

**Frederick L. Dryer**  
**Professor Emeritus**  
**Senior Scientist**  
(July 1, 2017)

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Google Scholar: <http://scholar.google.com/citations?user=-zDOIYQAAAAJ&hl=en>

Frederick L. Dryer received a Bachelor of Aeronautical Engineering degree from Rensselaer Polytechnic Institute in 1966 and a Ph.D. degree in Aerospace and Mechanical Sciences from Princeton University in 1972. Dr. Dryer served on the Professional Research Staff in the Mechanical and Aerospace Engineering at Princeton from 1971-1981. He joined the tenured faculty in 1981 and was promoted to full professor in 1983. He served as the Undergraduate Departmental Representative from 1984-1987, and as Associate Dean of Academic Affairs for the School of Engineering and Applied Sciences from 1987-1990. Dr. Dryer joined the University of South Carolina as a Research Professor in Mechanical Engineering in October 2016.

Dr. Dryer is a former associate editor and editorial board member of *Combustion Science and Technology*, co-editor for the Proceedings of the 26<sup>th</sup> and 27<sup>th</sup> International Symposiums on Combustion, and a former editorial board member of the *International Journal of Chemical Kinetics* and of *Progress in Energy and Combustion Science*. He is currently a member of the Combustion Institute (*2012 Egerton Gold Medal Awardee; 2014 Invited Plenary Speaker*), the American Society of Mechanical Engineers (*Fellow*), the Society of Automotive Engineers (*Fellow*), the American Institute of Aeronautics and Astronautics (*Associate Fellow; 2014 Propulsion and Combustion Medal*), the American Chemical Society, and the National Fire Protection Association.

Dr. Dryer has published extensively and consulted for the government, industry and the legal profession on combustion, fire safety, energy, and emissions-abatement-related subjects. His services on advisory committees include efforts for the National Materials Advisory Board/National Research Council (five times), NASA, DOE-BES, DOE-ARPA-E, DARPA, ARO, and NIST.

Current research interests include: chemistry/chemical kinetics of fuels and hazardous waste materials as related to ignition, combustion, and emissions generation/abatement; petroleum-derived fuels, including gasoline, diesel, gas turbine, and heavy fuel oil combustion properties; non-petroleum-derived alternative fuels, their production, their chemical kinetic properties, and their ability to address U.S. energy security and reduction in net carbon cycle emissions as well as other pollutant concerns; fire safety related issues on earth and in micro gravity environments; solid phase/gas phase interactions as related to particle burning phenomena and nano-catalyst materials; emissions from internal combustion engines, including hydrocarbons, nitrogen oxides, aerosol particulates; emissions interactions including chlorine, sulfur and ash (metals) component effects in stationary energy conversion, chemical processing, and incineration.

## Education

Ph.D. – Aerospace and Mechanical Sciences - Princeton University, 1972

M. A. – Aerospace and Mechanical Sciences - Princeton University, 1968

Bachelor of Aeronautical Engineering – Rensselaer Polytechnic Institute, 1966

## Professional History

2016 – Present Educational Foundation Distinguished Research Professor, Mechanical Engineering, University of South Carolina

2015 – Present Professorial Fellow, Mechanical Engineering, University of Melbourne, Australia

2013 – Present Professor Emeritus, Senior Scholar, Mechanical and Aerospace Engineering, Princeton University

1983 – 2013 Professor, Mechanical and Aerospace Engineering, Princeton University

1987 – 1990 Associate Dean of Academic Affairs, School of Engineering and Applied Science, Princeton University

1984 – 1987 Undergraduate Departmental Representative, Mechanical and Aerospace Engineering, Princeton University

1982 – 1983 Associate Professor, Mechanical and Aerospace Engineering, Princeton University

1977 – 1982 Lecturer, Mechanical and Aerospace Engineering, Princeton University

1976 – 1981 Research Engineer, Mechanical and Aerospace Engineering, Princeton University

1972 – 1976 Professional Research Staff Member of Guggenheim Laboratories for the Aerospace Propulsion Sciences, Princeton University

1971 – 1972 Research Associate, Princeton University

## Professional Activities and Honors:

### *Professional Memberships:*

The Societies of Sigma Gamma Tau, Sigma Xi, Tau Beta Pi, American Chemical Society, American Society of Automotive Engineers (Fellow), American Institute of Aeronautics and Astronautics (Associate Fellow), American Society of Engineering Educators, American Society of Mechanical Engineers (Fellow), The Combustion Institute, National Fire Protection Association.

