

Jeffrey F. Glusman

Assistant Teaching Professor
Ann and H.J. Smead Aerospace Engineering Sciences
University of Colorado, Boulder

3775 Discovery Drive, AERO N205
Boulder, Colorado 80303
☎ (303) 735-0523
✉ jeff.glusman@colorado.edu

Education

- 2017–2022 **Ph.D. Mechanical Engineering**, University of Colorado Boulder, Boulder, Colorado.
Thesis title: *Development of Reduced Chemical Models for Simulations of Biomass Pyrolysis and Combustion*
Co-Advisors: Dr. John W. Daily and Dr. Peter E. Hamlington
- 2014–2016 **M.S. Aeronautics and Astronautics**, University of Washington, Seattle, Washington.
Thesis title: *Theoretical Performance Model and Initial Experimentation of a Baffled-Tube Ram Accelerator*
Advisor: Dr. Carl Knowlen
- 2009–2013 **B.S. Mechanical Engineering**, The Pennsylvania State University, State College, Pennsylvania.

Honors

- 2022 Graduate Part-Time Instructor Teaching Excellence Award Nominee – Graduate and Professional Student Government, University of Colorado Boulder
- 2021 John and Mercedes Peebles Innovation in Education Award – College of Engineering and Applied Science, University of Colorado Boulder
- 2016 AIAA Best Paper by the ASME Propulsion Committee for AIAA 2016-4813 *Experimental Investigation of a Baffled-Tube Ram Accelerator*
- 2016 Excellence in Teaching Award Nominee for Graduate Teaching Assistants – College of Engineering (Center for Teaching and Learning), University of Washington
- 2013 Capstone Design Project Award Winner – College of Engineering, Pennsylvania State University

Professional Experience

- 2022-current **Assistant Teaching Professor**, Ann and H.J. Smead Aerospace Engineering Sciences, University of Colorado Boulder, Boulder, CO.
- 2017-2022 **Graduate Research/Teaching Assistant/Graduate Part-Time Instructor (GPTI)**, Paul M. Rady Department of Mechanical Engineering, University of Colorado Boulder, Boulder, CO.
Turbulent Energy Systems Laboratory (TESLa) & TA for Methods of Engineering Analysis
GPTI: Fall 2019, 2020 (MCEN3012: Thermodynamics I), Spring 2022 (MCEN6001: Reacting Flows)
- 2016-2017 **Adjunct Faculty**, Bellevue College, Bellevue, WA.
Statics, Mechanics of Materials, Thermodynamics I, Pre-Calculus I
- 2016 **Adjunct Faculty**, North Seattle College, Seattle, WA.
Pre-Calculus I
- 2014-2016 **Graduate Research/Teaching Assistant**, William E. Boeing Department of Aeronautics & Astronautics, University of Washington, Seattle, WA.
Ram Accelerator Laboratory & TA for Thermodynamics I

Teaching Experience

Undergraduate Courses, Assistant Teaching Professor

- Spring 2024 **ASEN2012: Numerical and Computational Methods in AES**, University of Colorado, Boulder, CO.
60 students, on-going
- Spring 2024 **ASEN2702: Introduction to Thermodynamics and Aerodynamics**, University of Colorado, Boulder, CO.
80 students, on-going

