

Curriculum Vitae

Joshua S. Heyne, Ph.D.

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1. EDUCATIONAL BACKGROUND

Princeton University, Philosophiae Doctoris (PhD), Mech. & Aero. Engineering,	2014
Princeton University, Magister Artium (MA), Mech. & Aero. Engineering,	2013
Pennsylvania State University, Master of Science (MS), Mech. Engineering,	2009
University of Dayton, Bachelor of Mechanical Engineering (BME), Mechanical Engineering,	2007

2. ACADEMIC AND PROFESSIONAL POSITIONS

Co-Director,	2022 – present
WSU-PNNL Bioproducts Institute, Washington State University-Pacific Northwest National Laboratory, Richland, WA	

Director,	2022 – present
Bioproducts, Sciences, and Engineering Laboratory, Washington State University, Richland, WA	

Battelle Distinguished Professor,	2022 – present
Washington State University, Richland, WA	

Associate Professor,	2022 – present
Mech. Eng., School of Engineering and Applied Science, Washington State University, Richland, WA	

Scientist (Joint Appointment),	2022 – present
Energy Processes and Materials Division, Energy and Environment Directorate, Pacific Northwest National Laboratory, Richland, WA	

Associate Professor,	2020–2022
Mech. & Aero. Eng., University of Dayton, Dayton, OH	

Assistant Professor,	2014-2020
Mech. & Aero. Eng., University of Dayton, Dayton, OH	

3. RESEARCH AND SCHOLARSHIP

a) *Journal articles*

Heyne's role in publication:

a: principal investigator

- b: co-investigator
- c: corresponding author
- d: Heyne student primary author
- e: Heyne student co-author
- f: Heyne research staff authorship (R. Boehm)
- #: Heyne graduate student
- †: Heyne undergraduate student

Published:

46. a, d, Clemens Hall, #David C. Bell, #John Feldhausen, Bastian Rauch, Joshua Heyne, Quantifying isomeric effects: A key factor in aviation fuel assessment and design, *Fuel*, 357, 2024. <https://doi.org/10.1016/j.fuel.2023.129136>
 45. a, f, Shane Thomas Kosir, #John Feldhausen, #David Bell, Dylan Cronin, Randall Boehm, Joshua Heyne, Quantitation of olefins in sustainable aviation fuel intermediates using principal component analysis coupled with vacuum ultraviolet spectroscopy, *Frontiers in Fuels*, 2023. <https://doi.org/10.3389/ffuel.2023.1246950>
 44. a, d, Clemens Hall, #David C. Bell, #John Feldhausen, Bastian Rauch, Joshua Heyne, Quantifying isomeric effects: A key factor in aviation fuel assessment and design, *Fuel*, 357, 2024. <https://doi.org/10.1016/j.fuel.2023.129136>
 43. a, d, f, #Yang, Z., Boehm, R. C., Bell, D. C., Heyne, J. S. Maximizing Sustainable aviation fuel usage through optimization of distillation cut points and blending. *Fuel*, 353, 129136, 2023. <https://doi.org/10.1016/j.fuel.2023.129136>
 42. a, d, f, #Conor Faulhaber, #Christopher Borland, Randall Boehm, Joshua Heyne, “Measurements of Nitrile Rubber Absorption of Hydrocarbons: Trends for Sustainable Aviation Fuel Compatibility,” *Energy & Fuels*, 2023. <https://doi.org/10.1021/acs.energyfuels.3c00781>
 41. a, d, f, #David C. Bell, #John Feldhausen, †Aaron J. Spieles, Randall C. Boehm, Joshua S. Heyne, “Limits of identification using VUV spectroscopy applied to C₈H₁₈ isomers isolated by GC×GC,” *Talanta*, 2023. <https://doi.org/10.1016/j.talanta.2023.124451>
 40. a, e, f, Boehm, Randall C., †Hauck, Franchesca, #Yang, Zhibin, Wanstall, C. Taber, Heyne, Joshua S., “Error quantification of the Arrhenius blending rule for viscosity of hydrocarbon mixtures,” *Frontiers in Energy Research*, 2022. <https://doi.org/10.3389/fenrg.2022.1074699>
 39. a, d, f, #David C. Bell, Randall C. Boehm, #John Feldhausen, **Joshua S. Heyne**, A Dataset Comparison Method Using Noise Statistics Applied to VUV Spectrum Match Determinations, *Analytical Chemistry*, 2022. <https://doi.org/10.1021/acs.analchem.2c01931>
 - 38.* e, b, Michael L. Stone, Matthew S. Webber, William P. Mounfield III, #David C. Bell, Earl Christensen, Ana R. C. Morais, Yanding Li, Eric M. Anderson, **Joshua S. Heyne**, Gregg T. Beckham, Yuriy Román-Leshkov, Continuous Hydrodeoxygenation of Lignin to Performance-Advantaged Jet-range Aromatic Hydrocarbons, *Joule*, 2022. <https://doi.org/10.1016/j.joule.2022.08.005>
- *Cover/featured article.**
37. d, #Opacich, K. C., **Heyne, J. S.**, Gray, J. A. T., Busby, K., Hammack, S. D., & Ombrello, T. (2022). Ignition kernel development in a reactive flow for nanosecond-

- pulsed high-frequency and DC arc discharges. *Combustion and Flame*, 245, 112324. <https://doi.org/10.1016/j.combustflame.2022.112324>
36. a, e, f, Boehm, R. C., [†]Coburn, A. A., [#]Yang, Z., Wanstall, C. T., **Heyne, J. S.** (2022). Blend Prediction Model for the Freeze Point of Jet Fuel Range Hydrocarbons. *Energy & Fuels*. <https://doi.org/10.1021/acs.energyfuels.2c02063>
 35. a, c, d, f, [#]Feldhausen, J., [#]Bell, D. C., [#]Yang, Z., [†]Faulhaber, C., Boehm, R., Heyne, J. (2022). Synthetic aromatic kerosene property prediction improvements with isomer specific characterization via GCxGC and vacuum ultraviolet spectroscopy. *Fuel*, 326, 125002. <https://doi.org/10.1016/j.fuel.2022.125002>
 34. d, b, e, [#]Zhibin Yang, Zhangyang Xu, Maoqi Feng, John R. Cort, Rafal Gieleciak, **Joshua Heyne**, Bin Yang, "Lignin-based Jet Fuel and its Blending effect with Conventional Jet Fuel," *Fuel*, 2022. <https://doi.org/10.1016/j.fuel.2022.124040>
 33. d, e, [#]Lily Behnke, Eric Monroe, Bernard Nguyen, Alexander Landera, Anthe George, [#]Zhibin Yang, **Joshua Heyne**, Ryan W. Davis, "Multivariate Optimization for Maximizing Net Fuel Economy Improvement Potential from Fusel Alcohol Blends in Gasoline," *Fuel Communications*, 2022. <https://doi.org/10.1016/j.fueco.2022.100059>
 32. b, e, Cronin DJ, Subramaniam S, Brady C, Cooper A, [#]Yang Z, **Heyne J.**, Drennan, C.; Ramasamy, K.K.; Thorson, M.R. Sustainable Aviation Fuel from Hydrothermal Liquefaction of Wet Wastes. *Energies* 2022;15. <https://doi.org/10.3390/en15041306>
 31. a, e, f Randall Boehm, [#]Zhibin Yang, **Joshua Heyne**, "Threshold Sooting Index of Potential Sustainable Aviation Fuel from Composition Data Alone: Progress Toward Uncertainty Quantification," *ACS Energy & Fuels*, 2022. <https://doi.org/10.1021/acs.energyfuels.1c03794>
 30. b, S. Kramer, M. G. Andac, **J. Heyne**, K. Lewis, J. Ellsworth, P. Herzig, "Perspectives on fully synthesized sustainable aviation fuels: direction and opportunities," *Perspectives on Fully Synthesized Sustainable Aviation Fuels: Direction and Opportunities*. *Front. Energy Res.* 9:782823, 2022. <https://doi.org/10.3389/fenrg.2021.782823>
 29. b, Derek R. Vardon, Bryan Sherbacow, Kaiyu Guan, **Joshua Heyne**, Zia Abdullah, "Realizing "Net-Zero-Carbon" Sustainable Aviation Fuel," *Joule*, 2022, <https://doi.org/10.1016/j.joule.2021.12.013>.
 28. a, e, f **Heyne, J.**, [#]Bell, D., [#]Feldhausen, J., [#]Yang, Z., Boehm, R., "Towards chemical compositions and properties of fuels with vacuum ultraviolet light spectroscopy and multidimensional gas chromatography," *FUEL*, 2022. <https://doi.org/10.1016/j.fuel.2021.122709>
 27. a, e, f Boehm, R., [#]Yang, Z., [#]Bell, D., [#]Feldhausen, J., **Heyne, J.**, "Lower Heating Value of Jet Fuel from Hydrocarbon Class Concentration Data and Thermo-Chemical Reference Data: An Uncertainty Quantification," *FUEL*, 2022. <https://doi.org/10.1016/j.fuel.2021.122542>
 26. a, e, f Boehm, R., [#]Colborn, J., **Heyne, J.**, "Comparing Fuel Dependencies Between Combustors of Different Size and Mixing Approaches," *Frontiers in Energy Research*, August 2021. <https://doi.org/10.3389/fenrg.2021.701901>
 25. a, e, f Boehm, R., [#]Scholla, L., **Heyne, J.**, "Sustainable Alternative Fuel Effects on Energy Consumption of Jet Engines," *FUEL*, 2021, <https://doi.org/10.1016/j.fuel.2021.121378>.

