

# Jennifer G. Colborn

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## EDUCATION

**The Pennsylvania State University**, State College, PA  
*Doctor of Philosophy in Mechanical Engineering* July 2024

**University of Dayton**, Dayton, OH  
*Master of Science in Aerospace Engineering* May 2020  
*Bachelor of Mechanical Engineering, Concentration in Aerospace Engineering* December 2018

## RESEARCH EXPERIENCE

**The University of Texas at San Antonio**, San Antonio, TX  
*Post Doctoral Fellow* August 2024 – Present

**The Pennsylvania State University**, State College, PA  
*Graduate Research Assistant* June 2020 – July 2024

**Air Force Research Laboratory, Wright-Patterson AFB**, Dayton, OH  
*Graduate Research Assistant* January 2019 – May 2020

## TEACHING EXPERIENCE

**The Pennsylvania State University**, State College, PA  
*Teaching Assistant, Thermodynamics* Spring 2024

**University of Dayton**, Dayton, OH  
*Teaching Assistant, Engineering Analysis* Spring 2020  
*Teaching Assistant, Aerodynamics* Summer 2019  
*Teaching Assistant, Aerodynamics* Spring 2018

## PEER-REVIEWED PUBLICATIONS

### Published

- Colborn, J.**, O'Connor, J., Tricard, N., Denman, J., Zhang, P., Zhao, X., "Interpreting heat flux measurements in a vitiated backward-facing step flow," *AIAA Journal*, vol. 62, no. 2, 2024, pp. 2967-2978.
- Boehm, R.C., **Colborn, J.**, Heyne, J.H., "Comparing alternative jet fuel dependencies between combustors of different size and mixing approaches," *Frontiers in Energy Sciences*, vol. 9, 2021, p. 701901.
- Colborn, J.G.**, Heyne, J.S., Stouffer, S.D., Hendershott, T.T., Corporan, E., "Chemical and physical effects on lean blowout in a swirl-stabilized single-cup combustor," *Proceedings of the Combustion Institute*, vol. 38, no. 4, 2021, pp. 6309-6316.
- McConney, M.E., Glavin, N.R., Juhl, A.T., et. al, "Direct synthesis of ultra-thin large area transition metal dichalcogenides and their heterostructures on stretchable polymer surfaces," *Journal of Materials Research*, vol. 31, no. 7, 2016, pp. 967-974.

### In Progress

1. **Colborn, J.**, O'Connor, J., Denman, J., Zhao, X., "Radiative and convective heat flux measurements in a backward-facing step combustor," in progress for submission to AIAA Journal.
2. **Colborn, J.** and O'Connor, J., "Application of Multispectral Imaging to Understand Combustor Heat Transfer in a Vitiated Backward-Facing Step Flow," in progress for submission to AIAA Journal.
3. **Colborn, J.**, Zhao, X., O'Connor, J., "Gas turbine combustor heat transfer: Challenges and research methods," in progress for submission to Journal of Propulsion and Power.

### INVITED PRESENTATIONS

1. Sandia National Laboratories, Albuquerque, NM, "Improving combustor durability: The impact of convective and radiative heat transfer," May 2024.
2. The Air Force Research Laboratory, Wright-Patterson AFB, OH, "Improving combustor durability: The impact of convective and radiative heat transfer," April 2024.
3. The University of Texas at San Antonio, San Antonio, TX, "Improving combustor durability: The impact of convective and radiative heat transfer," April 2024.
4. Gordon Research Seminar on Laser Diagnostics in Combustion and Energy Sciences, Newry, ME, "Relative impact of convective and radiative heat transfer a backward-facing step," July 2023.
5. The Pennsylvania State University, State College, PA "Relative impact of convective and radiative heat transfer in a backward facing step combustor," February 2023.

### CONFERENCE PROCEEDINGS & PRESENTATIONS

1. **Colborn, J.**, O'Connor, J., "Measurement of heat flux in reacting flow in a backward-facing step combustor," Eastern States Section of the Combustion Institute Spring Meeting, Athens, GA, 2024.
2. **Colborn, J.**, O'Connor, J., "Measurement of heat flux in reacting flow in a backward-facing step combustor," AIAA SciTech 2024-1246, Orlando, FL, 2024.
3. **Colborn, J.**, and O'Connor, J., "Variation in convective and radiative heat transfer with Reynolds number and temperature in a backward-facing step combustor," AIAA SciTech 2023-0923, National Harbor, MD, 2023.
4. **Colborn, J.**, Snelling, E., O'Connor, J., "Characterization of a new backward-facing step combustor," Advanced Instrumentation, Diagnostics and Controls for Application in Turbomachinery Conference, State College, PA, 2022.
5. **Colborn, J.G.**, Heyne, J.S., Stouffer, S.D., Hendershott, T.T., Corporan, E., "Chemical and physical effects on lean blowout in a swirl-stabilized single-cup combustor," 38<sup>th</sup> International Symposium on Combustion, Adelaide, Australia, 2021.
6. **Colborn, J.G.**, Heyne, J.S., Stouffer, S.D., Hendershott, T.T., Corporan, E., "Chemical and physical effects on lean blowout in a swirl-stabilized single-cup combustor," Eastern State Section of the Combustion Institute Spring Meeting, Columbia, SC, 2021.
7. **Colborn, J.G.**, Heyne, J.S., Hendershott, T.H., Stouffer, S.D., Peiffer, E.E., Corporan, E., "Fuel and operating condition effects on lean blowout in a single-cup swirl stabilized combustor," AIAA SciTech 2020-1883, Orlando, FL, 2020.

8. Stouffer, S.D., Hendershott, T.H, **Colborn, J.G.**, Monfort, J.R., Corporan, E., “Lean blowout and ignition performance studies of F-76 marine diesel fuels,” AFRL-RQ-WP-TR-019-0057.
9. **Colborn, J.**, Heyne, J., Hendershott, T., Stouffer, s., Corporan, E., “Chemical and physical effects on lean blowout in a single-cup swirl-stabilized combustor,” DESS2019-057, 15th Dayton Engineering Sciences Symposium, Dayton, OH, 2019.
10. **Colborn, J.**, Hendershott, T., Stouffer, S., Corporan, E., Caswell, A., “Lean blowout of a swirl-stabilized single-cup combustor under low temperature conditions,” DESS2018-094, 14th Dayton Engineering Sciences Symposium, Dayton, OH, 2018.
11. **Colborn, J.**, Hendershott, T., Stouffer, S., Corporan, E., Caswell, A., “Ignition study of a swirl-stabilized single-cup combustor under altitude conditions.” DCASS2018, 43rd Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, 2018.

### **HONORS AND AWARDS**

**Zonta International Amelia Earhart Fellowship – May 2023**

**NASA Pennsylvania Space Grant Consortium Graduate Fellowship – May 2023**