

# Jeffrey F. Glusman

*Curriculum Vitae*

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## Education

- 2017–current **Ph.D. Mechanical Engineering**, *University of Colorado Boulder*, Boulder.  
Expected Graduation: January 2022  
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**, *The University of Washington*, Seattle.  
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.

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## Honors

- 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 Assistant – College of Engineering (Center for Teaching and Learning), University of Washington

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## Professional Experience

- 2017-current **Graduate Research/Teaching Assistant**, *University of Colorado Boulder*, Boulder, CO.  
Turbulent Energy Systems Laboratory (TESLa) & TA for Methods of Engineering Analysis
- Fall 2020 **Graduate Part-Time Instructor**, *University of Colorado Boulder*, Boulder, CO.  
MCEN3012 - Thermodynamics I - Remote Section
- Fall 2019 **Graduate Part-Time Instructor**, *University of Colorado Boulder*, Boulder, CO.  
MCEN3012 - Thermodynamics I
- 2016-2017 **Adjunct Faculty**, *Bellevue College*, Bellevue, WA.  
Statics, Mechanics of Materials, Thermodynamics, Pre-Calculus I
- 2016 **Adjunct Faculty**, *North Seattle College*, Seattle, WA.  
Pre-Calculus I
- 2014-2016 **Graduate Research/Teaching Assistant**, *University of Washington*, Seattle, WA.  
Ram Accelerator Laboratory & TA for Thermodynamics I
- 2014 **Engineering Intern**, *The Boeing Company*, Boeing Commercial Airplanes, Everett, WA.  
Take-off and Landing Performance
- 2014 **Engineering Intern**, *The Boeing Company*, Boeing Research & Test, Everett, WA.  
Balance Calibration and Design

- 2013 **Undergraduate Research Assistant**, *The Pennsylvania State University*, State College, PA, Advisor: Dr. Gary Settles.  
Gas Dynamics Laboratory
- 2012-2013 **Engineering Intern**, *The Boeing Company*, Boeing Research & Test, Ridley Park, PA.  
Data Engineer, Boeing V/STOL Wind Tunnel
- 2012 **Undergraduate Research Assistant**, *The Pennsylvania State University*, State College, PA, Advisor: Dr. Karen Thole.  
The Experimental and Computational Convection Laboratory
- 2011 **Engineering Intern**, *The Boeing Company*, Boeing Research & Test, Ridley Park, PA.  
Tool Design for V-22 and CH-47

## Courses Taught

- Fall 2020 **MCEN3012: Thermodynamics I**, *University of Colorado*, Boulder, CO, Graduate Part-Time Instructor - Remote Section.  
89 students, Use of Technology: 4.75/5.00 Respect of Diverse Students and Views: 4.76/5.00
- Fall 2019 **MCEN3012: Thermodynamics I**, *University of Colorado*, Boulder, CO, Graduate Part-Time Instructor.  
90 students, Instructor Rating: 5.74/6.00 Course Rating: 5.53/6.00
- Spring 2017 **ENGR&214: Statics**, *Bellevue College*, Bellevue, WA, Adjunct Faculty.  
27 students, Instructor Rating: 3.48/4.00 Course Rating: 3.52/4.00
- Spring 2017 **ENGR&224: Thermodynamics**, *Bellevue College*, Bellevue, WA, Adjunct Faculty.  
25 students, Instructor Rating: 4.00/4.00 Course Rating: 3.95/4.00
- Winter 2017 **ENGR&214: Statics**, *Bellevue College*, Bellevue, WA, Adjunct Faculty.  
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, Adjunct Faculty.  
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, Adjunct Faculty.  
34 students, Instructor Rating: 3.18/4.00 Course Rating: 3.19/4.00
- Fall 2017 **ENGR&214: Statics**, *Bellevue College*, Bellevue, WA, Adjunct Faculty.  
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, Adjunct Faculty.  
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, Adjunct Faculty.  
36 students, Ratings unreleased

## Research Interests

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

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## Publications

### Peer-Reviewed Journal Publications

- [15] 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.
- [14] 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  $\mu\text{m}$ . *Proceedings of the Combustion Institute*, <https://doi.org/10.1016/j.proci.2020.06.195>, 2021.
- [13] 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.
- [12] 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.
- [11] 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 Fir. *Fire Safety Journal*, 116:103185, 2020.
- [10] 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.

### Peer-Reviewed Journal Publications (Submitted)

- [9] 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. Submitted August 2021.

### 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.

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## Conference Presentations

### Presentations by J.F. Glusman

- [P.17] 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.16] 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.15] 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.14] 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.13] 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.12] 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.

### Presentations with collaboration by J.F. Glusman

- [P.11] C. Lapointe, N.T. Wimer, M.S. Day, A.S. Makowiecki, J.F. Glusman, J.W. Daily, G.B. Rieker, and P.E. Hamlington (2019) The Study of Fire at Small Scales Using Adaptive Mesh Refinement. 17th International Conference on Numerical Combustion, SIAM, 6-8 May 2019, Aachen, Germany.
- [P.10] N.T. Wimer, M.S. Day, A.S. Makowiecki, J.F. Glusman, J.W. Daily, G.B. Rieker, and P.E. Hamlington (2019) Low Mach Number AMR Combustion Simulations with PeleLM. SIAM Conference on Computational Science and Engineering, Spokane, Washington, 25 February - 1 March, 2019.
- [P.9] N.T. Wimer, M. Day, A.S. Makowiecki, J.F. Glusman, J.W. Daily, G.B. Rieker, and P.E. Hamlington (2018) Progress Towards Direct Numerical Simulations of Plumes and Pool Fires. 71st Annual meeting, Division of Fluid Dynamics, American Physical Society, Atlanta, Georgia, 18-20 November 2018.
- [P.8] N.T. Wimer, A.S. Makowiecki, J.F. Glusman, A.Y. Poludnenko, C. Hoffman, J.W. Daily, G.B. Rieker, and P.E. Hamlington (2018) Direct Numerical Simulation of a Turbulent Helium Plume and Methane Pool Fire. The Fire Continuum Conference, Missoula, Montana, 21-24 May 2018.
- [P.7] 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, Atlanta, Georgia, July 10-12 2017.