24. **b, e** Nabila A. Huq, Glenn R. Hafenstine, Xiangchen Huo, Hannah Nguyen, Stephen M. Tiff, Davis R. Conklin, Daniela Stück, Jim Stunkel, Earl D. Christensen, Cameron Hays, Matthew R. Wiatrowski, Yimin Zhang, Ling Tao, [#]Zhibin Yang, **Josh Heyne**, Zia Abdullah, Derek R. Vardon, "Towards Net Zero Sustainable Aviation Fuel with Food Waste-Derived Volatile Fatty Acids," **Proceedings of the National Academies of Sciences (PNAS)**, 2021. <https://doi.org/10.1073/pnas.2023008118>
23. **a, d, e** [#]Yang, Z., [#]Kosir, S., [#]Stachler, R., Shaffer, L., Anderson, C., **Heyne, J.**, "A GCxGC Tier α Combustor Operability Prescreening Method for Sustainable Aviation Fuel Candidates," *Fuel*, April 2021 <https://doi.org/10.1016/j.fuel.2021.120345>.
22. **a, c** **Heyne, J.**, Rauch, B., Colket, M., LeClercq, P., "Sustainable aviation fuel prescreening tools and procedures," *Fuel*, April 2021. <https://doi.org/10.1016/j.fuel.2020.120004>.
21. **a, d, e** [#]Shane Kosir, [#]Robert Stachler, **Joshua Heyne**, [†]Francesca Hauck "High-Performance Jet Fuel Optimization and Uncertainty Analysis," *FUEL*, 2020, <https://doi.org/10.1016/j.fuel.2020.118718>.
20. **b, d** [#]Katherine C. Opacich, Timothy Ombrello, **Joshua Heyne**, Joseph Lefkowitz, Robert J. Leiweke, Kenneth Busby, "Analyzing the Ignition Differences Between Conventional, Spark Discharges and Nanosecond-Pulsed High-Frequency Discharges," *Proceedings of the Combustion Institute*, 2021, <https://doi.org/10.1016/j.proci.2020.06.322>.
19. **a, c, d**, [#]Jennifer G. Colborn, **Joshua Heyne**, Scott D. Stouffer, Tyler H. Hendershott, Edwin Corporan, "Chemical and Physical Effects on Lean Blowout in a Swirl-Stabilized Single-Cup Combustor," *Proceedings of the Combustion Institute*, 2021. <https://doi.org/10.1016/j.proci.2020.06.119>.
18. **a, c, d, e** [#]Yang, Z., [#]Stachler, R., **Heyne, J. S.**, "Orthogonal Reference Surrogate Fuels for Operability Testing," *Energies*, April 2020, <https://doi.org/10.3390/en13081948>.
17. **a, d** [#]Kosir, S., **Heyne, J.**, Graham, J., "A Machine Learning Framework for Drop-in Volume Swelling Characteristics of Sustainable Aviation Fuel," *Fuel*, 2020, <https://doi.org/10.1016/j.fuel.2020.117832>.
16. **a, d** [#]R. D. Stachler, **Joshua S. Heyne**, Scott D. Stouffer, Joseph Miller, "Lean Blowoff in a TJSR: Implications for Alternative Fuel Approval and Potential Mechanisms for Autoignition and Extinction," *Energy & Fuels*, 2020, <https://dx.doi.org/10.1021/acs.energyfuels.9b01644>.
15. **b** Ruan, H., Qin, Y., **Heyne, J.**, Gieleciak, R., Feng, M., Yang, B., "Characterization of Chemical Compositions and Properties of Lignin-Based Jet Fuel Range Hydrocarbons," *Fuel* 256 (2019) 115947, <https://doi.org/10.1016/j.fuel.2019.115947>.
14. **a, d** [#]Erin Peiffer, **Joshua Heyne**, Med Colket, "Alternative Jet Fuel Effects on Lean Blowout in an Auxiliary Power Unit," *AIAA Journal*, AIAAJ-J058348, <https://arc.aiaa.org/doi/10.2514/1.J058348>.
13. **b**, Wu, Y., **Heyne, J.**, Zhang, Z., "Simultaneous measurements of refractive index, surface tension, and evaporation rate of Jet A Fuel," *Applied Optics*, Vol. 58, Issue 16, pp. 4326-4331 (2019), <https://doi.org/10.1364/AO.58.004326>.
12. **b, d** [#]Stachler, R., Lefkowitz, J., **Heyne, J.**, Stouffer, S., Ombrello, T., Miller, J., "An Investigation into the Effect of Residence Time and Equivalence Ratio on Ignition in a Toroidal Jet-Stirred Reactor," *Proceedings of the Combustion Institute*, (2018) <https://doi.org/10.1016/j.proci.2018.09.009>

11. **b Colket, M. D., Heyne, J.,** Rumizen, M., Edwards, J. T., Gupta, M., Roquemore, W. M., Moder, J. M., Tishkoff, J. M., Li, C. An Overview of the National Jet Fuels Combustion Program, AIAA Journal, (2017), <http://dx.doi.org/10.2514/1.J055361>.
 10. **c, Heyne, J. S.,** Dooley, S., Serinyel, Z., Dryer, F. L., Curran, H., Decomposition studies of isopropanol in a variable pressure flow reactor. Zeitschrift Für Physikalische Chemie, (2015) <https://doi.org/10.1515/zpch-2014-0630>.
 9. Dooley, S., **Heyne, J. S.,** Won, S. H., Dievart, P., Ju, Y., Dryer, F. L., Importance of a Cycloalkane Functionality in the Oxidation of a Real Fuel, Energy & Fuels, (2014) <https://doi.org/10.1021/ef5008962>.
 8. Sudholt, A., Cai, L., **Heyne, J.,** Haas, F. M., Pitsch, H., Dryer, F. L., Ignition characteristics of a bio-derived class of saturated and unsaturated furans for engine applications. Proc. Comb. Institute, (2014) <https://doi.org/10.1016/j.proci.2014.06.147>.
 7. Dryer, F. L., Jahangirian, S., Dooley, S., Won, S. H., **Heyne, J. S.,** Iyer, V. R., Litzinger, T. A., Santoro, R., Emulating the combustion behavior of real jet aviation fuels by surrogate mixtures of hydrocarbon fluid blends: Implications for science and engineering. Energy & Fuels. (2014) <https://doi.org/10.1021/ef500284x>.
 6. **c, Heyne, J.,** Dooley, S., Dryer, F.L., Dehydration rate measurements for tertiary-butanol in a variable pressure flow reactor. J. Phys. Chem. A, (2013) <https://doi.org/10.1021/jp404143f>.
 5. **c, Heyne, J.,** Dryer, F.L., Uncertainty analysis in the use of chemical thermometry — a case study with cyclohexene, J. Phys. Chem. A. (2013) <https://doi.org/10.1021/jp402982y>.
 4. Dooley, S., Won, S. H., **Heyne, J.,** Farouk, T., Ju, Y., Dryer, F. L., Kumar, K., Hui, X., Sung, C., Wang, H., Oehlschlaeger, M., Litzinger, T., Santoro, R., Malewecki, T., Brezinsky, K., The Experimental Evaluation of a Methodology to Surrogate Fuel Formulation for the Emulation of Combustion Kinetic Phenomena by a Theory of Real Fuel Oxidation, Combustion & Flame (2012) <https://doi.org/10.1016/j.combustionflame.2011.11.00>.
 3. Lefkowitz, J., **Heyne, J.,** Won, S., Dooley, S., Kim, H., Haas, F., Jahangirian, S., Dryer, F. L., Ju, Y., A Chemical Kinetic Study of tertiary-Butanol in a Flow Reactor and a Counterflow Diffusion Flame, Combustion & Flame (2011) <https://doi.org/10.1016/j.combustflame.2011.10.004>.
 2. Dooley, S., Won, S. W., Chaos, M., **Heyne, J.,** Ju, Y., Dryer, F. L., Kumar, K., Sung, C., Wang, H., Oehlschlaeger, M., Santoro, R., Litzinger, T., A jet fuel surrogate formulated by real fuel properties, Combustion & Flame, (2010) 2333-2339, <https://doi.org/10.1016/j.combustflame.2010.07.001>.
 1. **Heyne, J.,** Kirby, S., Boehman, A., Autoignition Studies of trans- and cis-Decalin in an Ignition Quality Tester (IQT) and the Development of a High Thermal Stability Unifuel/Single Battlefield Fuel, Energy & Fuels 23 (12), 5879–5885, <https://doi.org/10.1021/ef900715m>.
- i. Book chapters:**
4. Med Colket, **Joshua Heyne,** Gurhan Andac, Mark Rumizen, ``Chapter I. Introduction," Fuel Effects on Operability of Aircraft Gas Turbine Combustors, AIAA, Progress in Astronautics and Aeronautics, 1 August 2021. <https://doi.org/10.2514/5.9781624106040.0001.0020>

3. Nicholas Rock, Scott Stouffer, Tyler Hendershott, **Joshua Heyne**, David Blunck, Lukai, Zheng, Bhupendra Khandelwal, Benjamin Emerson, Epaminondas Mastorakos, Med Colket, "Chapter V. Lean Blowout Studies," Fuel Effects on Operability of Aircraft Gas Turbine Combustors, AIAA, Progress in Astronautics and Aeronautics, 1 August 2021. <https://doi.org/10.2514/5.9781624106040.0143.0196>
2. **Joshua Heyne**, Bastian Rauch, Ron Hanson, Stephen Dooley, Simon Blakey, #Zhibin Yang, Alison Ferris, Andrew Ure, Patrick Le Clercq, Randy Boehm, Chris Lewis, Med Colket, "Chapter XII. Prescreening of Sustainable Aviation Jet Fuels," Fuel Effects on Operability of Aircraft Gas Turbine Combustors, AIAA, Progress in Astronautics and Aeronautics, 1 August 2021. <https://doi.org/10.2514/5.9781624106040.0487.0524>
1. **Joshua Heyne**, Med Colket, Tim Edwards, Jeff Moder, Mark Rumizen, Anna Oldani, "Chapter XIII. Summary," Fuel Effects on Operability of Aircraft Gas Turbine Combustors, AIAA, Progress in Astronautics and Aeronautics, 1 August 2021. <https://doi.org/10.2514/5.9781624106040.0525.0534>

b) Books (Edited)

- Meredith Colket, **Joshua Heyne**, Timothy C. Lieuwen "Fuel Effects on Operability of Aircraft Gas Turbine Combustors," AIAA Progress in Astro. and Aero., 2021. <https://doi.org/10.2514/4.106040>

c) Invited technical reports

2. Johnathan Holladay, Zia Abdullah, Joshua Heyne, "Sustainable Aviation Fuel: Review of Technical Pathways," DOE Bioenergies Technology Office (DOE/EE-2041), Technical Report, September 2020. <https://www.energy.gov/sites/prod/files/2020/09/f78/beto-sust-aviation-fuel-sep-2020.pdf>
1. CAAFI R&D Committee, "Prescreening of synthesized hydrocarbons intended for candidates as blending components for aviation turbine fuels," Commercial Alternative Aviation Fuel Initiative (CAAFI), CAAFI R&D Committee Publication, August 2019. http://caafi.org/tools/Prescreening_Guidance.html

d) Papers in conference proceedings:

Heyne's role in publication:

- a: principal investigator
- b: co-investigator
- c: corresponding author
- d: Heyne student primary author
- e: Heyne student co-author
- f: Heyne research staff authorship (R. Boehm)
- g: Heyne student present
- #: Heyne graduate student
- †: Heyne undergraduate student

Refereed full paper for acceptance

41. **a, d** [#]Bell, David C; **Heyne, Joshua S**; Won, Sang Hee; Dryer, Frederick L., "The Impact of Preferential Vaporization on Lean Blowout in a Referee Combustor at Figure of Merit Conditions," ASME 2018 Power Conference, Orlando, FL 2018.
40. **a**, Briones, Alejandro M; Olding, Robert; Sykes, Joshua P; Rankin, Brent A; McDevitt, Kyle; **Heyne, Joshua S.**, "Combustion Modeling Software Development, Verification and Validation," ASME 2018 Power Conference, Orlando, FL 2018.

