

BRET COLIN WINDOM

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EDUCATION

University of Florida, Gainesville, FL 32611

Ph.D., Mechanical Engineering, August 8, 2009

Dissertation title: Optical diagnostic techniques in tribological analysis: applications to wear film characterization, solid lubricant chemical transition, and electrical sliding contacts.

University of Florida, Gainesville, FL 32611

M.S., Mechanical Engineering, August 2006

Thesis title: Implementation of aerodynamic focusing and a dual-pulse configuration to improve laser-induced breakdown spectroscopy aerosol particle sampling rates and analyte response.

University of Florida, Gainesville, FL 32611

B.S., Mechanical Engineering, December 2004

Cum Laude

WORK EXPERIENCE

- I. Assistant Professor** (August 2016 - Present)
Colorado State University, Fort Collins, Co
- II. AFRL Summer Faculty Fellowship** (May 2019 – August 2019)
US Air Force Academy (USAFA)
Supervisor: Dr. Mitch Hageman, 719.333.9220
- III. Visiting Research Scientist – Visiting Faculty Program** (May 2016 – August 2016)
National Renewable Energy Laboratory (NREL)
Supervisor: Dr. Robert McCormick, 303.275.4432
- IV. Assistant Professor** (August 2013 – August 2016)
University of Colorado Colorado Springs, Colorado Springs, Co
- V. Combustion Energy Frontier Research Center Postdoctoral Fellowship** (May 2011 – July 2013)
 - i. University of Southern California, Los Angeles, CA
Supervisor: Prof. Fokion Egolfopoulos, 213.740.0480
 - ii. Princeton University, Princeton, NJ
Supervisor: Prof. Yiguang Ju, 609.258.5644
- VI. National Academy of Sciences Postdoctoral Associate** (July 2009 - May 2011)
The National Institute of Standards and Technology (NIST), Boulder, CO
Supervisor: Dr. Thomas J. Bruno, 303.497.5158
- VII. Graduate Research Assistant** (January 2005 – July 2009)
Department of Mechanical and Aero. Engineering, University of Florida, Gainesville, FL
Supervisor: Prof. David W. Hahn, 352.392.0807

TEACHING EXPERIENCE

Classes taught:

- Thermodynamics
- Propulsion
- Heat and Mass Transfer
- Combustion (graduate)
- Senior Design
- Building Energy Systems

Students Advised in Laboratory/Research: (Institution, Expected Graduation)

- Post-doctoral Students: Fran Chan (CSU, 2019-current)
- Master's students: Colin Curtis (UCCS, Graduated), Stephen Burke (CSU, Fall 2019), Mangesh Dake (CSU, Graduated), Bahar Abdollahipoor (CSU, Graduated), Anish Jadhav (CSU, Graduated), McKay Stoker (CSU, Graduated), Geet Padhi (CSU, Graduated), Jesse Schulthess (CSU, Fall 2020), Miguel Castro (CSU, Summer 2020), Michael Sartini (Summer 2021)
- PhD student: Radi Alsulami (CSU, Graduated, Fall 2019), Diego Bestel (CSU, Summer 2021, GRA), Stephen Lucas (Summer 2023), Marshall Rayno (Summer 2023)
- Funded Undergraduate Students: Brandon Patz (UCCS, Graduated), Rose Szczur (UCCS, Graduated), Jeffery Baston (UCCS, Graduated), Stephen Burke (UCCS, Graduated), Robert Rhoads (UCCS/NREL, Graduated), Irene Delgado (UCCS, Graduated), Diego Bestel (UCCS, Graduated), Carson Belknop (CSU, Graduated), Danielle Bartholet (UF/CSU, Graduated), Brye Windell (CSU, Senior), Miguel Valles (CSU, Graduated), Matthew Kronwall (CSU, Senior), Luca Maxeiner (Hochschule RheinMain, Graduated), Nick Scrivens (CSU, Junior), Carson Green (CSU, Freshman)

SUCCESSFUL GRANTS AND FUNDING

1. Gas Machinery Research Council (GMRC), "High Pressure Vapor Liquid Equilibrium Measurements of Gas and Water Mixtures using Nuclear Magnetic Resonance Spectroscopy", PI, Requested \$90,000, Awarded \$90,000, January 2020.
2. Gas Machinery Research Council (GMRC), "Analytical Lubrication Model Informed by Experimental Data", PI, Requested \$85,000, Awarded \$85,000, January 2020.
3. Caterpillar Inc. "Lubrication Oil Droplet Ignition Study using a Rapid Compression Machine", Co-PI, Requested \$134,691, Awarded \$134,691, September 2019
4. Department of Energy, "Poly(oxymethylene) Ethers as a High Cetane, Low Sooting Biofuel Blendstock for Use in Medium to Heavy Duty Mixing Controlled Compression Ignition Engines", PI, Requested \$1,972,050, Awarded: \$1,972,050, September 2019.
5. Colorado Energy Research Collaboratory, "Poly(oxymethylene) Ethers as a High Cetane, Low Sooting Biofuel Blendstock for Use in Medium to Heavy Duty Mixing Controlled Compression Ignition Engines", PI, Requested \$85,000, Awarded \$85,000.
6. Department of Defense STTR - Subcontract from Pioneer Astronautics, "Storable Clean Ethane-ethylene Nitrous Engine (SCENE)", PI, Requested \$30,000, Awarded \$30,000, April 2019.
7. AFRL Summer Faculty Fellowship, "The Study of Two-phase Combustion of Jet Fuel Surrogates Using Advanced Diagnostics at the US Air Force Academy", PI, \$30,000, May 2019.
8. Gas Machinery Research Council (GMRC), "Regionally Greenhouse Gas Analysis of Compressor Driver", Co-PI, Requested \$75,000, Awarded \$75,000, March 2019.
9. Gas Machinery Research Council (GMRC), "Rod Packing Leakage Monitoring and Prevention Survey of Technologies and Recommended Practices", PI, Requested \$75,000, Awarded \$75,000, March 2019.
10. Gas Machinery Research Council (GMRC), "Field-site High Pressure Oil Sampling and Gas Dilution Measurements", PI, Requested \$75,000, Awarded \$75,000, March 2019.