### Poster Presentations

- [P.6] J.F. Glusman, A. Makowiecki, N.T. Wimer, C. Lapointe, A.Y. Poludnenko, C.M. Hoffman, J.W. Daily, G.B. Rieker, and P.E. Hamlington (2018) Examination of Wildfire Spread at Small Scales Using Direct Numerical Simulations and Frequency Comb Diagnostics. Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP) Symposium, Washington, District of Columbia, 27 November 2018.
- [P.5] A. Makowiecki, J. Steinbrenner, J. Glusman, N. Wimer, J. Daily, P. Hamlington, and G. Rieker (2018) Dual Frequency Comb Spectroscopy for the Investigation of Ignition Behavior of Wildland Fire Fuels. Field Laser Applications in Industry and Research (FLAIR), Assisi, Italy, September 2018.
- [P.4] N.T. Wimer, C. Lapointe, M. Day, A.Y. Poludnenko, J.F. Glusman, A.S. Makowiecki, J.W. Daily, G.B. Rieker, and P.E. Hamlington (2018) Progress Towards Direct Numerical Simulations of Fire Using Adaptive Mesh Refinement. 37th International Symposium on Combustion, Dublin, Ireland, 29 July - 3 August 2018.
- [P.3] A.S. Makowiecki, J.E. Steinbrenner, J.F. Glusman, N.T. Wimer, J.W. Daily, P.E. Hamlington, and G.B. Rieker (2018) Diagnostics Suite for Benchmark Data of Wildland Fire Fuels for Application to Physics-Based Models. 37th International Symposium on Combustion, Dublin, Ireland, 29 July - 3 August 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 (2018) Experimental Comparison of Small-Scale Biomass Pyrolysis and Reduced Chemical Kinetic Models for Direct Numerical Simulations of Wildland Fires. 37th International Symposium on Combustion, Dublin, Ireland, 29 July - 3 August 2018.

- [P.1] N.T. Wimer, A. Makowiecki, J.F. Glusman, A.Y. Poludnenko, C.M. Hoffman, J.W. Daily, G.B. Rieker, and P.E. Hamlington (2017) Examination of Wildfire Spread at Small Scales Using Direct Numerical Simulations and Frequency Comb Diagnostics. Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP) Symposium, Washington, District of Columbia, 28-30 November 2017.

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## Conference, Symposium and Seminar Participation

- 2021 **Presenter**, *Fire Research*, 12th U.S. National Combustion Meeting.  
May 24-26, Virtual
- 2021 **Attendee**, 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 **Attendee**, The Fire Continuum Conference.  
May 21-24, Missoula, MT
- 2018 **Attendee**, Western States Section of the Combustion Institute - Spring 2018 Meeting.  
March 25-27, Bend, OR
- 2018 **Committee**, Graduate Engineering Annual Research & Recruitment Symposium.  
February 21-23, Boulder, CO
- 2017 **Attendee**, American Physical Society 70th Annual, Division of Fluid Dynamics.  
November 19-21, Denver, CO
- 2016 **Presenter**, *Advanced Propulsion Concepts I*, 52nd AIAA/SAE/ASEE Joint Propulsion Conference.  
July 25-27, Salt Lake City, UT
- 2014 **Attendee**, 9th International Symposium on Strain Gauge Balances.  
May 19-22, Seattle, WA
- 2013 **Attendee**, American Physical Society 66th Annual, Division of Fluid Dynamics.  
November 24-26, Pittsburgh, PA

## Professional Service

- 2021-ongoing **Member**, Committee for Equity in Mechanical Engineering (CEME).  
University of Colorado Boulder, Boulder, CO
- 2021-ongoing **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 2021 **Subject Lead & Mentor**, Fluid Dynamics Oral Preliminary Exam Preparation, Paul M. Rady Department of Mechanical Engineering.  
University of Colorado Boulder, Boulder, CO
- Summer 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
- Summer 2020 **Subject Lead & Mentor**, Fluid Dynamics Oral Preliminary Exam Preparation, Paul M. Rady Department of Mechanical Engineering.  
University of Colorado Boulder, Boulder, CO
- Summer 2020 **Subject Lead & Mentor**, Thermodynamics Oral Preliminary Exam Preparation, Paul M. Rady Department of Mechanical Engineering.  
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
- Summer 2019 **Subject Lead & Mentor**, Fluid Dynamics Oral Preliminary Exam Preparation, Paul M. Rady Department of Mechanical Engineering.  
University of Colorado Boulder, Boulder, CO
- Summer 2019 **Subject Lead & Mentor**, Thermodynamics Oral Preliminary Exam Preparation, Paul M. Rady Department of Mechanical Engineering.  
University of Colorado Boulder, Boulder, CO