- Spring 2024 **ASEN3208: Aerospace Sciences Lab II**, *University of Colorado*, Boulder, CO.
150 students, on-going
- Fall 2023 **ASEN2012: Numerical and Computational Methods in AES**, *University of Colorado*, Boulder, CO.
256 students, Average Instructor Rating: 3.95/5.00 Average Course Rating: 3.80/5.00
- Fall 2023 **ASEN3208: Aerospace Sciences Lab II**, *University of Colorado*, Boulder, CO.
150 students, Average Instructor Rating: 4.22/5.00 Average Course Rating: 4.61/5.00
- Summer 2023 **ASEN1022: Material Science for AES**, *University of Colorado*, Boulder, CO.
35 students, Average Instructor Rating: 4.47/5.00 Average Course Rating: 4.22/5.00
- Spring 2023 **ASEN1022: Material Science for AES**, *University of Colorado*, Boulder, CO.
259 students, Average Instructor Rating: 4.23/5.00 Average Course Rating: 3.95/5.00
- Spring 2023 **ASEN3113: Thermodynamics and Heat Transfer Lab**, *University of Colorado*, Boulder, CO.
125 students, Average Instructor Rating: 4.09/5.00 Average Course Rating: 4.26/5.00
- Fall 2022 **ASEN2012: Numerical and Computational Methods in AES**, *University of Colorado*, Boulder, CO.
163 students, Average Instructor Rating: 3.60/5.00 Average Course Rating: 3.53/5.00
- Fall 2022 **GEEN1400: First-year Engineering Projects**, *University of Colorado*, Boulder, CO.
30 students, Average Instructor Rating: 4.46/5.00 Average Course Rating: 4.45/5.00
- [Undergraduate Courses, Graduate Part-Time Instructor](#)
- Fall 2020 **MCEN3012: Thermodynamics I**, *University of Colorado*, Boulder, CO, Remote Section.
89 students, Average Instructor Rating: 4.56/5.00 Average Course Rating: 4.28/5.00
- Fall 2019 **MCEN3012: Thermodynamics I**, *University of Colorado*, Boulder, CO.
90 students, Instructor Rating: 5.74/6.00 Course Rating: 5.53/6.00
- [Undergraduate Courses, Adjunct Faculty](#)
- Spring 2017 **ENGR&214: Statics**, *Bellevue College*, Bellevue, WA.
27 students, Instructor Rating: 3.48/4.00 Course Rating: 3.52/4.00
- Spring 2017 **ENGR&224: Thermodynamics**, *Bellevue College*, Bellevue, WA.
25 students, Instructor Rating: 4.00/4.00 Course Rating: 3.95/4.00
- Winter 2017 **ENGR&214: Statics**, *Bellevue College*, Bellevue, WA.
42 students, Instructor Rating: 3.44/4.00 Course Rating: 3.54/4.00
- Winter 2017 **ENGR&225: Mechanics of Materials**, *Bellevue College*, Bellevue, WA.
25 students, Instructor Rating: 3.64/4.00 Course Rating: 3.64/4.00
- Winter 2017 **MATH&141: Pre-Calculus I**, *Bellevue College*, Bellevue, WA.
34 students, Instructor Rating: 3.18/4.00 Course Rating: 3.19/4.00
- Fall 2017 **ENGR&214: Statics**, *Bellevue College*, Bellevue, WA.
49 students, Instructor Rating: 3.34/4.00 Course Rating: 3.32/4.00
- Fall 2017 **ENGR&225: Mechanics of Materials**, *Bellevue College*, Bellevue, WA.
12 students, Instructor Rating: 2.56/4.00 Course Rating: 3.00/4.00
- Fall 2017 **MATH&141: Pre-Calculus I**, *North Seattle College*, Seattle, WA.
36 students, Ratings unavailable
- [Graduate Courses, Graduate Part-Time Instructor](#)
- Spring 2022 **MCEN6001: Reacting Flows**, *University of Colorado*, Boulder, CO, Hybrid Section.
18 students, Average Instructor Rating: 4.31/5.00 Average Course Rating: 4.15/5.00

Research Interests

Engineering education, computational combustion, reacting flows, and compressible flows.

Publications

Peer-Reviewed Journal Publications

- [15] **J.F. Glusman**, C.B. Lapointe, A.S. Makowiecki, S. Simons-Wellin, G.B. Rieker, J.W. Daily, and P.E. Hamlington. Validation of Computationally Efficient Simulations of Douglas Fir Pyrolysis and Combustion Using Time-Resolved Frequency Comb Laser Measurements. *Frontiers in Forests and Global Change - Fire and Forests*, Fire Behavior and Effects: From Observation to Model Development, Refinement, and Evaluation. <https://doi.org/10.3389/ffgc.2022.758689>, 5:758689, 2022.
- [14] C. Lapointe, N.T. Wimer, S. Simons-Wellin, **J.F. Glusman**, G.B. Rieker, and P.E. Hamlington. Efficient simulations of propagating flames and fire suppression optimization using adaptive mesh refinement. *Fluids*, <https://doi.org/10.3390/fluids6090323>, 2021.
- [13] A.S. Makowiecki, D.I. Herman, N. Hoghooghi, E.F. Strong, R.K. Cole, G. Ycas, F.R. Giorgetta, C.B. Lapointe, **J.F. Glusman**, J.W. Daily, P.E. Hamlington, N.R. Newbury, I.R. Coddington, and G.B. Rieker. Mid-infrared dual frequency comb spectroscopy for combustion analysis from 2.5 to 5 μm . *Proceedings of the Combustion Institute*, <https://doi.org/10.1016/j.proci.2020.06.195>, 2021.
- [12] N.T. Wimer, M.S. Day, C. Lapointe, M.A. Meehan, A.S. Makowiecki, **J.F. Glusman**, J.W. Daily, G.B. Rieker, and P.E. Hamlington. Numerical simulations of buoyancy-driven flows using adaptive mesh refinement: structure and dynamics of a large-scale helium plume. *Theoretical and Computational Fluid Dynamics*, 35:61–91, 2021.
- [11] C. Lapointe, N.T. Wimer, **J.F. Glusman**, A.S. Makowiecki, J.W. Daily, G.B. Rieker, and P.E. Hamlington. Efficient simulation of turbulent diffusion flames in OpenFOAM using adaptive mesh refinement. *Fire Safety Journal*, 111:102934, 2020.
- [10] A.S. Makowiecki, J.E. Steinbrenner, N.T. Wimer, **J.F. Glusman**, C.B. Lapointe, J.W. Daily, P.E. Hamlington, and G.B. Rieker. Dual frequency comb spectroscopy of solid fuel pyrolysis and combustion: Quantifying the influence of moisture content in Douglas Fire. *Fire Safety Journal*, 116:103185, 2020.
- [9] **J.F. Glusman**, K.E. Niemeyer, A.S. Makowiecki, N.T. Wimer, C. Lapointe, G.B. Rieker, P.E. Hamlington, and J.W. Daily. Reduced Gas-Phase Kinetic Model for Burning of Douglas-Fir. *Frontiers in Mechanical Engineering*, <https://doi.org/10.3389/fmech.2019.00040>, 5:40, 2019.