11. Gas Machinery Research Council (GMRC), "Transient High Pressure Oil-gas Dilution Study", PI, Requested \$95,000, Awarded \$95,000, March 2019.
12. Air Force Research Lab Subcontract from Busek Inc, "Support of SBIR Phase I High Speed Positive Displacement Injector for Rate Shaping", PI, Requested \$25,000, Awarded: \$15,000, August 2018.
13. DOE - Argonne, "Advanced Vehicle Technology Competitions – EcoCar" Co-PI, \$112,000, August 2018.
14. Colorado Energy Research Collaboratory, "Cost Share: High Efficiency, Low Cost & Robust Hybrid SOFC/IC Engine Power Generator", Co-PI, Requested \$75,000, Awarded: \$75,000. April 2018.
15. ARPA-e, "High Efficiency, Low Cost & Robust Hybrid SOFC/IC Engine Power Generator", July 2018, Co-PI, Requested: \$4,000,000, Awarded: \$3,081,864 (\$998,458 awarded to CSU).
16. Department of Energy, "Expanding the Knock/Emissions/Misfire Limits for the Realization of Ultra-Efficiency Heavy Duty Natural Gas Engines Low Emissions, High", May 2018, Co-PI, Requested: \$1,257,633, Awarded: \$1,257,633
17. Colorado State University Energy Institute, "A New Approach in Evaluating the Sooting Tendency of Liquid Fuels Using a Spray Flame Burner", April 2018, Requested: \$4,500, Awarded: \$4,500
18. Pacific Northwest National Laboratory, "Two-phase flame sooting tendency of fuels produced via hydrothermal liquefaction", February 2018, co-PI, Requested \$110,000, Awarded \$110,000.
19. CSU Energy Institute - Undergraduate research discovery and mentoring internship, "Development of a Spray Burner to Study the Impact of Preferential Evaporation on Turbulent Flame Dynamics", 12/15/2016, PI, Requested: \$7,000, Awarded: \$3,650.
20. National Science Foundation - Extreme Science and Engineering Discovery Environment (XSEDE), "Computational theoretical, multiscale, and phenomenological modeling of solid & fluid mechanics in extreme environments", October 15, 2016, Co-PI, Requested: 1,500,000 CPU hours, Awarded: 704,691CPU hours, value of \$24,562.95.
21. Honda R&D Americas, "Onboard Refueling Vapor Recovery System Testbed and Simulation", October 28, 2016, PI, Requested: \$309,985, Awarded: \$309,985.
22. U.S. Department of Defense, "High Power Optical Diagnostics for Large Hydrocarbon Fuel Combustion and Flame Research", June 1, 2016, PI, Requested: \$362,384, Awarded: \$362,384.
23. Department of Energy/National Renewable Energy Laboratory – Visiting Faculty Program (VFP), "Optimized fuel composition and operating parameters for ethanol-gasoline direct injection spark ignition engines", Summer 2016, PI, Requested: \$25,000, Awarded: \$25,000.
24. UCCS Associate Vice Chancellor for Research and Faculty Development (AVCRFD) - Committee on Research and Creative Works (CRCW), "Optimized fuel composition and operating parameters for ethanol-gasoline direct injection spark ignition engines", March 6, 2016, PI, Requested: \$7,500, Awarded: \$7,500.
25. National Science Foundation - Extreme Science and Engineering Discovery Environment (XSEDE), "Methodology and Phenomenological Simulation Considerations for Multi-Application Gas Kinetic Modeling", October 15, 2015, Co-PI, Requested: 2,000,000 CPU hours, Awarded: 377,378 CPU hours, value of \$24,000.
26. UCCS Undergraduate Research Academy (URA), "Flame Extinction Behavior of Alternative Fuels", April 25, 2015, PI, Requested: \$7,000, Awarded: \$7,000.
27. UCCS Associate Vice Chancellor for Research and Faculty Development (AVCRFD) - Committee on Research and Creative Works (CRCW), "Derived Measurement of the Enthalpy of Vaporization for Complex Fuels Using a Reduced Pressure Distillation Curve Approach", March 31, 2014, PI, Requested: \$7,500, Awarded: \$7,500.

28. UCCS Undergraduate Research Academy (URA), “Volatility Characteristics of Alternative Fuels with Application to Novel Internal Combustion Engines”, April 25, 2014, PI, Requested: \$7,000, Awarded: \$6,000.
29. UCCS - EAS Undergraduate Research Scholars Program, “Detailed characterization of turbulent flame planar laser induced fluorescence images”, April 25, 2014, PI, Requested: \$3,000, Awarded: \$1,500.
30. NASA – Colorado Space Grant Consortium, “Colorado Space Grant - COURSE Supplement”, Awarded: 9/16/2014, PI, Requested: \$5,250, Awarded: \$5,250.
31. National Science Foundation - Extreme Science and Engineering Discovery Environment (XSEDE), “Methodology and Phenomenological Simulation Considerations for Multi-Application Gas Kinetic Modeling”, Awarded 10/14/14, Co-PI, Requested 1,500,000 hrs of high performance computational time, Awarded 734,060 hrs valued at \$25,417.15.
32. U.S. Department of Commerce – National Institute of Standards and Technology, “Professional Research Experience Program: Undergraduate/Graduate Student and Post-doctoral Research Fellowships at the National Institute of Standards and Technology”, December 13, 2013, PI, Requested: \$5,567,501 (over 5 years), Awarded: \$5,567,501 (over 5 years).