Refereed abstract for acceptance

39. **b, d**, Katherine C Opacich, Joshua Heyne, Erik Braun, Timothy Ombrello, Investigating the use of Low-Voltage Nanosecond-Pulsed Discharges for Cavity Ignition in Supersonic Flow, AIAA SCITECH 2024 Forum, 2024.
<https://doi.org/10.2514/6.2024-0180>
38. **b, d**, [#]Opacich, K. C., Heyne, J., Hammack, S., Ombrello, T. (2023). Investigating the Effect of Flow Velocity on Jetting Motion Produced by Repetitively Pulsed Discharges. In AIAA SCITECH 2023 Forum. American Institute of Aeronautics and Astronautics.
<https://doi.org/doi:10.2514/6.2023-1865>
37. **b, e** Gray JA, Ombrello T, [#]Opacich KC, **Heyne JS**. Investigation of the pulse-coupled regimes of nanosecond pulsed high-frequency discharges with respect to various fuels. AIAA SCITECH 2022 Forum, American Institute of Aeronautics and Astronautics; 2021. doi:doi:10.2514/6.2022-0979.
36. **b, d, g**, [#]Opacich KC, **Heyne JS**, Ombrello T, Gray JA. Parametric Study to Elucidate the Mechanisms of Jetting Motion That Bolster Ignition Kernel Development from Repetitively Pulsed Discharges. AIAA SCITECH 2022 Forum, American Institute of Aeronautics and Astronautics; 2021. doi:doi:10.2514/6.2022-0978.
35. **a, d, e, f, g**, [†]Faulhaber C, [#]Kosir ST, [†]Gawelek K, Boehm RC, **Heyne JS**. Optical Dilatometry Measurements for the Quantification of Sustainable Aviation Fuel Materials Compatibility. AIAA SCITECH 2022 Forum, American Institute of Aeronautics and Astronautics; 2021. doi:doi:10.2514/6.2022-1240.
34. **a, d, e, f, g**, [†]Coburn A, [#]Yang Z, Boehm R, **Heyne JS**. Determination of a Freeze Point Blend Prediction Model for Jet Fuel Range Hydrocarbons. AIAA SCITECH 2022 Forum, American Institute of Aeronautics and Astronautics; 2021. doi:doi:10.2514/6.2022-2221.
33. **a, d, f, g**, [#]Behnke L, Boehm RC, **Heyne JS**. Optimization of Sustainable Alternative Fuel Composition for Improved Energy Consumption of Jet Engines. AIAA SCITECH 2022 Forum, American Institute of Aeronautics and Astronautics; 2021. doi:doi:10.2514/6.2022-2056.
32. **a, d, e, g**, [#]John Feldhausen, [#]Shane Kosir, **Joshua Heyne**, Corrine Scown, Vi Rapp, Ana Comensana, "Towards the Co-optimization of Sustainable Aviation Fuel: Cost, Emissions, and Performance," AIAA SciTech, January 2021.
31. **b, d, g**, [#]Katherine Opacich, [#]Logan Scholla, **Joshua Heyne**, Timothy Ombrello, "Analyzing the Impact Discharge Type and Power Loadings have on Ignition Kernel Development in a Reactive Flow," AIAA SciTech, January 2021.
30. **a, d, e, g**, [†]Hauck, Franchesca R., [#]Yang, Zhibin, [#]Kosir, Shane T, **Heyne, Joshua S**, Landera, Alexander, George, Anthe, "Experimental Validation of Viscosity Blending

- Rules and Extrapolation for Sustainable Aviation Fuel," AIAA Propulsion and Energy Forum, August 2020. doi:10.2514/6.2020-3671
29. **b, d, g**, #Olson, Andrew, Fotia, Matthew, Stevens, Chris, Heyne, Joshua S. ``Propagation of Gaseous Detonations in 2D Curved Channels," AIAA Propulsion and Energy Forum, August 2020, doi:10.2514/6.2020-3863.
*Heyne was thesis adviser and committee chair at the time of publication. Fotia later assumed that role in order to get Graduate Faculty Statues in the UD MAE department.
 28. **a, d, g**, #Colborn, J., Heyne, J., Henderschott, T., Stouffer, S., Corporan, E., ``Fuel Chemical and Physical Effects on Lean Blowout in a Swirl-Stabilized Single-Cup Combustor," AIAA SciTech Forum, Orlando, FL, January 2020.
 27. **b, d, g**, #Opacich, K., Heyne, J. Ombrello, T., Leiweke, R., ``Analyzing the Ignition Differences Between Single, High Energy Spark Discharges and Nanosecond-Pulsed High-Frequency Discharges," AIAA SciTech Forum, Orlando, FL, January 2020.
 26. **b, d, g**, #Gazella, M., Donbar, J., Ombrello, T., Lin, K.-C., Busby, K., Heyne, ``Cold Start Ignition Performance Using Alternative Liquid Hydrocarbon Fuels," JANNAF 49th Combustion Subcommittee, Dayton, OH, June 2019.
 25. **a, d, e**, Joshua Heyne, #Katharine Opacich, #Erin Peiffer, M. Colket, ``The effect of chemical and physical fuel properties on the approval and evaluation of alternative jet fuels," 11th U.S. National Combustion Meeting, Pasadena, CA, March 2019.
 24. **a, e, g**, Giacomo Flora, #Shane T. Kosir, †Lily Behnke, #Robert D. Stachler, Joshua S. Heyne, Steven Zabarnick, Mohan Gupta. ``Properties Calculator and Optimization for Drop-in Alternative Jet Fuel Blends," AIAA Scitech 2019 Forum, AIAA SciTech Forum, (AIAA 2019-2368), <https://doi.org/10.2514/6.2019-2368>.
 23. **a, d, e, g**, #Katherine C. Opacich, Joshua S. Heyne, #Erin Peiffer, Scott D. Stouffer, ``Analyzing the Relative Impact of Spray and Volatile Fuel Properties on Gas Turbine Combustor Ignition in Multiple Rig Geometries," AIAA Scitech 2019 Forum, AIAA SciTech Forum, (AIAA 2019-1434), <https://doi.org/10.2514/6.2019-1434>.
 22. **a, d, e, g**, #Shane T. Kosir, †Lily Behnke, Joshua S. Heyne, #Robert D. Stachler, Giacomo Flora, Steven Zabarnick, Anthe George, Alexander Landera, Ray Bambha, Russell Denney, Mohan Gupta, "Improvement in Jet Aircraft Operation with the Use of High-Performance Drop-in Fuels", AIAA Scitech 2019 Forum, AIAA SciTech Forum, (AIAA 2019-0993), <https://doi.org/10.2514/6.2019-0993>.
 21. **b, d, g**, #Robert Stachler, Joseph Lefkowitz, Joshua Heyne, Scott Stouffer, Timothy, Ombrello, Joseph Miller, "An Investigation into the Effect of Residence Time and Equivalence Ratio on Ignition in a Toroidal Jet-Stirred Reactor," 37th International Symposium on Combustion, Dublin, Ireland, August 2018.
 20. **a, d, e**, #Peiffer, Erin E; Heyne, Joshua S; Colket, Meredith B., "Characteristic Timescales for Lean Blowout of Alternative Jet Fuels," AIAA 2018 Joint Propulsion Conference, Cincinnati, OH 2018.
 19. **a, d, e, g**, #Stachler, R., #Peiffer, E., Kosir, S., Heyne, J., and Stouffer, S., "A Study into the Chemical Timescale for a Toroidal Jet-Stirred Reactor (TJSR)," Central States Section of The Combustion Institute, Minneapolis 2018, <https://doi.org/10.2514/6.2018-4914>
 18. **a, e**, Heyne, Joshua S; #Peiffer, Erin; Colket, Meredith B; Jardines, Aniel; Shaw, Cecilia; Moder, Jeffrey P; Roquemore, William M; Edwards, James T; Li, Chiping; Rumizen, Mark; Gupta, Mohan, "Year 3 of the National Jet Fuels Combustion

- Program: Practical and Scientific Impacts of Alternative Jet Fuel Research,” 2018 AIAA Aerospace Sciences Meeting, Orlando, FL 2018.
17. **b, d, g,** #Stachler, R.D., Lefkowitz, J. K., Ombrello, T. M., Stouffer, S. D., Heyne, J. S., Miller, J. M., “The effect of residence time on the ignitability of ethylene and air mixtures in a toroidal jet-stirred reactor,” 10th U. S. National Combustion Meeting, College Park, Maryland, April 23-27 2017.
 16. **a, d, g,** #Bell, D., Heyne, J. S., Dryer, F. L., Won, S. W., Haas, F. M., Dooley, S., On the Development of General Surrogate Composition Calculations for Chemical and Physical Properties, AIAA SciTech-Aerospace Sciences Meeting, Grapevine, TX, Jan. 2017.
 15. **a,** Heyne, J. S., Colket, M., Gupta, M., Jardines, A., Moder, M., Edwards, J., Roquemore, W., Li, C., Rumizen, M., Year 2 of the National Jet Fuels Combustion Program: Towards a Streamlined Alternative Jet Fuels Certification Process, AIAA SciTech-Aerospace Sciences Meeting, Grapevine, TX, Jan. 2017.
 14. **b, d, g,** #Stachler, R., Heyne, J. S., Miller, J., Stouffer, S., Investigation of Combustion Emissions from Conventional and Alternative Aviation Fuels in a Well-Stirred Reactor, AIAA SciTech-Aerospace Sciences Meeting, Grapevine, TX, Jan. 2017.
 13. **b, e,** Wu, Y., Gragston, M., Zhang, Z., #Stachler, R. D., Heyne, J. S., Stouffer, S. D., Miller, J. D., See-through-wall Radar REMPI for Spatially Localized Temperature Measurements in a Well-Stirred Reactor, AIAA SciTech-Aerospace Sciences Meeting, Grapevine, TX, Jan. 2017.
 12. **b, d, g,** #Stachler, R., Heyne, J. S., Miller, J., Stouffer, S., Zeppieri, S., Colket, M., Roquemore, M., Well Stirred Reactor Emission Studies of Fuel Surrogates, Spring Technical Meeting of the Central States Section of the Combustion Institute, Knoxville, TN, May 2016.
 11. **b,** Colket, M., Heyne, J. S., Rumizen, M., Gupta, M., Jardines, A., Edwards, T., Roquemore, W. M., Andac, G., Boehm, R., Zelina, J., Lovett, J., Condevaux, J., Bornstein, S., Risk, N., Turner, D., Graves, C., Anand, M. S., Williams, R., Xu, F., Tishkoff, J., Li, C., Moder, J., Anthenien, R., Friend, D., Chu, P., Kamin, R., Serino, P., Domen, M., Kweon, C. M., Sankaran, V., Cohen, J., Chishty, W., Canteenwalla, P., Corber, A., An Overview of the National Jet Fuels Combustion Program, AIAA SciTech, San Diego, CA, Jan. 2016.
 10. **a,** Heyne, J. S., Dryer, F. L., Won, S. H., Haas, F., Reactivity of Utmost Conventional Alternative Jet Fuels in a Variable Pressure Flow Reactor, 9th U.S. National Combustion Meeting, Cincinnati, OH, May 2015.
 9. Sudholt, A., Cai, L., Heyne, J., Haas, F. M., Pitsch, H., Dryer, F. L., Ignition characteristics of a bio-derived class of saturated and unsaturated furans for engine applications. 35th International Symposium on Combustion, San Francisco, CA, Aug. 2014.
 8. Heyne, J., Dooley, S., Dryer, F. L., A decomposition study of isopropanol in a variable pressure flow reactor, Eastern States Section of the Combustion Fall Technical Meeting, Clemson, SC, October, 2013.
 7. Heyne, J., Dryer, F. L., Serinyel, Z., Curran, H., Dooley, S., Water Elimination Rate Measurements for Isopropanol, Central States Sectional Technical Meeting, Dayton, OH, April, 2012.