Conference Proceedings

- [8] **J.F. Glusman**, C.B. Lapointe, A.S. Makowiecki, S. Simons-Wellin, G.B. Rieker, J.W. Daily, and P.E. Hamlington. Computationally Efficient Simulations of Douglas Fir Pyrolysis and Combustion. *Proceedings of the 12th U.S. National Meeting on Combustion*, 2021.
- [7] **J.F. Glusman**, C. Rogers, C.B. Lapointe, N. Labbe, G.B. Ellison, P. Hamlington, and J.W. Daily. Modeling a micro-reactor with transonic regions. *Proceedings of the 11th U.S. National Meeting on Combustion*, 2019.
- [6] C. Lapointe, N.T. Wimer, **J.F. Glusman**, A.S. Makowiecki, J.W. Daily, G.B. Rieker, and P.E. Hamlington. Progress towards high fidelity simulations of large-scale fires. *Proceedings of the 11th U.S. National Meeting on Combustion*, 2019.
- [5] A.S. Makowiecki, N.T. Wimer, **J.F. Glusman**, J.W. Daily, P.E. Hamlington, and G.B. Rieker. Comparison of flame temperatures to mass flux rates for wildland fire fuels. *Proceedings of the 11th U.S. National Meeting on Combustion*, 2019.
- [4] **J.F. Glusman**, A.S. Makowiecki, N.T. Wimer, K.E. Niemeyer, G.B. Rieker, P.E. Hamlington, and J.W. Daily. A Chemical Kinetic Model Reduction and Pyrolysis Model for Wildland Fire Direct Numerical Simulation. *Western States Section of the Combustion Institute - Spring 2018 Meeting*, 38CK-0010, 2018.
- [3] C. Knowlen, T. Byrd, J. Dumas, N. Daneshvaran, **J. Glusman**, A.P. Bruckner, and A.J. Higgins. Baffled-Tube Ram Accelerator Operation with Inclined Baffles. *53rd AIAA/SAE/ASEE Joint Propulsion Conference*, AIAA-2017-4959, 2017.
- [2] C. Knowlen, **J.F. Glusman**, R. Grist, A.P. Bruckner, and A.J. Higgins. Experimental Investigation of a Baffled-Tube Ram Accelerator. *52nd AIAA/SAE/ASEE Joint Propulsion Conference*, AIAA-2016-4813, 2016.

Textbook Chapter

- [1] G.S. Settles, R.M. Young, F.R. Svingala, and **J.F. Glusman**. Chapter 3: Optical shock Hugoniot measurements of transparent and translucent polymers. In *Elastomeric Polymers with High Rate Sensitivity*, edited by R. George S. Barsoum, Elsevier Inc.