### *Honors:*

2014 Propulsion and Combustion Award, American Institute of Aeronautics and Astronautics.

2012 Alfred C. Egerton Gold Medal recipient, The Combustion Institute.

American Institute of Aeronautics and Astronautics; Associate Fellow, 2010.

American Society of Mechanical Engineers; Fellow, 2011.

Society of Automotive Engineers; Fellow, October, 2008.

Silver Medal, 28<sup>th</sup> International Combustion Symposium, August, 2000.

Selection Panel, 1993 DLR Science Award, Deutsche Forschungsanstalt für Luft-und Raumfahrt e.V., 1993.

### *National Committee and Advisory Board Memberships:*

Member, International Scientific Advisory Board, Cluster of Excellence “Tailor Made Fuels from Biomass”, RWTH, Aachen, Germany 2008 – present.

Member, National Materials Advisory Board/National Research Council Committee to Identify Needs to Foster Improved Fire Safety in the United States 2002–2003.

Member, Committee on Fire Safe Fuels for Aircraft, National Materials Advisory Board, Commission on Engineering and Technical Systems, National Research Council, 1996–1997.

Member, Committee on Energy Conservation in the Processing of Industrial Materials, National Materials Advisory Board, Commission on Engineering and Technical Systems, National Research Council, 1990–1993.

Member, NASA Scientific Advisory Panel on Atmospheric Effects of Aviation Project (AEAP), Earth Sciences and Applications Divisions, 1993–1995.

Chair, Engine Emissions Trace Chemistry Sub-Committee, NASA Atmospheric Advisory Panel on

Atmospheric Effects of Stratospheric Aircraft (AESAs), Earth Sciences and Applications Divisions, Office of Space Science and Applications, 1993–1995.

Member, National Academy of Sciences NRC Panel on Impacts of Diesel Powered Light Duty Vehicles, 1979-1980.

Member, National Academy of Sciences NRC Carbon Monoxide Control Assessment Panel, 1980.

*Editorial Activities:*

Editorial Board Member, *Progress in Energy and Combustion Science*, 2002–2005.

Co-organizer, of the Droplets and Sprays Colloquium for the 29<sup>th</sup> International Symposium on Combustion, Sapporo, Japan, July 21–26, 2002.

Co-editor (and Co-chair, Publication Committee) 27<sup>th</sup> International Combustion Symposium Proceedings, Boulder CO, July 1998.

Editorial Board, *International Journal of Chemical Kinetics*, 1997–2002.

Co-editor (and Co-chair, Publication Committee) 26<sup>th</sup> International Combustion Symposium, The Combustion Institute, Pittsburgh, PA, 1996.

Editorial Board, *Combustion Science and Technology*, 1986–1991.

Associate Editor, *Combustion Science and Technology*, 1977-1986.

*Review Activities:*

Proposal Review: ACS, ARO, DOE, NASA, NSF, ONR , NIST Technical Proposals.

Reviewer: *Combust. Flame*, *Combust. Sci. Tech.*, *Energy and Fuels*, *Enviro Sci. Tech.*, *Fuel*, *Int. J. Heat Transfer*, *Int. J. Chem. Kin.*, *J.Phys. Chem.*, *Proc. Combust. Ins.*, *AIAA Journals*, and *AICHE*.