6. Veloo, P. S., Heyne, J., Haas, F., Dryer, F.L., Egolfopoulos, F. N., Iso-pentanol oxidation, Central States Sectional Technical Meeting, Dayton, OH, April, 2012.
5. Heyne, J., Dooley, S., Dryer, F. L., Water elimination rate measurements for tertiary-butanol, Eastern States Sectional Technical Meeting, Storrs, CT, October, 2011.
4. Heyne, J., Lefkowitz, J., Haas, F., Won, S.H., Dooley, S., Kim, H. H., Jahangirian, S., Dryer, F. L., Ju, Y., Combustion kinetics study of t-butanol and its principal intermediates iso-butene, acetone, and methane, US Joint Meeting of the Combustion Institute, Atlanta, GA, 2011.
3. Lefkowitz, J., Heyne, J., Won, S.H., Dooley, S., Kim, H. H., Haas, F., Jahangirian, S., Dryer, F. L., Ju, Y., A Chemical Kinetic Study of the Alternative Transportation Fuel, tertiary-Butanol, 49th AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition, Orlando, FL, 2011.
2. Haas, F., Heyne, J., Grieb, J., Dryer, F. L., Comparative IQT Ignition Delay Times of the Isomeric Butanols, Western States Technical Meeting, Spring 2010, Boulder, CO.
1. Stouffer, S. D., Pawlik, R., Justinger, G., Heyne, J., Zelina, J., Ballal, D., Combustion Performance and Emissions Characteristics for a Well-Stirred Reactor for Low Volatility Hydrocarbon Fuels, AIAA 2007-5673.

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e) Invited presentations

International invited talks, conferences, and symposia

71. Panel, Heyne, "SAF Property Predictions from Gas Chromatography Predictions," **UK Department for Transport's Advanced Fuel Fund: Sustainable Aviation Fuel Innovation Programme**, QEII Centre, London, UK, May 2024.
70. Plenary, Heyne, "Catalyzing Change in Aviation: Future and Current Sustainable Fuel Pathways," **Topsoe Catalysis Forum**, Munkrupgaard, Denmark, 12 September 2023.
69. Seminar, Heyne, Some sustainable aviation fuel drop-in constraints and non-drop-in opportunities, Sustainable Aviation Fuels – Design, Production and Climate Impact, **Wilhelm and Else Heraeus Foundation**, Hanau, Germany, 24 May 2023.
68. Seminar, Heyne, "Changing ASTM D7566 annexes for novel SAF fuels," HEFA catalyst development group, **Topsoe R&D**, Lyngby, Denmark, 8 December 2022.
67. Seminar, Heyne, "SAF Fuel Characterization and qualification," Advanced Biofuels Group, **Aalborg University**, Aalborg, Denmark, 7 December 2022.
66. Panel, Heyne, "How to approve a new SAF with the ASTM International committee?," **Sustainable Aviation Fuel Seminar, Topsoe**, Copenhagen, Denmark, 5 December 2022.
65. Panel, Heyne, "Sustainable aviation fuel property needs and some solid waste candidates," Hydrothermal Liquefaction: biocrudes and advances towards drop-in fuel potential, **Aalborg University**, VIRTUAL, 17 Aug. 2021.
64. Seminar, Heyne J., "Optimization of Drop-in Sustainable Aviation Fuels," **Institute Lecture, DLR Germany**, Stuttgart, DE, December 2019, Sponsored Travel.
63. Panel, Heyne J., "SAF Benefits Beyond CO2 Reduction," Sustainable Fuels for Aviation in Europe, **European Union Commission, Press Club Brussels**, Brussels, BE, November 2019, Sponsored Travel.

62. Presentation, M. Colket, J. Heyne, "NJFCP Update," JETSCREEN Meeting, Rome, October 2017.

Other invited talks, conferences, and symposia

61. Seminar, Heyne, "Eco-friendly Altitudes: Some Technical Challenges and Opportunities in Sustainable Aviation Fuels," University of Washington, Aeronautical & Astronautical department seminar series, March 2024.
60. Lecture, Heyne, "Fuel analysis, qualification, and standardization," ASCENT 93: Global Supply Chain Development Series, Online, February 2024.
59. Keynote, Heyne, "ASCENT 101: SAF Repository," Commercial Aviation Alternative Fuels (CAAFF) Research & Development Committee Lecture Series, Online, January 2024.
58. Keynote, Fuller and Heyne, "Some Local SAF Efforts and Overviews," CleanTech Alliance, Perkins Coie, Seattle, WA, January 2024.
57. Panel, Heyne, "Navigating the Shift: Understanding Fuel Property Variations in the Move to 100% SAF," AIAA SciTech Forum, Sustainable Aviation Fuels: Moving towards 100% SAF, Orlando, FL, January 2024.
56. Lecture, Heyne, "Future Horizons: Present Insights and Emerging Trends in Sustainable Aviation Fuel," Campus seminar, WSU Everett, Everett, WA, December 2023.
55. Panel, Heyne, "Clear skies ahead: Sustainable aviation fuel work at WSU Tri-Cities," WSU Tri-Cities: Research Week, Clean Energy & the Environment Panel, Richland, WA, October 2023.
54. Keynote, Heyne, "Clear skies ahead: The evolution and expansion of sustainable aviation fuel," Discovery Series: A Technology Alliance Program, Perkins Coie, Seattle, WA, October 2023.
53. Keynote, Heyne, "WSU Tri-Cities Bioenergy: Research, Programs, & Priorities," Northwest Environmental Business Council, Northwest Bioenergy Summit, Three Rivers Convention Center, Kennewick, WA, October 2023.
52. Panel, Heyne, "Sustainable aviation fuel: existing pathways, contemporary developments, and a potential future fuels," Northwest Environmental Business Council, Northwest Bioenergy Summit: Biofuels section, Kennewick, WA, October 2023.
51. Lecture, Heyne, "Drop-in and non-drop-in Sustainable Aviation Fuel Considerations," Airlines for America: SAF Committee, Alaska Airlines, Seattle, WA, August 2023.
50. Panel, Heyne, "Sustainable Aircraft Propulsion Vehicle Technologies and Fuels Sustainable Aviation Fuels," Washington State Academy of Sciences Annual Symposium, August 2023.
49. Panel, Heyne, "WSU-Snohomish Co.: SAF Applied R&D Center," Washington State Alternative Aviation Fuels Working Group, July 2023.
48. Panel, Heyne, "Towards Sustainable Aviation Fuel Distillation Optimization," CRC Aviation Fuels Meeting, Renton, WA, May, 2023.
47. Seminar, Heyne, "Sustainable aviation fuel: Qualification, operability, and some contemporary statuses," The Robert W. Courter Mechanical & Industrial Engineering Seminar Series, Louisiana State University, Baton Rouge, LA, 24 February 2023.

46. Seminar, Heyne, "Sustainable aviation fuel: Opportunities and challenges," Mechanical Engineering Graduate Seminar Series, School of Engineering and Applied Science, Washington State University Tri-Cities, Richland, WA, 13 January 2023.
45. Panel, Heyne, "Safety considerations of sustainable aviation," Alaska Airlines Day, Honors College, Washington State University, Pullman, Washington, 19 October 2022.
44. Panel, Joshua Heyne, "Prescreening and ASTM Qualification of Sustainable Aviation Fuels," Oak Ridge National Lab Sustainable Aviation Fuel Meeting, Virtual, 16 August 2022.
43. Seminar, Joshua Heyne, "Towards sustainable transportation, other goods, and services: An overview of past work and some potential collaborations," Washington State University Tri-Cities Campus Seminar, Richland, WA, 21 June 2022.
42. Seminar, Joshua Heyne, "Gas chromatography for sustainable aviation fuel development and deployment," WSU-PNNL Bioproducts Institute Seminar Series, Richland, WA, June 2022.
41. Presentation, Joshua Heyne, "Perspectives on Fully Synthesized SAF," FAA ASCENT Meeting, 6 April 2022, Washington, D.C.
40. Seminar, Heyne, "Prescreening Sustainable Aviation Fuel Candidates: A tiered testing approach for streamlined qualification," ChemCatBio Consortium, 7 March 2022.
39. **Keynote, Heyne, "Sustainable Aviation Fuel: properties, compositions, and qualification requirements," 2022 Workshop on Sustainable Aviation Fuel End Use Research Opportunities, Argonne National Lab, Feb. 2022.**
38. Seminar, Heyne, "Sustainable Aviation Fuel: properties, compositions, and qualification requirements," Joint seminar Mechanical and Aerospace Engineering Departments, **University of Michigan**, Jan. 2022, Sponsored Travel.
37. Seminar, Heyne, "Sustainable Aviation Fuel: properties, compositions, and qualification requirements," Center for Multiphase Flow Research and Education, **Iowa State University**, Nov. 2021, Sponsored Travel.
36. Seminar, Heyne, "Sustainable Aviation Fuel: properties, compositions, and qualification requirements," Combustion Research Facility and Applied Biosciences and Engineering Groups, **Sandia National Laboratory**, 17 Aug. 2021, Sponsored Travel.
35. Panel, J. Heyne, "Chemical and Safety Needs from engine and aircraft prospective," BIOMASS ENERGY PANEL SESSION: 2021 AIAA Propulsion and Energy Forum, 10 August 2021.
34. Panel, Heyne, "Sustainable Aviation Fuel prescreening, benefits, and a proposed streamlined evaluation process," **National Academies, Transportation Research Board (AV030)**, Sustainable Aviation Fuels subcommittee mid-year meeting, 2 June 2021.
33. Panel, Heyne J., "Prescreening of sustainable aviation fuels," CAAFI Virtual Mini-Symposium, June 2021.
32. Panel, Heyne J., "Summative Results of the National Jet Fuels Combustion Program," Properties and Emissions, CRC Aviation Fuels Meeting, virtual, May 2021.
31. Panel, Heyne J., "High Value Drop-in Aviation Fuels: From Molecule Selection to Mission Benefits," Panel Title: Fuel quality matters, DOE BETO/ PNNL HTL Workshop, virtual, November 2020.