Conference Presentations

Presentations by J.F. Glusman

- [P.6] **J.F. Glusman**, C.B. Lapointe, A.S. Makowiecki, S. Simons-Wellin, G.B. Rieker, J.W. Daily, and P.E. Hamlington. Computationally Efficient Simulations of Douglas Fir Pyrolysis and Combustion. 12th U.S. National Combustion Meeting - Fire Research, held virtually, May 24-26, 2021.
- [P.5] **J.F. Glusman**, G.B. Rieker, J.W. Daily, and P.E. Hamlington. Wildland Fire: A cooperative effort of simulations, chemical modeling and lasers. 2020 Graduate Engineering Annual Research & Recruitment Symposium - Air Quality, Boulder, Colorado, February 21 2020.
- [P.4] **J.F. Glusman**, K.E. Niemeyer, A.S. Makowiecki, N.T. Wimer, C. Lapointe, G.B. Rieker, P.E. Hamlington, and J.W. Daily. Initial Verification of a Reduced Combustion Model of Douglas Fir. Rocky Mountain Fluid Mechanics Symposium - Summer 2019 Meeting, Boulder, Colorado, July 29 2019.
- [P.3] **J.F. Glusman**, A.S. Makowiecki, N.T. Wimer, K.E. Niemeyer, G.B. Rieker, P.E. Hamlington, and J.W. Daily. A Chemical Kinetic Mechanism Reduction for Wildland Fire Direct Numerical Simulation and Experimental Validation. Rocky Mountain Fluid Mechanics Symposium - Fall 2018 Meeting, Boulder, Colorado, August 13 2018.
- [P.2] **J.F. Glusman**, A.S. Makowiecki, N.T. Wimer, K.E. Niemeyer, G.B. Rieker, P.E. Hamlington, and J.W. Daily. A Chemical Kinetic Model Reduction and Pyrolysis Model for Wildland Fire Direct Numerical Simulation. Western States Section of the Combustion Institute - Spring 2018 Meeting, Bend, Oregon, March 25-27 2018.
- [P.1] C. Knowlen, **J.F. Glusman**, R. Grist, A.P. Bruckner, and A.J. Higgins. Experimental Investigation of a Baffled-Tube Ram Accelerator. 52nd AIAA/SAE/ASEE Joint Propulsion Conference, Salt Lake City, Utah, July 25-27 2016.

Conference, Symposium and Seminar Participation

- 2023 **Participant**, American Society of Engineering Education National Meeting. June 24-29, Baltimore, MD
- 2021 **Participant**, Be the Change Inclusive Pedagogy Seminar Series, Hosted by the Center for Teaching & Learning. January 22, February 19, March 19, Boulder, CO
- 2021 **Committee**, Graduate Engineering Annual Research & Recruitment Symposium. February 19-21, Boulder, CO
- 2020 **Committee**, Rocky Mountain Fluid Mechanics Research Symposium. August 4, Boulder, CO
- 2020 **Committee & Presenter**, *Air Quality*, Graduate Engineering Annual Research & Recruitment Symposium. February 19-21, Boulder, CO
- 2019 **Committee & Presenter**, *Fire*, Rocky Mountain Fluid Mechanics Research Symposium. July 29, Boulder, CO
- 2019 **Committee**, Graduate Engineering Annual Research & Recruitment Symposium. February 20-22, Boulder, CO
- 2018 **Committee & Presenter**, *Fire*, Rocky Mountain Fluid Mechanics Research Symposium. August 13-14, Boulder, CO
- 2018 **Committee**, Graduate Engineering Annual Research & Recruitment Symposium. February 21-23, Boulder, CO
- 2016 **Presenter**, *Advanced Propulsion Concepts I*, 52nd AIAA/SAE/ASEE Joint Propulsion Conference. July 25-27, Salt Lake City, UT

Professional Service

- 2021-2022 **Member**, Committee for Equity in Mechanical Engineering (CEME).
University of Colorado Boulder, Boulder, CO
- 2021-2022 **Mentor**, Mentor Mechanical Engineering (Mentor ME), Paul M. Rady Department of Mechanical Engineering.
University of Colorado Boulder, Boulder, CO
- 2020-2021 **Lead Graduate Student Fellow**, Center for Teaching and Learning, Paul M. Rady Department of Mechanical Engineering.
University of Colorado Boulder, Boulder, CO
- July 2021 **Lead Volunteer**, *thru CEME*, Planned and led STEM Programming for students entering high school.
Arrupe Jesuit High School, Denver, CO
- June 2021 **Lead Volunteer**, *thru CEME*, Planned and led STEM Programming for middle school students.
The Heart & Hand Center, Denver, CO
- Summer 2019-2021 **Subject Lead & Mentor**, Fluid Dynamics Oral Preliminary Exam Preparation, Paul M. Rady Department of Mechanical Engineering.
University of Colorado Boulder, Boulder, CO
- Summer 2019-2021 **Subject Lead & Mentor**, Thermodynamics Oral Preliminary Exam Preparation, Paul M. Rady Department of Mechanical Engineering.
University of Colorado Boulder, Boulder, CO
- 2020-2021 **Mentor**, Graduate Student Peer Mentoring Program, University of Colorado Boulder Graduate School.
University of Colorado Boulder, Boulder, CO
- 2019-2020 **Lead Graduate Student Fellow Elect**, Paul M. Rady Department of Mechanical Engineering.
University of Colorado Boulder, Boulder, CO