame* 179 (2017) 23-32.
24. C. B. Reuter, S. H. Won, Y. Ju, "Flame Structure and Ignition Limit of Partially Premixed Cool Flames in a Counterflow Burner," *Proceedings of the Combustion Institute* 36 (2017) 1513-1522.
25. C. H. Sohn, H. S. Han, C. B. Reuter, Y. Ju, S. H. Won, "Thermo-Kinetic Dynamics of Near-Limit Cool Diffusion Flames," *Proceedings of the Combustion Institute* 36 (2017) 1329-1337.
26. B. Windom, S. H. Won, C. B. Reuter, B. Jiang, Y. Ju, S. Hammack, T. Ombrello, C. Carter, "Study of Ignition Chemistry on Turbulent Premixed Flames of n-Heptane/Air by Using a Reactor Assisted Turbulent Slot Burner," *Combustion and Flame* 169 (2016) 19-29.

27. C. B. Reuter, S. H. Won, Y. Ju, "Experimental Study of the Dynamics and Structure of Self-Sustaining Premixed Cool Flames Using a Counterflow Burner," *Combustion and Flame* 166 (2016) 125-132.
28. Y. Ju, J. K. Lefkowitz, C. B. Reuter, S. H. Won, X. Yang, W. Sun, Z. Jiang, Q. Chen, "Plasma Assisted Low Temperature Combustion," *Plasma Chemistry and Plasma Processing* 36 (2016) 85-105.
29. Y. Ju, C. B. Reuter, S. H. Won, "Numerical Simulations of Premixed Cool Flames of Dimethyl Ether/Oxygen Mixtures," *Combustion and Flame* 162 (2015) 3580-3588.

CONFERENCE PRESENTATIONS (61 total, Presenter in bold)

1. **C. B. Reuter**, S. G. Tuttle, "Interactions between Liquid Sprays and Shock Waves in Underexpanded Flows," 40th International Symposium on Combustion, Milan, Italy (Jul 2024), accepted for presentation.
2. C. B. Reuter, **J. B. Sinrud**, C. J. Pfutzner, S. G. Tuttle, "Measurements of Propane Autoignition in a New Shock Tube Facility," AIAA SciTech 2024 Forum, Orlando, FL (Jan 2024).
3. **D. A. Schwer**, C. Mackes, C.; R. Johnson, C.B. Reuter, S.G. Tuttle, "Simulations of a Heated, Over-expanded Nozzle with Reactions," AIAA SciTech 2024 Forum, Orlando, FL (Jan 2024).
4. **C. B. Reuter**, S. G. Tuttle, "Statistics of the Interactions between an Underexpanded Shock Train and a Liquid Spray," 13th U.S. National Combustion Meeting, College Station, TX (Mar 2023).
5. **C. B. Reuter**, T. I. Farouk, S. G. Tuttle, "Droplet Characteristics in Spray Flames of Jet Fuels and Jet Fuel Surrogates," AIAA SciTech 2023 Forum, National Harbor, MD (Jan 2023).
6. **S. G. Tuttle**, C. B. Reuter, "Influence of an Underexpanded Shock Train on Spray Distribution Statistics," AIAA SciTech 2023 Forum, National Harbor, MD (Jan 2023).
7. **C. B. Reuter**, Z. Wang, W. Xu, Y. Ju, "Effectiveness of Flame Suppressants on Cool Flames and Hot Flames," 39th International Symposium on Combustion, Vancouver, Canada (July 2022).
8. **C. B. Reuter**, T. I. Farouk, S. G. Tuttle, "Liquid Physical Property Effects on the Lift-off of Jet Fuels and Jet Fuel Surrogates," AIAA SciTech 2022 Forum, San Diego, CA (Jan 2022).
9. **C. B. Reuter**, T. M. Ombrello, "Flame Enhancement of Ethylene/Methane Mixtures by Ozone Addition," 38th International Symposium on Combustion, Adelaide, Australia (Jan 2021).
10. **Y. Murakami**, C. B. Reuter, O. R. Yehia, Y. Ju, "Studies of Autoignition-Assisted Nonpremixed Cool Flames," 38th International Symposium on Combustion, Adelaide, Australia (Jan 2021).
11. **M. Zhou**, O. R. Yehia, C. B. Reuter, C. M. Burger, Y. Murakami, H. Zhao, Y. Ju, "Kinetic Effects of NO Addition on n-Dodecane Cool and Warm Diffusion Flames," 38th International Symposium on Combustion, Adelaide, Australia (Jan 2021).