30. Panel, Heyne J., “Prescreening of HTL SAFs: Rapid low-volume, lowcost testing,” Panel Title: Sustainable Aviation Fuel Certification, DOE BETO/PNNL HTL Workshop, virtual, November 2020.
29. Panel, Heyne J., “Routes to sustainable aviation fuels,” Energy and Fuels (ENFL) Division, ACS Fall 2020 National Meeting & Exposition, virtual, August 2020.
28. Seminar, Heyne J., “Overview of the Opportunities in Biojet BETO Program,” Federal Alternative Jet Fuel Strategy Working Group*, Webinar, June 2020.
Now part of the **Biomass Research & Development (BR&D) Board and named the Sustainable Aviation Fuels Working Group.*
27. Panel, J. Heyne, “The Technology Magic Bullet Delusion and the Cost of Sustainability,” Mann Chair Lecture Series, Breaking Down Silos Panel, University of Dayton, Oct. 2019.
26. Seminar, J. Heyne, “Prescreening of Novel SAF Fuels,” CAAFI SOAP-Jet Webinar, Oct. 2019.
25. Panel, Heyne J., “The Sustainability Delusion: Sustainability Under Uncertainty and Dramatic Outcomes,” Hanley Sustainability Institute, University of Dayton, Dayton, OH, September 2019.
24. Panel, Colket, M., Heyne J., “Major results from the National Jet fuels and Combustion Program,” ASME TurboExpo, Pheonix, AZ, June 2019.
23. Panel, Joshua Heyne, “The Mission Benefits of Sustainable Drop-in High-Performance Fuels,” ASME TurboExpo, Pheonix, AZ, June 2019.
22. Panel, T. Edwards, J. Heyne, “Towards the Minimization of ASTM D4054 Tier 3 & 4 AJF Approvals,” 2019 CRC Aviation Committee Meetings, San Juan, PR, May 2019.
21. Panel, J. Heyne, “Drop-in High-Performance Fuels,” 2019 CRC Aviation Committee Meetings, San Juan, PR, May 2019.
20. Panel, J. Heyne, “Reasonable Transportation Sustainability,” University of Dayton Sustainability Scholars, Dayton, OH April 2019.
19. Seminar, J. Heyne, “High-Performance Fuels for Emissions Reductions and ICAO Support,” **NASA Glenn**, Cleveland, OH, April 2019.
18. Seminar, J. Heyne, “High-Performance Fuels for Operability and Mission Benefits,” **AFRL/RQHC**, Dayton, OH, April 2019.
17. Seminar, J. Heyne, “The Approval and Evaluation NJFCP Learnings and High-Performance Fuels for Operability and Mission Benefits,” **Rolls-Royce**, Indianapolis, IN, April 2019.
16. Seminar, J. Heyne, “Drop-in High-Performance Fuels: From Molecule Selection to Mission Benefits,” **NREL Integrated Bio-Refinery Facility (IBRF) Lab**, Golden, CO, March 2019.
15. Seminar, J. Heyne, A. George, R. Denney, “Drop-in High-Performance Fuels: From Molecule Selection to Mission Benefits,” DOE Headquarters- BETO, Washington, D.C., January 2019.
14. Panel, J. Heyne, M. Colket, T. Lee, “An overview of ASCENT research efforts to improve our understanding of how fuel composition and characteristics determine performance,” CAAFI Biennial General Meeting, December 2018.
13. Panel, George, A., Heyne, J., Denney, R., Gupta, M., “Engine Optimized Sustainable Drop-in JET High Performance Fuels (HPF),” Advanced Bioeconomy Leadership Conference (ABLC), San Francisco, CA, November 2018.

12. Panel, M. Colket, J. Heyne, “Early Evaluation of Alternative Jet Fuels Based on NJFCP Results,” Advanced Bioeconomy Leadership Conference (ABLC), San Francisco, CA, November 2018.
11. Seminar, Z. Abdulla, J. Heyne, J. Holladay, “Jet Workshop Learning: Interpretations and Recommendations,” BETO-DOE, Washington, D.C., October 2018.
10. **Keynote Address**, Heyne, J., “What makes a Great Jet Fuel?,” **Tri-Lateral US-Mexico-Canada Bio-Jet Workshop**, Pacific Northwest National Laboratories, May 2018.
9. Seminar, J. Heyne, M. Colket, “Overview and Results from the National Jet Fuels Combustion Program,” CAAFI SOAP-Jet Webinar, Jan. 2018.
8. Panel, Med Colket, Sang Hee Won, Stephen, Dooley, Bill Pitz, Charlie Westbrook, Josh Heyne, Fred Dryer, Steve Zeppieri, “Surrogates for Practical Fuels: Historical Perspective, Palettes, Selection, Use and Modeling,” 2018 MACCCR Meeting, Sandia National Laboratories, Livermore, CA, 2018.
7. Panel, J. Heyne, “ASCENT Overview,” CAAFI SOAP-Jet Webinar, December 2017.
6. Panel, Heyne, J. S., “An Update for the NJFCP,” CRC Aviation Meeting, Washington, D.C., May 2016.
5. Panel, J. Heyne, “Career Opportunities and Trajectories Post Doctorate,” Princeton MAE Department Reunions Panel, Princeton, NJ, June 2015.
4. Panel, Heyne, J. S., National Jet Fuels Combustion Program: Alternative Jet Fuel Certification Augmentation, 2015 CRC Aviation Committee Meeting, Nashville, TN, May 2015.
3. Seminar, J. Heyne, “Rate Constant Determinations and UQ for Combustion Reactions,” Aerospace Systems Directorate Seminar, WPAFB/AFRL, Dayton OH, March 2014.
2. Seminar, Heyne, J. S., “Why go to Graduate School?,” Mechanical Engineering Department, University of Dayton, Fall 2013.
1. Panel, J. Heyne, “Graduate Student Experience at Princeton,” 'Many Minds, Many Stripes' Conference, Princeton University, Oct. 2013.

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f) Contributed presentations

Heyne’s role in presentation:

- a: principal investigator
- b: co-author
- ~~c: corresponding author~~
- d: Heyne student primary presenter
- e: Heyne student co-author
- f: Heyne research staff authorship (R. Boehm)
- g: Heyne student present
- [#]: Heyne graduate student
- [†]: Heyne undergraduate student

Refereed abstract for acceptance:

58. **a, d, e, g**, [#]Zhibin Yang, Randall Boehm, **Joshua Heyne**, “Distillation optimization for full distillate sustainable aviation fuel,” ACS National Meeting, Division of Energy and Fuels, March 2023.

57. **a, b, f**, Randall Boehm, Joshua Heyne, “Review of fuel property prediction methods advancing sustainable aviation,” ACS National Meeting, Division of Energy and Fuels, March 2023.
56. **a, d, e, g**, #John Feldhausen, #David Bell, Randall Boehm, **Joshua Heyne**, “Hydrocarbon multidimensional gas chromatograph template optimization study,” ACS National Meeting, Division of Energy and Fuels, March 2023.
55. **a, d, e, g**, #Conor Faulhaber, Randal Boehm, Joshua Heyne, “O-ring seal swell property relationships and blending rule validation for sustainable,” ACS National Meeting, Division of Energy and Fuels, March 2023.
54. **a, d, e, g**, #David Bell, #John Feldhausen, **Joshua Heyne**, Isomer detection limits using GCxGC-VUV in hydrocarbon fuels, ACS National Meeting, Division of Energy and Fuels, March 2023.
53. **a, d, e, g**, #David Bell, #John Feldhausen, **Joshua Heyne**, “Impact of Isomer Specific Identification on Fuel Property Predictions,” 17th International Conference of the Stability, Handling, and Use of Liquid Fuels (IASH), Dresden, Germany, September, 2022.
52. **a, d, f, g**, †Aaron Spieles, **Joshua Heyne**, “Vacuum ultraviolet spectroscopy’s contribution to the prescreening of fuels,” DCASS 2022, 47DCASS-106, Dayton, OH, March 2022.
51. **a, d, f, g**, #Jack Hoog, **Joshua Heyne**, #Lily Behnke, Randall Boehm, “Optimization of Sustainable Aviation Fuel Composition for Improved Energy Consumption of Jet Engines,” DCASS 2022, 47DCASS-112, Dayton, OH, March 2022.
50. **a, d, f**, #Steven Ivec, Josh Heyne, “Predicting Fuel Lower Heating Value From Ultraviolet Absorbance,” DCASS 2022, 47DCASS-089, Dayton, OH, March 2022.
49. **a, d, g**, #D. Bell, J. Heyne, “Multidimensional Gas Chromatography with Ultraviolet Spectroscopy for Isomer Identification,” ACS National Meeting & Exposition, virtual, August, 2021.
48. **a, d, g**, #J. Feldhausen, J. Heyne, “Numerical approaches for fuel characterization with multidimensional gas chromatography and ultraviolet light spectroscopy,” ACS National Meeting & Exposition, virtual, August, 2021.
47. **a, d, g**, #Z. Yang, J. Heyne, “Overview of GCxGC Tier α combustor operability prescreening method for sustainable aviation fuel candidates,” ACS National Meeting & Exposition, virtual, August, 2021.
46. **b, d, e, g**, #Katherine Opacich, Joshua Heyne, #Logan Scholla, Timothy Ombrello, Joshua A. T. Gray, Kenneth Busby, “Analyzing the Impact Discharge Type and Power Loadings have on Ignition Kernel Development in a Reactive Flow,” 46th Dayton-Cincinnati Aerospace Sciences Symposium, 46DCASS-065, online, 2021.
45. **a, d, e, g**, #David Bell, #John Feldhausen, Josh Heyne, “Hydrocarbon Isomer Identification Using Gas Chromatography with Ultra-Violet Spectroscopy,” 46th Dayton-Cincinnati Aerospace Sciences Symposium, 46DCASS-063, online, 2021.
44. **a, d, e, g**, #Zhibin Yang, #Shane Kosir, Joshua Heyne, “Prescreening of Sustainable Aviation Fuel,” 46th Dayton-Cincinnati Aerospace Sciences Symposium, 46DCASS-064, online, 2021.
43. **a, e, f** Randall Boehm, #Logan Scholla, Joshua Heyne, “Specific Fuel Consumption: A Potential Benefit of Sustainable Alternative Jet Fuel with High Thermal Stability,” 46th Dayton-Cincinnati Aerospace Sciences Symposium, 46DCASS-067, online, 2021.