*Selected Invitations:*

Invited Speaker, “Combustion and Emissions Properties of Heavy Oils”, King Abdullah Science and Technology Future Fuels Workshop, Thuwal SA, March 7-9, 2016.

Invited Plenary Speaker, 35<sup>th</sup> International Symposium on Combustion, “Chemical Kinetic and Combustion Characteristics of Transportation Fuels”, San Francisco, CA, August 8, 2014.

Invited Speaker, “Emulating the Combustion Behavior of Real Petroleum-Derived and Alternative Fuels”, *Bilger Plenary Lecture, 2011 Proceedings of the Australian Combustion Symposium*, University of Newcastle, Whitesands Conference Centre, Shoal Bay Resort and Spa, NSW Australia, November 29 – Dec. 1.

Invited Speaker, “Surrogate Mixtures for Describing Real Fuel Combustion: Challenges and Recent Progress,” *Technology Watch Day on Future Biofuels*, Tailor-Made Fuels from BioMass (TMFB), RWTH Aachen University, Aachen City, Germany, May 24, 2011.

Invited Speaker, “Recent Studies on High-Hydrogen-Content Power Generation and Liquid Jet Aircraft Fuels,” *GE Energy Combustion Symposium*, *GE Energy*, Greenville, SC, January 25–26, 2011.

Invited Topical Paper, “Surrogate Mixtures for Describing Real Fuel Combustion: Challenges and Recent Progress,” 7<sup>th</sup> *US National Combustion Meeting (Combustion Institute)*, Georgia Institute of Technology, Atlanta, GA, March 20–23, 2011.

Invited Speaker, College of Engineering & CS MMAE Distinguished Speaker Series, University of Central Florida, Orlando, FL, November 18–19, 2010.

Invited Speaker, 20<sup>th</sup> *Italian National Heat Transfer Conference*, Maratea, Italy. June 25 – 27, 2002.

Hotel Lecturer, *Hotel Lecture Series on Energy and Combustion*, Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA, 1991.

Invited Contributor, (with C.K. Westbrook), "Chemical Kinetics and Modeling of Combustion Processes", Invited Paper, 18<sup>th</sup> *International Symposium on Combustion*, The Combustion Institute, Pittsburgh, PA, 1981, p. 749

Invited Contributor - "Water Addition to Practical Combustion Systems - Concepts and Applications", 16<sup>th</sup> *International Symposium on Combustion*, The Combustion Institute, Pittsburgh, PA, 1977, p. 279.

### Industrial Scientific Advisory Boards

Science Advisory Board, Knite Corporation, Princeton, NJ.	2005 – Present
Environmental Advisory Board, NetJets Inc., Woodbridge, NJ.	2007 – 2010
Science Advisory Board, ORYXE International, Irvine, CA.	2005 – 2009