PEER REVIEWED PUBLICATIONS

1. Alsulami R, Windell B, Nates S, Wang W, Won SH, Windom BC. “*Investigating the role of atomization on flame stability of liquid fuels in an annular spray burner*”, Fuel, 265:116945, **2020**.
2. Shirazi SA, Abdollahipoor B, Windom B, Reardon KF, Foust TD. “*Effects of blending C3-C4 alcohols on motor gasoline properties and performance of spark ignition engines: A review*”. Fuel Processing Technology, 1;197:106194, **2020**.
3. Braun RJ, Reznicek E, Cadigan C, Sullivan NP, Danforth R, Bandhauer TM, Garland S, Olsen D, Windom B, Schaffer B. Development of a Novel High Efficiency, Low Cost Hybrid SOFC/Internal Combustion Engine Power Generator. ECS Transactions. **2019** Jul 10;91(1):355-60.
4. Ratcliff MA, Windom B, Fioroni GM, John PS, Burke S, Burton J, Christensen ED, Sindler P, McCormick RL. “*Impact of ethanol blending into gasoline on aromatic compound evaporation and particle emissions from a gasoline direct injection engine*”. Applied Energy, 250:1618-31, **2019**.
5. Shirazi SA, Abdollahipoor B, Martinson J, Windom B, Foust TD, Reardon KF. “*Effects of dual-alcohol gasoline blends on physiochemical properties and volatility behavior*”. Fuel, 15;252:542-52, **2019**.
6. Tryner J, Quinn C, Windom BC, Volckens J. “*Design and evaluation of a portable PM 2.5 monitor featuring a low-cost sensor in line with an active filter sampler*”. Environmental Science: Processes & Impacts, 21(8):1403-15, **2019**.
7. Stoker TM, Dake M, Nibbelink L, Henderson M, Shaw J, Windom B. “*Development and Validation of a CFD Simulation to Model Transient Flow Behavior in Automotive Refueling Systems*”. SAE Technical Paper; **2019**.
8. Alsulami, R. A., Nates, S., Wang, W., Won, S. H., **Windom, B.** “*Effects of varying liquid fuel and air co-flow rates on spray characterization of an annular co-flow spray burner*”, Proceedings of the ASME Turbo Expo, June 17-21, **2019**.
9. Abdollahipoor, B., Shirazi, S. A., Reardon, K. F., & Windom, B. C. “*Near-azeotropic volatility behavior of hydrous and anhydrous ethanol gasoline mixtures and impact on droplet evaporation dynamics*”. Fuel Processing Technology, 181, 166-174, **2018**.
10. Shirazi, S. A., Abdollahipoor, B., Martinson, J., Reardon, K. F., & Windom, B. C. “*Physiochemical Property Characterization of Hydrous and Anhydrous Ethanol Blended Gasoline*”. Industrial & Engineering Chemistry Research, 57(32), 11239-11245, **2018**.

11. Dake, M. R., FitzWilliam, J., Henderson, M., Shaw, J., Swanson, M., & Windom, B. "Considerations for CFD Simulations of a Refueling Pump Nozzle with Application to the Computer Aided Engineering of a Vehicle Refueling System". SAE Technical Paper. No. 2018-01-0489, **2018**.
12. Burke, S., Rhoads, R., Ratcliff, M., McCormick, R. & Windom, B.C., "Measured and Predicted Vapor Liquid Equilibrium of Ethanol-Gasoline Fuels with Insight on the Influence of Azeotrope Interactions on Aromatic Species Enrichment and Particulate Matter Formation in Spark Ignition Engines," SAE Technical Paper 2018-01-0361, **2018**.
13. Burke, S., Rhoads, R., McCormick, R., Ratcliff, M., **Windom, B.C.**, "Distillation-based Droplet Modeling of Non-Ideal Oxygenated Gasoline Blends: Investigating the Role of Droplet Evaporation on PM Emissions", SAE Int. J. Fuels Lubr. 10(1), **2017**.
14. **Windom, B.C.**, Won, S.H., Jiang, B., Ju, Y., Hammack, S., Ombrello, T., Carter, C., "Study of ignition chemistry on turbulent premixed flames of n-heptane/air by using a reactor assisted turbulent slot burner", Combustion and Flame, **2016**, 169, 19-29.
15. Lefkovitz, J., Uddi, M., **Windom, B.C.**, Lou, G., Ju, Y., "In situ species diagnostics and kinetic study of plasma activated ethylene pyrolysis and oxidation in a low temperature flow reactor", *Proceedings of Combustion Institute*, **2015**, 35(3), 3505-3512.
16. Won, S.H., **Windom, B.C.**, Jiang, B., Ju, Y., The role of low temperature fuel chemistry on turbulent flame propagation" *Combustion and Flame*, **2014**, 161(2), 475-483.
17. Shukla, B., Gururajan, V., Eisazadeh-Far, K., **Windom, B.C.**, Egolfopoulos, F.N., "Effects of electrode geometry on transient plasma induced ignition" *Journal of Physics D: Applied Physics*, **2013**, 4, 205201.
18. **Windom, B.C.** and Bruno, T.J., "Application of pressure-controlled advanced distillation curve analysis: Virgin and Waste Oils" *Industrial & Engineering Chemistry Research*, **2013**, 52(1), 327-337.
19. **Windom, B.C.**, Bruno, T.J. "Pressure-Controlled Advanced Distillation Curve Analysis of Biodiesel Fuels: Assessment of Thermal Decomposition" *Energy & Fuels*, **2012**, 26(4), 2407-2415.
20. **Windom, B.C.**, Huber, M.L., Bruno, T.J., Lown, A.L., Lira, C.T., "Measurements and Modeling Study on a High-Aromatic Diesel Fuel" *Energy & Fuels*, **2012**, 26(3), 1787-1797.
21. **Windom, B.C.**, Bruno, T.J., "Assessment of the Composition and Distillation Properties of Thermally Stressed RP-1 and RP-2: Application to Fuel Regenerative Cooling" *Energy & Fuels*, **2011**, 25(11), 5200-5214.
22. Bruno, T.J., **Windom, B.C.**, "Method and Apparatus for the Thermal Stress of Complex Fluids: Application to Fuels" *Energy & Fuels*, **2011**, 25(6), 2625-2632.
23. Bruno, T.J., **Windom, B.C.**, "Chromatographic sample collection from two-phase flows" *Journal of Chromatography A*, **2011**, 1218(48), 8594-8599.
24. **Windom, B.C.**, Sawyer, W.G., and Hahn, D.W., "A Raman spectroscopic study of MoS₂ and MoO₃: applications to tribological systems" *Tribology Letters*, **2011**, 42(3), 301-310.
25. **Windom, B.C.**, Lovestead, T.M., Mascal, M., Nitkin, E.B., and Bruno, T.J., "Advanced distillation curve analysis on ethyl levulinate as a diesel fuel oxygenate and a hybrid biodiesel fuel" *Energy & Fuels*, **2011**, 25(4), 1878-1890.
26. Lovestead, T.M., **Windom, B.C.**, Riggs, J.R., Nickell, C., and Bruno, T.J., "Assessment of the Compositional Variability of RP-1 and RP-2 with the Advanced Distillation Curve Approach" *Energy & Fuels*, **2010**, 24(10), 5611-5623.
27. **Windom, B.C.** and Bruno, T.J., "Novel reduced pressure-balance syringe for chromatographic analysis" *Journal of Chromatography A*, **2010**, 1217(47), 7434-7439.
28. **Windom, B.C.** and Bruno, T.J., "Improvements in the measurement of distillation curves. 5. reduced pressure composition-explicit approach" *Industrial & Engineering Chemistry Research*, **2011**, 50(2), 1115-1126.