42. **a, d, e, g,** [#]John Feldhausen, [#]David Bell, [#]Shane Kosir, Joshua Heyne, “The Co-Optimization of Sustainable Aviation Fuel: Cost, Emissions, and Performance,” 46th Dayton- Cincinnati Aerospace Sciences Symposium, 46DCASS-069, online, 2021.
41. **a, e, g,** [#]Logan Scholla, Randall Boehm, Joshua Heyne, “Influence of Fuel Properties on Waste Heat Recovery in a Simplified Gas Turbine Engine Model,” 46th Dayton- Cincinnati Aerospace Sciences Symposium, 46DCASS-071, online, 2021.
40. **a, e, g, f,** Randall Boehm, [#]Jennifer Colborn, Joshua Heyne, “Comparison between a Single-Cup Combustor and an Auxiliary Power Unit,” 46th Dayton-Cincinnati Aerospace Sciences Symposium, 46DCASS-068, online, 2021.
39. **a, d, e, g,** [#]Conor Faulhaber, Joshua Heyne, [#]Shane Kosir, “Optical Dilatometry Measurements for the Quantification of Sustainable Aviation Fuel Materials Compatibility,” 46th Dayton-Cincinnati Aerospace Sciences Symposium, 46DCASS-048, online, 2021.
38. **a, d, g,** [#]Zhibin Yang, Joshua Heyne, “A GCxGC Tier Alpha and Combustor Figure-of-Merit Approach on Sustainable Aviation Fuels Prescreening,” AIAA 44th Dayton-Cincinnati Aerospace Sciences Symposium, 45DCASS-094, Sinclair Community College, Dayton, OH, 2020.
37. **a, d, g,** [#]Shane Kosir, Joshua Heyne, John Graham, Michelle Kirby, “High-Performance Jet Fuel Optimization and Aircraft Performance Analysis Considering O-ring Volume Swell,” AIAA 44th Dayton-Cincinnati Aerospace Sciences Symposium, 45DCASS-97, Sinclair Community College, Dayton, OH, 2020.
36. **b, d, g,** [†]Lily Behnke, Eric Monroe, Ryan W. Davis, Anthe George, [#]Katie Opacich, Joshua Heyne, “In Investigation into the Relative Impact of Fusel Alcohol Mixtures from Biomass Feedstocks on Gasoline Blends,” AIAA 44th Dayton-Cincinnati Aerospace Sciences Symposium, 45DCASS-100, Sinclair Community College, Dayton, OH, 2020.
35. **b, d, g,** [#]Katherine Opacich, Joshua Heyne, Timothy Ombrello, Joseph K. Lefkowitz, Robert J. Leiweke, “An Investigation on Kernel Growth Variations between Conventional Spark Discharges and Nanosecond-Pulsed High-Frequency Discharges,” AIAA 44th Dayton-Cincinnati Aerospace Sciences Symposium, 45DCASS-102, Sinclair Community College, Dayton, OH, 2020.
34. **a, d, g,** [#]Jennifer Colborn, Joshua Heyne, Tyler Hendershott, Scott Stouffer, Edwin Corporan, “Chemical and Physical Effects on Lean Blowout in a Single-Cup Swirl-Stabilized Combustor,” AIAA 44th Dayton-Cincinnati Aerospace Sciences Symposium, 45DCASS-120, Sinclair Community College, Dayton, OH, 2020.
33. **a, d, g,** [#]Jennifer Colborn, Joshua Heyne, Tyler Hendershott, Scott Stouffer, Edwin Corporan, “Chemical and Physical Effects on Lean Blowout in a Single-Cup Swirl-Stabilized Combustor,” ASME 15th Dayton Engineering Sciences Symposium, DESS2019-057, University of Dayton, 2019.
32. **b, d, g,** [#]Katherine Opacich, Joshua Heyne, Timothy Ombrello, Robert J. Leiweke, Joseph Lefkowitz, “Analyzing the Ignition Differences Between Conventional Spark Discharges and Nanosecond-Pulsed High-Frequency Discharges,” ASME 15th Dayton Engineering Sciences Symposium, DESS2019-066, University of Dayton, 2019.
31. **a, d, g,** [#]Robert Stachler, Joshua Heyne, Scott Stouffer, “An Analysis of Well-Stirred Reactors for Combustion Applications,” ASME 15th Dayton Engineering Sciences Symposium, DESS2019-056, University of Dayton, 2019.

30. **a, d, e, g,** [#]Zhibin Yang, [#]Robert Stachler, Joshua Heyne, “Orthogonal Reference Surrogate Fuels for Operability Testing,” ASME 15th Dayton Engineering Sciences Symposium, DESS2019-040, University of Dayton, 2019.
29. **a, d, g,** [#]Shane Kosir, Joshua Heyne, John Graham, “A Machine Learning Framework for Drop-in Volume Swell Characteristics of Sustainable Aviation Fuel,” ASME 15th Dayton Engineering Sciences Symposium, DESS2019-035, University of Dayton, 2019.
28. **a, d, e, g,** [†]Lily Behnke, [#]Shane Kosir, Joshua S. Heyne, Steven Zabarnick, Giacomo Flora, Russell K. Denney, Mohan Gupta, “The Role of High Energy Molecules and Alternative Jet Fuel Blends in the Advancement of Conventional Jet Fuels,” DESS2018-020, 14th Dayton Engineering Sciences Symposium, Wright State University, 2018.
27. **a, d, e, g,** [#]Shane Kosir, Lily Behnke, Joshua S. Heyne, Steven Zabarnick, Giacomo Flora, Russell K. Denney, Mohan Gupta, “Improvement in Jet Aircraft Operation with the Use of High-Performance Alternative Drop-in Fuels in Conventional Fuels,” DESS2018-007, 14th Dayton Engineering Sciences Symposium, Wright State University, 2018.
26. **a, d, e, g,** [#]Robert Stachler, Joshua Heyne, [#]Erin Peiffer, Scott Stouffer, Joseph Miller, “Assessment of Lean Blowout in a Toroidal Jet Stirred Reactor,” DESS2018-055, 14th Dayton Engineering Sciences Symposium, Wright State University, 2018.
25. **a, d, e, g,** [#]Katherine Opacich, Joshua S. Heyne, [#]Erin Peiffer, Scott D. Stouffer, “Analyzing the Relative Impact of Spray and Volatile Fuel Properties on Gas Turbine Combustor Ignition,” DESS2018-019, 14th Dayton Engineering Sciences Symposium, Wright State University, 2018.
24. **a, d, g,** [#]Erin Peiffer, Joshua Heyne, “Combustor Rig Sensitivity to DCN for LBO and Ignition Results from Year 3 of the NJFCP,” 43rd Dayton-Cincinnati Aerospace Sciences Symposium, Sinclair Community College, February 2018.
23. **b, d, e, g,** [#]Robert D. Stachler, Joshua S. Heyne, Scott D. Stouffer, Joseph D. Miller, Keith Rein, “Characterization of a Toroidal Jet-Stirred Reactor using Hot-Wire Anemometry and Tunable Diode Laser Absorption Spectroscopy (TDLAS),” 43rd Dayton-Cincinnati Aerospace Sciences Symposium, Sinclair Community College, February 2018.
22. **a, d, e, g,** [#]Erin Peiffer, [#]Sari Mira, Joshua Heyne, “TENDING PRACTICES AND THERMAL EFFICIENCY FOR BIOMASS COOKSTOVES,” ETHOS Conference, Kirkland, WA Jan. 2018.
21. **a, d, g,** [#]David Bell, Joshua Heyne, “Preferential Vaporization's Effect on Lean Blowout,” 13th Dayton Engineering Sciences Symposium, Wright State University, 2017.
20. **a, d, g,** [#]Peiffer, E., Heyne, J., “LBO and Ignition Feature Importance's from Year 3 of the National Jet Fuels Combustion Program (NJFCP),” 13th Dayton Engineering Sciences Symposium, Wright State University, 2017.
19. **b, d, g,** [#]Robert D. Stachler, Joshua S. Heyne, Scott D. Stouffer, Joseph K. Lefkowitz, Timothy M. Ombrello, Joseph D. Miller, “Characterization of a Toroidal Jet-Stirred Reactor Using Hot-Wire Anemometry,” 13th Dayton Engineering Sciences Symposium, Wright State University, 2017.
18. **a, d, g,** [#]Mira, S., Heyne, J., “Modeling and Characterization of Wood Stove Efficiencies in Natural Draft and Induced Turbulence Environments,” 13th Dayton Engineering Sciences Symposium, Wright State University, 2017.

17. **a, d, g**, [#]Bell, D., Heyne, J. S., “Developing a Calculator for Generating Surrogate Jet Fuels with Target Chemical and Physical Properties,” Dayton Engineering Sciences Symposium, Nov. 1, 2016.
16. **a, d, g**, [#]Carson, J., Heyne, J. H., Henderschott, T., Stouffer, S., “On the Use of Statistical Analysis Techniques to Determine Driving Factors in Combustion Processes,” 12th Dayton Engineering Sciences Symposium, Nov. 1, 2016.
15. **a**, Heyne, J. S., “On the Streamline of the Alternative Jet Fuel Certification Process,” 12th Dayton Engineering Sciences Symposium, Nov. 1, 2016.
14. **a, d, g**, [#]Peiffer, E., Heyne, J., “Minimizing Deforestation and Pollutant Emissions with Biomass Gasification,” 12th Dayton Engineering Sciences Symposium, Nov. 1, 2016.
13. **a, e**, Heyne, J. S., [#]Mira, S., “Developing an Efficient Bio-mass Stove using Gas Turbine Design Principles,” 12th Dayton Engineering Sciences Symposium, Nov. 1, 2016.
12. **b, d, g**, [#]Robert Stachler, Scott Stouffer, Joshua Heyne, “A Study of Surrogate, Conventional, and Alternative Fuel Emissions Using a Well-Stirred Reactor,” Stander Symposium, Dayton, OH, April 2016.
11. **a, d, e, g**, [#]Sari Mira, [#]Robert Stachler, Joshua Heyne, “Reduced Order Experimental Configuration Studies of Wood Combustion,” Stander Symposium, Dayton, OH, April 2016.
10. **b, d, g**, [#]Stachler, R., Heyne, J. S., Miller, J., Stouffer, S., Roquemore, M., Emission Studies of Surrogates in a Well-Stirred Reactor, DCASS, Dayton, OH, Mar. 2016.
9. **a, d, e, g**, [#]Mira, S., [#]Stachler, R., Heyne, J., Zhang, Y., Lakshminarayanan, S., Long, B., Pereira, K., Sounik, J., Reduced Order Experimental configuration Studies of Wood Combustion, ETHOS Conference, Kirkland, WA, Jan. 2016.
8. **b, d, g**, [#]Stachler, R., Heyne, J. S., Miller, J., Stouffer, S., Roquemore, M., Well Stirred Reactor Emission Studies of Fuel Surrogates, 11th Annual Dayton Engineering Sciences Symposium, Fairborn, OH, Nov. 2015.
7. Heyne, J., Dryer, F. L., A Dehydration Study of tertiary-butanol and Implications for Chemical Thermometry and Relative Rate Studies, ACEEES Education Forum, Waikaloa, Hawaii, December, 2012.
6. Serinyel, Z., Heyne, J., Dryer, F. L., Chemical Kinetics of Isopropanol and t-Butanol Pyrolysis and Oxidation, Energy Frontier Research Center (EFRC) Annual Meeting, Princeton, NJ, Sept. 2010.
5. Heyne, J., Kirby, S., Boehman, A., Development of a drop-in unifuel/single battlefield fuel of high thermal stability, ACS National Meeting & Exposition, Salt Lake City, Utah, March, 2009.
4. Heyne, J., Kirby, S., Boehman, A., Proposed reactivity mechanism for trans- and cis-decalin and implications for the development of JP-900, ACS National Meeting & Exposition, Salt Lake City, Utah, March, 2009.

g) Recognition of work in the media

Authored articles

2. Joshua Heyne, A decarbonized aviation path with sustainable aviation fuel, ASME Global Gas Turbine News, vol. 62, no. 4, Aug./Sept. 2023.

1. Joshua Heyne, Hai Wang, Joseph Kalman, Safely improving jet, rocket fuels, Aerospace America, 2018 Year in Review, Propellants and Combustion Technical Committee Contribution, December 2018.