### Archival Publications, 2011 – Present

- S.H. Won, F.M. Haas, S. Dooley, F.L. Dryer, and T. Edwards, “Reconstruction of Chemical Structure of Real Fuel by Surrogate Formulation base upon Combustion Property Targets”, *Combust Flame*, **183**, 39-49 (2017). <https://doi.org/10.1016/j.combustflame.2017.04.032>
- T.M. Foong, M.J. Brear, K.J. Morganti, G. da Silva, Y. Yang, and F.L. Dryer, “Modeling End-Gas Autoignition of Ethanol/Gasoline Surrogate Blends in the Cooperative Fuel Research Engine”, *Energy Fuels* **31**, 2378-2389 (2017). <http://dx.doi.org/10.1021/acs.energyfuels.6b02380>
- F.E. Alam, F.M. Francis, T.I. Farouk, and F.L. Dryer, “Influence of Trace Nitrogen Oxides on Natural Gas Oxidation: Flow Reactore Measurements and Kinetic Modeling”, *Energy Fuels* **31**, 2360-2369 (2017). <http://dx.doi.org/10.1021/acs.energyfuels.6b02369>
- S.F. Ahmed, J. Santner, F.L. Dryer, B. Padak, and T.I. Farouk, “Computational Study of NOx Formation at T.I. Farouk, Y. Xu, C.T. Avedisian, and F.L. Dryer, “Combustion Characteristics of Primary Reference Fuels (PRF) Droplets: Single Stage High Temperature Combustion to Multistage “Cool” Flame Behavior”, *Proc. Combust Ins.*, **36**, 2585-2594 (2017). <http://dx.doi.org/10.1016/j.proci.2016.07.066>
- T.I. Farouk, D. Dietrich, and F. E. Alam, “Isolated n-Decane Droplet Combustion – Dual Stage and Single Stage Transition to “Cool Flame” Droplet Burning” *Proc. Combust Ins.*, **36** 2523-2530 (2017). <http://dx.doi.org/10.1016/j.proci.2016.07.015>
- Conditions Relevant to Gas Turbine Operation, Part 2: NOx in High Hydrogen Content Fuel Combustion at Elevated Pressure”, *Energy Fuels*, 2016, **30** (9), pp 7691–7703. <http://dx.doi.org/10.1021/acs.energyfuels.6b00421>
- J. Santner, S.K. Ahmed, T. Farouk, and F.L. Dryer “Computational Study of NOx Formation at Conditions Relevant to Gas Turbine Operation: Part 1, *Energy Fuels*, 2016, **30** (8), pp 6745–6755. <http://dx.doi.org/10.1021/acs.energyfuels.6b00420>
- C-W. Zhou, Y. Li, E. O'Connor, K.P. Somers, S. Thion, C. Keesee, O. Mathieu, E.L. Petersen, T.A. DeVerter, M.A. Oehlschlaeger, G. Kukkadapu, C-J. Sung, M. Alrefae, F. Khaled, A. Farooq, P. Dirrenberger, P-A. Glaude, F. Battin-Leclerc, J. Santner, Y. Ju, T. Held, F.M. Haas, F.L. Dryer, and H.C. Curran, “A Comprehensive Experimental and Modeling Study of Isobutene Oxidation, *Combust. Flame*, **167**, 353-379 (2016). <http://dx.doi.org/10.1016/j.combustflame.2016.01.021>
- S.H. Won, F.M. Haas, A. Tekawade, G. Kosiba, M.A. Oehlschlaeger, S. Dooley and F.L. Dryer, “Combustion Characteristics of C<sub>4</sub> iso-Alkane Oligomers: Experimental Characterization of iso-Dodecane as a Jet Fuel Surrogate Component”, *Combust. Flame*, **165**, 137-143 (2016). <http://dx.doi.org/10.1016/j.combustflame.2015.11.006>
- S.H. Won, P.S. Veloo, S. Dooley, J. Santner, F.M. Haas, Y. Ju, F.L. Dryer, “Predicting the Global Combustion Behaviors of Petroleum-Derived and Alternative Jet Fuels by Simple Fuel Property Measurements”, *Fuel*, **168**, 34-36 (2016). <http://dx.doi.org/10.1016/j.fuel.2015.11.026>
- F.E. Alam, F.L. Dryer, and T.I. Farouk, “Effectiveness of Xenon as a Fire Suppressant under Microgravity Combustion Conditions”, *Combust. Sci. Tech.*, **188**, 145-165 (2015). <http://dx.doi.org/10.1080/00102202.2015.1085033>
- F.M. Haas and F.L. Dryer, “Rate Coefficient Determinations for H + NO<sub>2</sub> → OH + NO from High Pressure Flow Reactor Measurements”, *J. Phys. Chem. A*, **119**, 7792–7801 (2015). Special Issue. <http://dx.doi.org/10.1080/00102202.2015.1085033>
- J.S. Heyne, S. Dooley, Z Serinyel, F.L. Dryer, and H.C. Curran, “Decomposition Studies of Isopropanol in a Variable Pressure Flow Reactor”, *Zeitschrift fur Physikalische Chemie*, **229**, 881–907 (2015). Special Issue. <http://dx.doi.org/10.1515/zpch-2014-0630>