29. Lovestead, T.M., **Windom, B.C.** and Bruno, T.J., “Application of the Advanced Distillation Curve Method to the Development of Cuphea-Derived Biodiesel Fuel,” *Energy and Fuels*, **2010**, 24(6), 3665–3675.
30. **Windom, B.C.**, Lovestead, T.M. and Bruno, T.J., “Application of the Advanced Distillation Curve Method to the Development of Unleaded Aviation Gasoline,” *Energy and Fuels*, **2010**, 24(5), 3275–3284.
31. **Windom, B.C.**, Hahn, D.W. “Laser ablation-laser induced breakdown spectroscopy (LA-LIBS): A means for overcoming matrix effects leading to improved analyte response” *Journal of Analytical Atomic Spectroscopy*, **2009**, 24(12), 1665-1675.
32. **Windom, B.C.**, Diwakar, P.K., and Hahn D.W. “Dual-pulse LIBS for analysis of gaseous and aerosol systems: plasma-analyte interactions” *Spectrochimica Acta Part B*, **2006**, 61, 788-796.

CONFERENCE PROCEEDINGS

1. Lucas, S., Alsulami, R., Hageman, M., Knadler, M., Windom, B.C., “Combustion and droplet behavior of jet fuel surrogates in a two-phase reacting flow”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
2. Alsulami, R., Windell, B., Lucas, S., Windom, B.C., “Flame blowout and liftoff of jet fuels with different physical and chemical properties”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
3. J. Mohr, A. Zdanowicz, J. Tryner, K. Gustafson, J. Venegas, B. Windom, D. Olsen, A. Marchese, “Ignition, flame propagation, and end-gas autoignition studies of natural gas/EGR blends in a rapid compression machine”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
4. S. Bayliff, A. Marchese, B. Windom, D. Olsen, “The effect of EGR on knock suppression, efficiency, and emissions in a stoichiometric, spark ignited, natural gas engine”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
5. A. Zdanowicz, J. Mohr, J. Tryner, K. Gustafson, B. Windom, D.B. Olsen, G. Hampson, A.J. Marchese, “Effect of fuel reactivity and end-gas temperature on autoignition and flame propagation rate in primary reference fuel mixtures at elevated temperature and pressure”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
6. A. Balu, T. Bandhauer, B. Windom, S. Garland, R. Braun, D.B. Olsen, “Operation of a SI engine fueled by simulated exhaust anode tail-gas from a SOFC”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
7. D. Bestel, B. Windom, D. Olsen, A. Marchese, S. Bayliff, H. Xu, “3-D Modeling of the CFR engine for the investigation of knock on natural gas”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
8. M. Countie, B. Windom, T. Bandhauer, S. Garland, R. Braun, D. Olsen, “Predictive modeling of a spark ignition SOFC anode tailgas engine”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
9. G. Padhi, A. Balu, S. Garland, D. Olsen, T. Bandhauer, B. Windom, “Combustion modelling and simulation of dilute syngas fuels in a CFR engine”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
10. R. Alsulami, B. Windell, B. Windom, “Influence of physical properties of conventional, alternative, and surrogate jet fuels on soot formation in a spray flame”, Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.