National media featuring work

*Heyne quoted.

#Heyne interviewed live.

1. *Anthony King, Bioengineered bacteria produce renewable rocket fuel, **Chemistry World**, 11 July 2022, <https://www.chemistryworld.com/news/renewable-rocket-fuel-made-by-genetically-engineered-soil-bacteria/4015918.article>
2. # Mornings with Simi: Science with Simi, Cheaper Catalysts to turn CO2 into jet fuel, 980 CKNW, Vancouver, CA, 18 March 2022. <https://omny.fm/shows/the-simi-sara-show/science-with-simi-b-c-highest-rate-of-hate-crimes?t=10s>
3. *Andy Uhler, Sustainable fuel for planes is closer than you may think, **Marketplace**, NPR, 17 February 2022. <https://www.marketplace.org/2022/02/17/sustainable-fuel-for-planes-is-closer-than-you-may-think//popout>
4. *Casey Crownhart, All your burning questions about sustainable aviation fuel, answered, **Popular Science**, 8 February 2022. <https://www.popsoci.com/technology/sustainable-aviation-fuel-explained/>
5. *Hugo Martín, Airlines have a recipe to reach zero emissions by 2050. The key ingredient: cooking oil, **LA Times**, 30 December 2021. <https://www.latimes.com/business/story/2021-12-30/can-airlines-cut-emissions-to-zero-by-2050>
6. #Julie Rose, Food Waste Jet Fuel, Top of Mind with Julie Rose on BYU Radio, 28 April 2021. <https://aerospaceamerica.aiaa.org/from-food-to-jet-fuel/>
7. Catherine Hofacker, From food to jet fuel, AIAA Aerospace America, 2021. <https://aerospaceamerica.aiaa.org/from-food-to-jet-fuel/>
8. Irina Pérez and Jeevan Ravindran, Scientists may have made jet fuel from food waste, and it could dramatically cut methane emissions, [Buisness] Insider, 17 March 2021. <https://www.businessinsider.com/airplane-southwest-delta-coronavirus-co2-flight-paraffin-climate-change-solution-2021-3>
9. *Eric Niiler, Could Carbon Dioxide Be Turned Into Jet Fuel?, **WIRED**, 22 December 2020. <https://www.wired.com/story/could-carbon-dioxide-be-turned-into-jet-fuel/>
10. Meghan Sapp, University of Dayton researchers help NREL get closer to production SAF from food waste, Biofuels Digest, 16 March 2021. <https://www.biofuelsdigest.com/bdigest/2021/03/16/university-of-dayton-researchers-help-nrel-get-closer-to-production-saf-from-food-waste/>
11. UD Researchers on NREL Team Fast-Tracking Food Waste into SAF, Renewable Energy Magazine, Tuesday, 16 March 2021.
12. Novel pathway for aviation fuel from food waste derived volatile fatty acids (VFA) could lead to 70% blends, up to 165% reduction in GHG, Green Car Congress, 16 March 2021.
13. *Alex Fox, Scientists Use Iron to Turn Carbon Dioxide Into Jet Fuel, **Smithsonian Magazine**, 31 December 2020. <https://www.smithsonianmag.com/smart-news/new-process-uses-iron-turn-carbon-dioxide-jet-fuel-180976654/>

14. *Ann Thompson, "UD Works To Help Reduce Airlines' Carbon Footprint," NPR WVXU Cincinnati, 18 November 2019. <https://www.wvxu.org/local-news/2019-11-18/ud-works-to-help-reduce-airlines-carbon-footprint>
Also broadcast on WOSU 18 November 2019.
15. Kathiann M. Kowalski. Sustainable aviation fuels could soon take flight, Energy News Network, 28 August 2020.

International media featuring work

16. Dyllan Furness, "Low-carbon aviation fuels are on the horizon. But for now, activists say we need to stay grounded," **The Guardian**, 11 November 2021. <https://www.theguardian.com/environment/2021/nov/11/low-carbon-aviation-fuels-activists-stay-grounded>
17. Matt McGrath, Climate change: Jet fuel from waste 'dramatically lowers' emissions, **British Broadcasting Corporation (BBC)**, Tuesday, 16 March 2021. <https://www.bbc.com/news/science-environment-56408603>
18. *Tom Metcalfe, New, cheaper catalyst turns carbon dioxide into jet fuel, Chemistry World, 7 January 2021. <https://www.chemistryworld.com/news/new-cheaper-catalyst-turns-carbon-dioxide-into-jet-fuel/4012981.article>

4. OTHER SUPPORTING INFORMATION OF SCHOLARLY IMPACT

a) Number of citations, h-index, and i10-index:

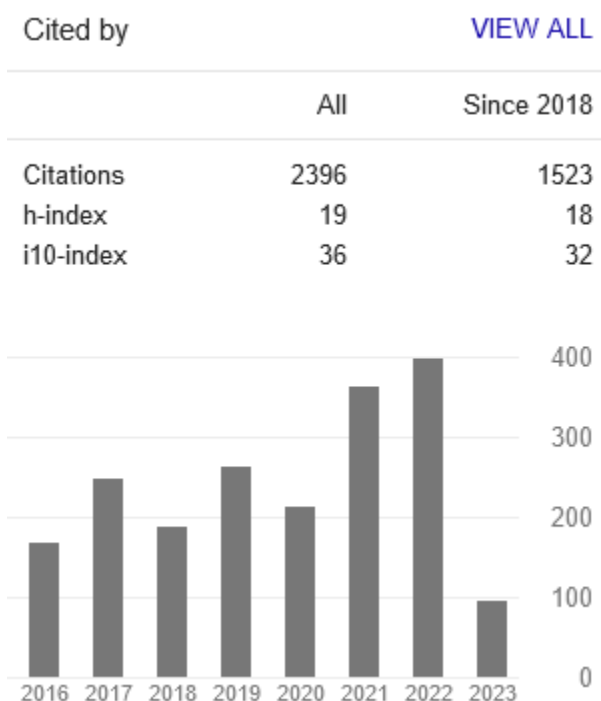


Figure 1: [Google Scholar statistics](#)

5. AWARDS AND HONORS

a) Research awards and honors

1. **Rising Stars, ACS Energy & Fuels**, 2024.
2. **Green Chemistry Award, Environmental Protection Agency (EPA)**, 2023.
3. Achievement & Leadership Award, Commercial Aviation Alternative Fuels Initiative, 2022
4. 2021 US Frontiers of Engineering Symposium, **National Academy of Engineering**, selected participant 2021
5. **Vision Award for Excellence in Scholarship**, School of Eng., University of Dayton 2021
6. Summer Faculty Fellow, AFRL/RQHF 2020
7. Excellence in Research, Southern Ohio Council of Higher Education (SOCHE) 2016

b) Public service awards

8. Outstanding Service Award, ASME Dayton Section 2018

c) Other evidence of recognition

9. University of Dayton Nominee, Blavatnik National Awards for Young Scientists, 2019
10. **Keynote Address**, Heyne, J. S., “Four Rules on How to Undergrad,” University of Dayton Convocation, Dayton, OH, August 2018.
11. Class of 1902 Award of Excellence for Outstanding Mechanical Engineering Achievement, MAE Dept., Univ. of Dayton 2007
12. Citizenship Award, Alter High School 2003

6. SUMMARY OF EXTERNAL SUPPORT

a. Summary of philanthropic donations

Heyne is a contributor to raising funds and is responsible for the distribution and use of funds in total.

b. Summary of grant and contract support

If Heyne is not the PI, the following holds:

- a: co-investigator
- b: Funding is through a large Air Force contract with the University of Dayton. While another PI is listed, all project management and project ideas originated with Heyne.
- c: Funding is through a large Air Force contract with the University of Dayton. Project originated with another investigator, and Heyne supported the project with a student, mentoring, and personal time.

UDRI: University of Dayton Research Institute

AFRL: Air Force Research Laboratory

SERDP: Strategic Environmental Research and Development Program

BETO: Bio-Energy Technology Office

FAA: Federal Aviation Administration

ii. Curriculum development,

1. MEE 114, Introduction to Programming for Mechanical Engineers, 2019
2. MEE 308H, Honors Fluid Dynamics, 2017

iii. Articles or workshops related to teaching

3. Learning Teaching Center Teaching Fellow, University of Dayton, 2017-2018
4. Kern Entrepreneurial Engineering Network (KEEN), Innovating Curriculum with an Entrepreneurial Mindset (ICE) Workshop, Denver, CO, August 2017
5. Midterm Instructional Diagnosis (MID) Evaluation, Fall 2016

iv. Revising curriculum for inclusive pedagogy.

1. MEE 565, Fundamentals of Combustion, course restructured to evaluate diverse skill sets via the inclusion of creative problems, oral communication, oral examination, writing assignments, teamwork, and analytical abilities, Spring 2018.
2. MEE 511, Advanced Thermodynamics, course restructured to evaluate diverse skill sets via the inclusion of creative problems, oral communication, writing assignments, teamwork, and analytical abilities, Fall 2017.

7. GRADUATE COURSES:

d) Instructor of record: courses

1. Fundamentals of Combustion, MEE 565, Spring 2021
2. Advanced Thermodynamics, MEE 511, Fall 2020
3. Advanced Thermodynamics, MEE 511, Fall 2019
4. Fundamentals of Combustion, MEE 565, Spring 2019
5. Advanced Thermodynamics, MEE 511, Fall 2018
6. Fundamentals of Combustion, MEE 565, Spring 2018
7. Advanced Thermodynamics, MEE 511, Fall 2017
8. Fundamentals of Combustion, MEE 565, Spring 2017
9. Advanced Thermodynamics, MEE 511, Spring 2016
10. Fundamentals of Combustion, MEE 565, Fall 2015
11. Advanced Thermodynamics, MEE 511, Spring 2015
12. Fundamentals of Combustion, MEE 565, Fall 2014

e) Instructor of record: Formal independent studies

13. Special Problems in Mech. Eng., MEE 590, Spring 2022
14. Special Problems in Aero. Eng., AEE 590, Spring 2022
15. PhD Dissertation, MEE 699, Spring 2022
16. Special Problems in Mech. Eng., MEE 590, Fall 2021
17. Special Problems in Aero. Eng., AEE 590, Fall 2021
18. Special Problems in Mech. Eng., MEE 590, Summer 2021
19. PhD Dissertation, MEE 699, Spring 2020
20. Special Problems in Mech. Eng., MEE 590, Summer 2021
21. Special Problems in Aero. Eng., AEE 590, Summer 2020