11. Braun, R.J., Reznicek, E., Cadigan, C., Sullivan, N.P., Danforth, R., Bandhauer, T. M., Garland, S. D., Olsen, D. B., Windom, B. C., Schaffer, B. Development of a Novel High Efficient, Low Cost Hybrid SOFC/Internal Combustion Engine Power Generator. 16th International Symposium on Solid Oxide Fuel Cells, 2019.
12. Bestel, D., Bayliff, S., Xu, H., Marchese, A., Olsen, D., Windom, B.C., “3-D Modeling of the CFR Engine for the Investigation of Knock on Natural Gas”, 11th U. S. National Combustion Meeting, Pasadena, California, March 24–27, 2019.
13. Padhi, G., Balu, A., Olsen, D., Windom, B.C., “Combustion Modelling and Simulation of Dilute Syngas Fuels in a CFR Engine”, 11th U. S. National Combustion Meeting, Pasadena, California, March 24–27, 2019.
14. Alsulami, R., Windell, B., Nates S., Wang, W., Won, S.H., Windom, B.C., “Investigating the Role of Atomization on Flame Stability of Liquid Fuels in Spray Burner”, 11th U. S. National Combustion Meeting, Pasadena, California, March 24–27, 2019.
15. Alsulami, R., Jadhav, A., Windell, B., Windom, B.*, “Investigation on the Role of Phase Change of a Liquid Fuel Spray on the Flame Stability and Behavior”, Western States Section of the Combustion Institute – Spring 2018 Meeting, Oregon State University, Bend Oregon, March 25-27, 2018.
16. Alsulami, R., Windell, B., **Windom, B.C.**, Exploring the Role of Physical and Chemical Properties on the Ignition and Flame Stability of Liquid Fuels with a Spray Burner and Fuel Ignition Tester (FIT), *AIAA SCITECH Forum*, Kissimmee, FL, January 8-12, 2018.
17. Burke, S., Bartholet, D., McCormick, R., Ratcliff, M., **Windom, B.C.**, Investigation of non-Ideal Gasoline-Ethanol Vaporization Behavior Using an Ethanol, Cyclohexane, and Benzene Surrogate, Proceedings for the Western States Section of the Combustion Institute, Laramie, WY, October 2-3, 2017.
18. Jadhav, A., Alsulami, R., **Windom, B.C.**, Global Diffusion Flame Extinction Strain Rate Experiments of Single Large Hydrocarbon Fuels, Proceedings for the Western States Section of the Combustion Institute, Laramie, WY, October 2-3, 2017.
19. Alsulami, R., Windell, B., **Windom, B.C.**, The Effect of Spray Burner Outlet Configuration, Nozzle Position and Nozzle Type on the Flame Behavior and Stability of Liquid Fuels, Proceedings for the Western States Section of the Combustion Institute, Laramie, WY, October 2-3, 2017.
20. Burke, S., Rhoads, R., McCormick, R., Ratcliff, M., **Windom, B.C.**, A UNIFAC-based Approach to Gasoline Droplet Evaporation and the Role of Oxygenates on PM Precursor Vaporization, Proceedings for the 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.
21. Curtis, C.*, Patz, B., Bruno, T.J., **Windom, B.C.**, “Combustion and Flame Behaviors of Endothermic Fuels”, *Proceedings for the Western States Section of the Combustion Institute Spring Meeting*, Seattle, WA, March 21-23, 2016.
22. Won, S.H., Reuter, C.B., Nakane, S., **Windom, B.C.**, Ju, Y., “Effect of Ignition on Turbulent Premixed Flames of n-Heptane and Toluene”, *53rd AIAA Aerospace Sciences Meeting*, Orlando, FL, January 5-9, **2015**.
23. Burke, S., **Windom, B.C.**, “Derived Measurement of the Enthalpy of Vaporization of Complex Fuels Using a Variable Pressure Distillation Curve Approach”, *249th ACS National Meeting*, Denver, CO, March 22-26, **2015**.
24. Patz, B., **Windom, B.C.**, “Azeotropic Volatility Behavior of Hydrous Ethanol Gasoline Mixtures”, *249th ACS National Meeting*, Denver, CO, March 22-26, **2015**.
25. Lefkovitz, J., **Windom, B.C.**, Uddi, M., MacDonald, W., Adams, S., Ju, Y., “Time Dependent Measurements of Species Formation in Nanosecond-Pulsed Plasma Discharges in C₂H₄/O₂/Ar Mixtures”, *52nd AIAA Aerospace Sciences Meeting*, National Harbor, MD, January 13-17, **2014**.

26. **Windom, B.C.**, Won, S.H., Jiang, B., Ju, Y., Hammack, S., Ombrello, T., Carter, C., “Detailed Characterization of Low Temperature Chemistry and Turbulence Interaction in Reactor-Assisted Turbulent Premixed Flames”, *52nd AIAA Aerospace Sciences Meeting*, National Harbor, MD, January 13-17, **2014**.
27. **Windom, B.C.**, Won, S.H., Jiang, B., Ju, Y., “Detailed Characterization of Low Temperature Chemistry and the Influence on Turbulent Burning velocities for n-Heptane and Iso-Octane Reactor-Assisted Turbulent Flames”, *Western States Section of the Combustion Institute Technical Meeting*, Fort Collins, CO, October 7-8, **2013**.
28. **Windom, B.C.**, Won, S.H., Jiang, B., Ju, Y., “Studies of Turbulent Flame Propagation and Chemistry Interaction at Elevated Temperatures and High Reynolds Numbers”, *8th U.S. National Combustion Meeting*, Park City, UT, May 19-22, **2013**.
29. **Windom, B.C.**, Won, S.H., Wada, T., Jiang, B., Ju, Y., “Study of Turbulent Flame Propagation and Surface Characteristics at Large Reynolds Numbers”, *51st AIAA Aerospace Sciences Meeting*, Grapevine, TX, January 7-10, **2013**.
30. Uddi, M., Lefkowitz, J., **Windom, B.C.**, Ju, Y., “Species Measurements of Ethylene Oxidation in a Nanosecond-Pulsed Plasma Discharge Using QCL Absorption Spectroscopy Near 7.6 μ m”, *51st AIAA Aerospace Sciences Meeting*, Grapevine, TX, January 7-10, **2013**.
31. **Windom, B.C.**, Xiouris, C., Fincham, A.M., Egolfopoulos, F.N., “A Study of Spherically Expanding Flames Using Particle Image Velocimetry” *2012 Spring Technical Meeting of the Western States Sections of the Combustion Institute*, Arizona State University, AZ, March 19-20, **2012**.
32. Eisazadeh-Far, K., **Windom, B.C.**, Jayachandran, J., Fincham, A.M., Egolfopoulos, F.N., “An Experimental Study of Spherically Expanding Flames and the Determination of Laminar Flame Speeds” *2011 Fall Technical Meeting of the Western States Sections of the Combustion Institute*, University of California at Riverside, CA, October 16-18, **2011**.
33. **Windom, B.C.**, Lovestead, T.M. and Bruno, T.J., “Assessment of the Compositional Variability of RP-1 and RP-2 with the Advanced Distillation Curve Approach” *Proceedings of the 57th JANNAF Propulsion Meeting*, Colorado Springs, CO, US, May 3-7, **2010**.