22. Special Problems in Aero. Eng., AEE 590, Spring 2020
23. Special Problems in Aero. Eng., AEE 590, Spring 2020
24. Special Problems in Aero. Eng., AEE 590, Spring 2020
25. Special Problems in Mech. Eng., MEE 590, Fall 2019
26. Special Problems in Mech. Eng., MEE 590, Spring 2019
27. PhD Dissertation, MEE 699, Spring 2019
28. Special Problems in Mech. Eng., MEE 590, Spring 2019
29. Special Problems in Mech. Eng., MEE 590, Spring 2019
30. PhD Dissertation, MEE 699, Spring 2018
31. PhD Dissertation, MEE 699, Spring 2019
32. PhD Dissertation, MEE 699, Summer 2018
33. Special Problems in Renewable Clean Energy, RCL 590, Fall 2018
34. PhD Dissertation, MEE 699, Spring 2018
35. Special Problems in Mech. Eng., MEE 590, Fall 2017
36. PhD Dissertation, MEE 699, Fall 2017
37. Special Problems in Mech. Eng., MEE 590, Summer 2017
38. PhD Dissertation, MEE 699, Summer 2016
39. Special Problems in Renewable Clean Energy, RCL 590, Summer 2015
40. PhD Dissertation, MEE 699, Summer 2015

f) Co-instructor

41. Engineering Design and Appropriate Technology II, EGR 590 Spring 2016

8. GRADUATE STUDENTS

a) Funded (delineated by degree)

Year completed

1. Conor Faulhaber, PhD	
2. Christopher Borland, MS	2023
3. Conor Faulhaber, MS	2022
4. Steven Ivec, MS	2022
5. Jack Hoog, MS	2022
6. Lily Behnke, MS	2022
7. David Bell, PhD	
8. John Feldhausen, MS	2022
9. Logan Scholla, MS	
10. Shane Kosir, MS,	2021
11. Zhibin Yang, PhD	
12. Katherine Opacich, PhD	
13. Jennifer Colborn, MS	2021
14. Zhibin Yang, MS	2020
15. Erin Peiffer, MS	2019
16. David Bell, MS	2018
17. Robert Stachler, PhD	2022
18. Jeremy Carson, MS	2017
19. Robert Stachler, MS	2016

b) Advisees

20. Luke Kozal, MS	
21. Anna Blair, MS	
22. Matthew Gazella, MS	2020
23. Craig Attenweiler, MS	2019
24. Hardik Viradiya, MS	2017
25. Katie Moosman, MS	
26. Sari Mira, MS	2019
27. Sneha Lakshminarayanan, MS	2016

c) Graduate committees (beyond students listed above)

28. Forood Karimzadeh, PhD Thesis, University of Dayton, Materials Engineering,	2021
29. Andrew Olson, MS Thesis, University of Dayton, Mechanical Engineering	2021
30. Eric Insana, M.S. Thesis, University of Dayton, Mechanical Engineering.	2020
31. Victor Burger, PhD Thesis, University of Cape Town, South Africa	2017

9. COLLABORATIONS:

a) Institutional collaborations

Current projects support the work of dozens of sustainable aviation fuel companies, gas turbine companies, and air framers as well as research institutions. Specifically the following institutions have or are current collaborators: National Renewable Energy Laboratory (multiple PIs), Earth Energy Renewables (now owned by ARA), CaptisAire, Boeing, Pacific Northwest National Laboratory, Sandia National Labs (multiple PIs), Lawrence Berkley National Lab, DLR Germany, Washington State University, NRC Canada, Sasol, University of Sheffield, Environmental C&C, Los Alamos National Lab, Oak Ridge National Lab, Yale, Trinity College Dublin, Mercurius Biofuels, University of Florida, NAVAIR, Georgia Tech, GranBio, General Electric Aviation, Stanford, Pratt & Whitney, University of Illinois-Urbana Champaign, Prometheus fuels, Air Company, CleanJoule, Alder Fuels, Greenfield Global, University of Alberta, United Airlines, World Energy, Neste, Rolls-Royce, Forge, Boom Supersonic, Argonne National Lab, CAAFI, and others.

The Heyne's lab is the low TRL centroid for sustainable aviation fuel testing and evaluation at low volumes and at the forefront of 100% sustainable aviation fuel development.

b) Sabbatical leaves:

Nothing to report

c) International collaborations:

i. Current international collaborations:

1. Prof./Dr. Stephen Dooley, Trinity College Dublin, Ireland
2. Mr. Chris Lewis, UK SAF Clearinghouse, Chris Lewis Fuels Consultancy Ltd., UK (formerly at Rolls-Royce)
3. Prof./Dr. Daniele Castello, Aalborg University, Denmark

4. Prof./Dr. Lasse Rosendahl, Aalborg University, Denmark
5. Dr. Joanna Bauldreay, Bauldreay Jet Fuel Consulting Ltd, UK (formerly of Shell Oil)
6. Dr. Alisdair Clark, British Petroleum, UK
7. Ms. Hanan Elsayed, Greenfield Global, Canada
8. Prof./Dr. Arno De Klerk, University of Alberta, Canada
9. Prof./Dr. Joseph Lefkowitz, The Technion, Israel
10. Dr. Rafal Gieleciak, Natural Resources Canada, CanmetENERGY-Devon, Canada
11. Dr. Patrick LeClerq, DLR Germany, Germany

ii. Former international collaborations:

12. Dr. Bastian Rauch, DLR Germany, Germany
13. Prof./Dr. Bhupendra Khandelwal, University of Sheffield, UK (now at the University of Alabama)
14. Dr. Victor Burger, Sasol and University of Cape Town, South Africa (now at BMW)
15. Prof./Dr. Henry Curran, NUI Galway, Ireland
16. Prof./Dr. Epaminondas Mastorakos, University of Cambridge, UK
17. Dr. Pedro Magalhaes de Oliveira, University of Cambridge, UK

10. SERVICE ACTIVITIES

a) *Center service*

1. Hiring authority, Research Operations Engineer (Job Code: 1467-NN_ADMINPRO), WSU Tri-Cities, BSEL, 2023.
2. Member, BSEL Safety Committee, 2022-present

b) *Departmental service*

1. **Chair**, Academic Dishonesty Sub-Committee 2016-2022
2. Faculty Search Committee, MAE Dept 2014-2015

c) *College or campus*

3. Committee member, WSU Tri-Cities Director of Facilities, 2023-2024.
4. Committee member, Campus Culture Committee, WSU Tri-Cities, 2022-2023.
5. Committee member, Strategic plan task force: Research, VCEA, 2023.
6. Committee member, Research Advisory Committee, WSU Tri-Cities, 2022-present
7. Engineers in Technical Humanitarian Oriented Service Learning (ETHOS) Center Development and Operation, School of Engineering, 2015-2022

d) *University*

8. Sustainability Scholar, Hanley Sustainability Institute, 2019-2022
9. Sustainability Delusion Working Group, Hanley Sustainability Institute, 2019
10. **Chair**, Athletics Advisory Committee, 2019-2022
11. Chair Elect, Athletics Advisory Committee, 2017-2019
12. Athletics Gender Equity Sub-committee, 2017-2022
13. Athletics Advisory Committee, 2016-2022

e) State

14. Member, Washington State Alternative Aviation Fuels Working Group, WA State Legislative initiative, 2024.
15. Member, Washington State Alternative Aviation Fuels Working Group, WA State Legislative initiative, 2023.
16. Member, Washington State Alternative Aviation Fuels Working Group, WA State Legislative initiative, 2022.

f) Other institution or firm contributions to shared governance

Recruiting Commitments

17. Graduate Student Open House, 2019
18. Football On Campus Visit Faculty Rep., 2019
19. Department Visit Faculty Rep. Host, 2018
20. Football On Campus Visit Faculty Rep., 2018
21. Summer Bridge Program (Instructor), 2017
22. Department Visit Faculty Rep. Host, 2017
23. Football On Campus Visit Faculty Rep., 2017
24. Department Visit Faculty Rep. Host, 2016
25. Football On Campus Visit Faculty Rep., 2016
26. Summer Bridge Program (Instructor), 2015
27. Football On Campus Visit Faculty Rep., 2015
28. Department Visit Faculty Rep. Host, 2015

g) Service to professional groups or associations

Reviewer (>50 archival publications):

1. Fuel
2. Energy & Fuels
3. Combustion and Flame
4. Proceedings of the Combustion Institute
5. Energies
6. Frontiers in Energy Research
7. Journal of Hydrogen Energy
8. ASME TurboExpo
9. Combustion Science and Technology
10. Nature Energy

Professional meeting or conference organization:

1. **Virtual host** and committee member, CAAFI Mini-Symposium, virtual, June 2023.
2. **Virtual host** and committee member, CAAFI Mini-Symposium, virtual, June 2021. 504 participants.
3. Committee member, AIAA Fuels Book Review Meeting, University of Dayton, Dayton, OH, November 2019.
4. Committee member, NJFCP Year 5 Review Meeting, OAI/NASA Glenn, Cleveland, OH, March 2019.
5. **General Chair**, ASME Dayton Engineering Sciences Symposium, 2018

6. Committee member, NJFCP Year 4 Mid-Year Review Meeting, GE Learning Center, Cincinnati, OH, August 2018.
7. **Committee Chair**, NJFCP Year 3 Year End Review Meeting, University of Dayton, Dayton, OH, Dec. 2017.
8. Committee member, NJFCP Year 3 Mid-Year Review Meeting, Purdue University, West Lafayette, IN, June 2017.
9. Committee member, NJFCP Year 2 Year End Review Meeting, Rolls-Royce, Indianapolis, IN, Dec. 2016.
10. Committee member, ASME, Dayton Engineering Sciences Symposium, 2016
11. Committee member, NJFCP Year 2 Mid-Year Review Meeting, United Technologies Research Center, Hartford, CT, June 2016.
12. Committee member, NJFCP Year 1 Mid-Year Review Meeting, Sandia National Laboratories, Livermore, CA, Oct. 2015.
13. Committee member, ASME, Dayton Engineering Sciences Symposium, 2015
14. Committee member, NJFCP Year 1 Mid-Year Review Meeting, GE Learning Center, Evendale, OH, May 2015.
15. Committee member, NJFCP OEM Feedback Meeting and Strategic Planning, GE Learning Center, Cincinnati, OH, May 2015.
16. Committee member, NJFCP Kick-off Meeting, TechEdge-Wright Brothers Institute, Dayton, OH, Dec. 2014.

Leadership roles to professional organizations and societies

1. Committee member, CRC Sustainable Mobility Committee, 2023.
2. CHEVRON RESEARCH AWARD OF EXCELLENCE IN HONOR OF JOHN BACHA, IASH, 2023.
3. Quad-chair, CAAFI (Commercial Aviation Alternative Fuels Initiative) R&D Committee, 2023
4. Quad-chair, CAAFI (Commercial Aviation Alternative Fuels Initiative) R&D Committee, 2022
5. Quad-chair, CAAFI (Commercial Aviation Alternative Fuels Initiative) R&D Committee, 2021
6. Quad-chair, CAAFI (Commercial Aviation Alternative Fuels Initiative) R&D Committee, 2020
7. Board Member, ASME Dayton Section, 2020
8. Quad-chair, CAAFI (Commercial Aviation Alternative Fuels Initiative) R&D Committee, 2019
9. Board Member, ASME Dayton Section, 2019
10. Board Member, ASME Dayton Section, 2018
11. Co-chair, ASME Dayton Engineering Sciences Symposium, 2017

11. APPENDIX A