ADDITIONAL PUBLICATIONS AND ARTICLES SUBMITTED

1. R. Alsulami, S. Lucas, M. Hageman, M. Knadler, J. M. Quinlan, B. Windom. “Coupling Effects of Physical and Chemical Properties on Jet Fuel Spray Flame Blowout”, *Proceedings of the Combustion Institute*. 2020, *Submitted*.
2. Diego Bestel, Scott Bayliff, Hui Xu, Anthony Marchese, Daniel Olsen, Bret Windom, “Investigation of the End-Gas Autoignition Process in Natural Gas Engines and Evaluation of the Methane Number Index”, *Proceedings of the Combustion Institute*. 2020, *Submitted*.
3. J. Mohr, B. Windom, D. Olsen, A. Marchese, “Impact of fuel reactivity and exhaust gas recirculation on ignition delay period, flame propagation, and end-gas autoignition fraction of natural gas at elevated temperature and pressure”, *Proceedings of the Combustion Institute*. 2020, *Submitted*.
4. Zdanowicz, A., Mohr, J., Tryner, J., Gustafson, K., Windom, B., Olsen, D., Hampson, G., Marchese, A., “End-Gas Autoignition Fraction and Flame Propagation Rate in Laser-Ignited Primary Reference Fuel Mixtures at Elevated Temperature and Pressure”, *Combustion and Flame*, **2019**, *Submitted*.
5. **Windom, B.C.** and Hahn, D.W., “Raman Spectroscopy”. In Wang, Q. and Chung, Y.W. (Eds.) *Encyclopedia of Tribology*, Springer, **2013**.
6. Bruno, T.J., Fortin, T.J., **Windom, B.C.**, Widegren, J.A., “Thermophysical properties of thermally stressed RP-1 and RP-2 for application to fuel regenerative cooling: a comprehensive report” *NIST Journal of Research*, **2012**.

RECENT PRESENTATIONS (* indicates presenting author, full list available upon request)

1. Lucas, S.*, Alsulami, R., Hageman, M., Knadler, M., Windom, B.C., "Combustion and droplet behavior of jet fuel surrogates in a two-phase reacting flow", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
2. Alsulami, R.*, Windell, B., Lucas, S., Windom, B.C., "Flame blowout and liftoff of jet fuels with different physical and chemical properties", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
3. J. Mohr*, A. Zdanowicz, J. Tryner, K. Gustafson, J. Venegas, B. Windom, D. Olsen, A. Marchese, "Ignition, flame propagation, and end-gas autoignition studies of natural gas/EGR blends in a rapid compression machine", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
4. S. Bayliff*, A. Marchese, B. Windom, D. Olsen, "The effect of EGR on knock suppression, efficiency, and emissions in a stoichiometric, spark ignited, natural gas engine", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
5. A. Zdanowicz, J. Mohr, J. Tryner, K. Gustafson, B. Windom, D.B. Olsen, G. Hampson, A.J. Marchese*, "Effect of fuel reactivity and end-gas temperature on autoignition and flame propagation rate in primary reference fuel mixtures at elevated temperature and pressure", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
6. A. Balu*, T. Bandhauer, B. Windom, S. Garland, R. Braun, D.B. Olsen, "Operation of a SI engine fueled by simulated exhaust anode tail-gas from a SOFC", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
7. D. Bestel*, B. Windom, D. Olsen, A. Marchese, S. Bayliff, H. Xu, "3-D Modeling of the CFR engine for the investigation of knock on natural gas", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
8. M. Countie*, B. Windom, T. Bandhauer, S. Garland, R. Braun, D. Olsen, "Predictive modeling of a spark ignition SOFC anode tailgas engine", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
9. G. Padhi*, A. Balu, S. Garland, D. Olsen, T. Bandhauer, B. Windom, "Combustion modelling and simulation of dilute syngas fuels in a CFR engine", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
10. R. Alsulami*, B. Windell, B. Windom, "Influence of physical properties of conventional, alternative, and surrogate jet fuels on soot formation in a spray flame", Proceedings for the Western States Section of the Combustion Institute, Albuquerque, NM, October 14-15, 2019.
11. Castro, M*, Bhoite, S., Marchese, A., Windom, B.C., "Computational Fluid Dynamics Of A Heavy Hydrocarbon Direct Injected Unmanned Aerial Vehicle", Rocky Mountain Fluid Mechanics Symposium, Boulder, CO, July 16, 2019.
12. Schulthess, J.*, Windom, B.C., "Transient, High Pressure Oil-gas Dilution Study", Rocky Mountain Fluid Mechanics Symposium, Boulder, CO, July 16, 2019.
13. Lucas, S.*, Alsulami, R., Windom, B.C., "Combustion and Droplet Behavior of JP-8 Surrogates in a Two-Phase Reacting Flow", Rocky Mountain Fluid Mechanics Symposium, Boulder, CO, July 16, 2019.
14. Alsulami, R. A.*, Nates, S., Wang, W., Won, S. H., Windom, B. "Effects of varying liquid fuel and air co-flow rates on spray characterization of an annular co-flow spray burner", ASME Turbo Expo, Phoenix, AZ, June 17-21, 2019.

15. Stoker TM*, Dake M, Nibbelink L, Henderson M, Shaw J, Windom B. Development and Validation of a CFD Simulation to Model Transient Flow Behavior in Automotive Refueling Systems. SAE World Congress, April 10-12, 2019, Detroit, MI.
16. Bestel, D.*, Bayliff, S., Xu, H., Marchese, A., Olsen, D., Windom, B.C., "3-D Modeling of the CFR Engine for the Investigation of Knock on Natural Gas", 11th U. S. National Combustion Meeting, Pasadena, California, March 24–27, 2019.
17. Padhi, G.*, Balu, A., Olsen, D., Windom, B.C., "Combustion Modelling and Simulation of Dilute Syngas Fuels in a CFR Engine", 11th U. S. National Combustion Meeting, Pasadena, California, March 24–27, 2019.
18. Alsulami, R.*, Windell, B., Nates S., Wang, W., Won, S.H., Windom, B.C., "Investigating the Role of Atomization on Flame Stability of Liquid Fuels in Spray Burner", 11th U. S. National Combustion Meeting, Pasadena, California, March 24–27, 2019.
19. Bestel, D.*, Windom, B., Bayliff, S., Balu, A., "Natural Gas and CFR Engine Modeling for Knock Prediction", Rocky Mountain Fluid Mechanics Research Symposium, August 13-14, 2018, Boulder, CO.
20. Stoker, M.*, Dake, M., Nibbelink, L., Henderson, M., Windom, B.*, "CFD Model for an Automobile Refueling System", Rocky Mountain Fluid Mechanics Research Symposium, August 13-14, 2018, Boulder, CO.
21. Alsulami, R.*, Jadhav, A., Windell, B., Windom, B., "Investigation on the Role of Fuel Droplet Vaporization and Atomization on Spray Flame Stability and Dynamics", Rocky Mountain Fluid Mechanics Research Symposium, August 13-14, 2018, Boulder, CO.
22. Jadhav, A., Alsulami, R., Curtis, C., Windom, B.*, "Effect of thermal decomposition of single hydrocarbon fuels on global diffusion extinction strain rates", 37th International Symposium on Combustion, July 29-August 30, 2018, Dublin Ireland.
23. Burke, S. C., Rhoads, R., Ratcliff, M., McCormick, R., **Windom, B. C.***, "The Role of Vapor Liquid Equilibrium on Particulate Matter Formation in Direct Injection Spark Ignition Engines", 37th International Symposium on Combustion, July 29-August 30, 2018, Dublin Ireland.
24. Alsulami, R., Windell, B., Jadhav, A., Windom, B.*, "Investigation on the role of fuel droplet vaporization and atomization on spray flame stability and dynamics", 37th International Symposium on Combustion, July 29-August 30, 2018, Dublin Ireland.
25. Abdollahipoor, B., Shirazi, S., Martinson, J., Burke, S., Ratcliff, M., McCormick, Reardon, K., Windom, B.*, "Physiochemical Property Characterization, Azeotropic Volatility Behavior, and Soot Tendency of Hydrous and Anhydrous Ethanol Gasoline Mixtures", Invited talk at the 20th Symposium on Thermophysical Properties, June 24-29, 2018, Boulder, CO.
26. Shirazi, S.*, Abdollahipoor, B., Windom, B., Reardon, K., "Dual-Alcohol Blending Effects on Gasoline Properties", 20th Symposium on Thermophysical Properties, June 24-29, 2018, Boulder, CO.
27. Dake, M. R.*, FitzWilliam, J., Henderson, M., Shaw, J., Swanson, M., & Windom, B. "Considerations for CFD Simulations of a Refueling Pump Nozzle with Application to the Computer Aided Engineering of a Vehicle Refueling System". SAE World Congress, April 10-12, 2018, Detroit, MI.
28. Burke, S., Rhoads, R., Ratcliff, M., McCormick, R. & Windom, B.C.*, "Measured and Predicted Vapor Liquid Equilibrium of Ethanol-Gasoline Fuels with Insight on the Influence of Azeotrope Interactions on Aromatic Species Enrichment and Particulate Matter Formation in Spark Ignition Engines," SAE World Congress, April 10-12, 2018, Detroit, MI.
29. Alsulami, R., Jadhav, A., Windell, B., Windom, B.*, "Investigation on the Role of Phase Change of a Liquid Fuel Spray on the Flame Stability and Behavior", Western States Section of the Combustion Institute – Spring 2018 Meeting, Oregon State University, Bend Oregon, March 25-27, 2018.

30. Windom, B.*, Burke, S., Alsulami, R., “The Role of Vapor Liquid Equilibrium on the Chemical Energy Conversion of Fuels with Implications to Flame Dynamics and Particulate Matter Formation”, National Institute of Standards Thermophysical Properties Seminar Series, February 14, 2018, Boulder, CO.
31. Alsulami, R.*, Windell, B., **Windom, B.C.**, Exploring the Role of Physical and Chemical Properties on the Ignition and Flame Stability of Liquid Fuels with a Spray Burner and Fuel Ignition Tester (FIT), *AIAA SCITECH Forum*, Kissimmee, FL, January 8-12, 2018.
32. Burke, S. C.*, Rhoads, R., Ratcliff, M., McCormick, R., **Windom, B. C.**, “Gasoline Droplet Evaporation and the Role of Oxygenates on In-Cylinder Particulate Matter Formation”, Boulder Fluid and Thermal Sciences Seminar, University of Colorado, Boulder, CO, November 14, 2017.
33. Dake, M.*, Henderson, M., Windom, B.C., “Computer Aided Engineering of Refueling and Emissions”, CSU Graduate Student Showcase, Fort Collins, CO, November 9, 2017.
34. Alsulami, R.*, Windell, B., **Windom, B.C.**, “The Role of Physical and Chemical Fuel Properties on Flame Stability”, CSU Graduate Student Showcase, Fort Collins, CO, November 9, 2017.
35. Abdollahipoor, B.*, Windom, B.C., “Physiochemical Property Characterization of Hydrous and Anhydrous Ethanol Blended Gasoline”, CSU Graduate Student Showcase, Fort Collins, CO, November 9, 2017.
36. McCormick, R.*, Fioroni, G., Ratcliff, M., Fouts, L., Burton, J., Sindler, P., Burke, S., Windom, B.C., “Gasoline Heat of Vaporization Measurement and Effects on Direct-Injection Spark-Ignition Engine Knock and Particle Emissions” SAE 2017 International Powertrains, Fuels and Lubricants Meeting, Beijing, China, October 17.
37. Burke, S.*, Bartholet, D., McCormick, R., Ratcliff, M., **Windom, B.C.**, Investigation of non-Ideal Gasoline-Ethanol Vaporization Behavior Using an Ethanol, Cyclohexane, and Benzene Surrogate, Proceedings for the Western States Section of the Combustion Institute, Laramie, WY, October 2-3, 2017.
38. Jadhav, A.*, Alsulami, R., **Windom, B.C.**, Global Diffusion Flame Extinction Strain Rate Experiments of Single Large Hydrocarbon Fuels, Proceedings for the Western States Section of the Combustion Institute, Laramie, WY, October 2-3, 2017.
39. Alsulami, R.*, Windell, B., **Windom, B.C.**, The Effect of Spray Burner Outlet Configuration, Nozzle Position and Nozzle Type on the Flame Behavior and Stability of Liquid Fuels, Proceedings for the Western States Section of the Combustion Institute, Laramie, WY, October 2-3, 2017.
40. Windom, B.C.*, “Chemical Energy Conversion Laboratory”, CSU Mechanical Engineering Faculty Roundtable Seminar, Fort Collins, CO, September 19, 2017.
41. Abdollahipoor, B.*, Windom, B.C., “Blending Effects of Hydrous and Anhydrous Ethanol on Gasoline Properties”, Rocky Mountain Fluid Mechanics Research Symposium, Boulder, CO, August 11, 2017.
42. Dake, M.R.*, FitzWilliam, J., Henderson, M., Shaw J., Swanson, M., Windom, B.C., “Considerations for CFD Simulations of a Refueling Pump Nozzle with Application to the Computer Aided Engineering of a Vehicle Refueling System”, Rocky Mountain Fluid Mechanics Research Symposium, Boulder, CO, August 11, 2017.
43. Bartholet, D.*, Windom, B.C., “The Role of Biofuel Species in Multicomponent Fuel Vaporization and its Impact on Ignition Timing” C2B2 NSF-REU Poster Presentation, Boulder, CO, July 24, 2017.
44. Burke, S., Rhoads, R., McCormick, R., Ratcliff, M., **Windom, B.C.***, “A UNIFAC-based Approach to Gasoline Droplet Evaporation and the Role of Oxygenates on PM Precursor Vaporization”, 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.
45. Burke, S.*, Rhoads, R., McCormick, R., Ratcliff, M., **Windom, B.C.**, “*Distillation-based Droplet Modeling of Non-Ideal Oxygenated Gasoline Blends: Investigating the Role of Droplet Evaporation on PM Emissions*”, SAE World Congress, Detroit, MI, April 4-6, 2017.

46. Alsulami, R.*, Curtis, C., Bruno, T., Windom, B.C., “The effective regenerative flame stability for liquid hydrocarbon fuels”, 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.
47. Alsulami, R.*, Belknap, C., Windom, B.C., “Linking evaporation and liquid-vapor equilibrium to flame dynamics of real fuels”, 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.
48. Windom, B.C.*, “Chemical Energy Conversion Research”, CSU Mechanical Engineering Faculty Roundtable Seminar, Fort Collins, CO, October 3, 2016.
49. Rhoads, R., Burke, S., **Windom, B.C.***, “DOE-VFP: The volatility of ethanol-gasoline fuels and its impact on particulate matter emissions from spark ignition engines” National Renewable Energy Laboratory, Golden, CO, August 18, 2016.
50. Burke, S. C.*, Rhoads, R., Ratcliff, M., McCormick, R., Windom, B. C., “Distillation-based Droplet Modeling of Non-ideal Oxygenated Gasoline Blends”, *Rocky Mountain Fluid Mechanics Research Symposium 2016*, Boulder, CO, August 9, 2016.
51. Rhoads, R., Burke, S. C., , Ratcliff, M., McCormick, R., Windom, B. C., “Optimized Fuel Composition and Operating Parameters for Ethanol-Gasoline Direct Injection Spark Ignition Engines”, *Rocky Mountain Fluid Mechanics Research Symposium 2016*, Boulder, CO, August 9, 2016.
52. Curtis, C., Gowing, D., Windom, B. C., Owens, J., Lowe, L., Bruno, T., "Combustion of Endothermic Fuels", *UCCS Mountain Lion Research Day*, Colorado Springs, CO, April 8, 2016.
53. Burke, S. C., Patz, B., Windom, B. C., "Distillation curve based approach to evaluating hydrous ethanol volatility and heat of vaporization of other complex fuels", *UCCS Mountain Lion Research Day*, Colorado Springs, CO, April 8, 2016.
54. Curtis, C.*, Patz, B., Bruno, T.J., **Windom, B.C.**, “Combustion and Flame Behaviors of Endothermic Fuels”, *Western States Section of the Combustion Institute Spring Meeting*, Seattle, WA, March 21-23, 2016.
55. **Windom, B.C.***, “The Role of Low Temperature Fuel Ignition Chemistry on Premixed Turbulent Flame Structures, Propagation, and Stability”, *Mechanical Engineering Department Seminar – Colorado State University*, Fort Collins, CO, February 11, 2016.

AWARDS

- Society of Automotive Engineering’s (SAE) Ralph R. Teetor Educator Award, 2018
- Air Force Research Lab Summer Fellowship, US Air Force Academy, 2019
- Department of Energy Summer Faculty Fellowship – National Renewable Energy Laboratory, 2016.
- First Prize in Artistic Merit at the U.S. National Combustion Meeting art competition, 2013
- National Academy of Science/National Research Council postdoctoral associateship program 2009-2011
- Elsevier Science prize for best student presentation at 2006 Laser Induced Breakdown Spectroscopy Conference, Montreal, Canada, September 2006

PROFESSIONAL AFFILIATIONS AND SERVICE ACTIVITIES

- Member of Pi Tau Sigma engineering honor society
- Member of The Combustion Institute
 - WSSCI Board Member
 - USSCI Awards Committee Member
 - Conference Sessions Chair
- Member of the Society of Automotive Engineering
 - CSU SAE Chapter Faculty Advisor
 - Rocky Mountain Region Board Member

- Member of the American Society of Engineering Education
- Member of the American Institute of Aeronautics and Astronautics