- F.L. Dryer, "Chemical Kinetic and Combustion Characteristics of Transportation Fuels", *Proc. Combust. Ins.* **35**, 117-144 (2015). *Invited Plenary*. <http://dx.doi.org/10.1016/j.proc.2014.09.008>
- T.I. Farouk, M.C. Hicks, and F. L. Dryer, "Multistage Oscillatory "Cool Flame" Behavior for Isolated Alkane Droplet Combustion in Elevated Pressure Microgravity Condition", *Proc. Combust. Ins.* **35**, 1701–1708 (2015). <http://dx.doi.org/10.1016/j.proci.2014.06.015>
- E.A. Alam, Y.C. Liu, C.T. Avedisian, F.L. Dryer, and T.I. Farouk, "A Detailed Numerical Simulation of Spherically Symmetric n-Butanol Droplet Combustion and Comparisons with Experimental Data", *Proc. Combust. Ins.* **35**, 1693–1700 (2015). <http://dx.doi.org/10.1016/j.proci.2014.06.043>
- K.J. Morganti, T.M. Foong, M.J. Brear, G. da Silva, Y. Yang, and F.L. Dryer, "The Autoignition of Liquefied Petroleum Gas (LPG) in Spark-Ignition Engines", *Proc. Combust. Ins.* **35**, 2933–2940 (2015). <http://dx.doi.org/10.1016/j.proci.2014.06.070>
- J. Santner, F.M. Haas, F.L. Dryer, and Y. Ju, "High Temperature Oxidation of Formaldehyde and Formyl Radical: A Study of Laminar 1,3,5-Trioxane Burning Velocities", *Proc. Combust. Ins.* **35**, 687–694 (2015). <http://dx.doi.org/10.1016/j.proci.2014.05.014>
- A. Sudholt, C. Liming, C., J. Heyne, F.M. Haas, F.L. Dryer, and H. Pitsch, "Ignition Characteristics of a Bio-Derived Class of Saturated and Unsaturated Furans for Engine Applications", *Proc. Combust. Ins.* **35**, 2957-2965 (2015). <http://dx.doi.org/10.1016/j.proci.2014.06.147>
- S.M. Burke, U. Burke, R. Mc Donagh, O. Mathieu, I. Osorio, C. Keesee, A. Morones, E.L. Petersen, W. Wang, T.A. DeVerter, M.A. Oehlschlaeger, B. Rhodes, R.K. Hanson, D.F. Davidson, B.W. Weber, C.-J. Sung, J. Santner, Y. Ju, F.M. Haas, F.L. Dryer, E.N. Volkov, E.J.K. Nilsson, A.A. Konnov, M. Alrefae, F. Khaled, A. Farooq, P. Dirrenberger, P.-A. Glaude, F. Battin-Leclerc, H.J. Curran, "An Experimental and Modeling Study of Propene Oxidation. Part 2: Ignition Delay Time and Flame Speed Measurements", *Combust. Flame* **162**, 296-314 (2015). <http://dx.doi.org/10.1016/j.combustflame.2014.07.032>
- S.M. Burke, W. Metcalfe, O. Herbinet, F. Battin-Leclerc, F.M. Haas, J. Santner, F.L. Dryer, H.J. Curran, "An Experimental and Modeling Study of Propene Oxidation. Part 1: Speciation Measurements in Jet-stirred and Flow Reactors", *Combust. Flame* **161**, 2765-2784 (2014). <http://dx.doi.org/10.1016/j.combustflame.2014.05.010>
- S. Dooley, J. Heyne, S.H. Won, P. Dievart, Y. Ju, and F.L. Dryer, "On the Importance of a Cycloalkane Functionality in the Oxidation of a Real Fuel", *Energy Fuels* **28**, 7649–7661 (2014). <http://dx.doi.org/10.1021/ef5008962>
- F.L. Dryer, F.M. Haas, J. Santner, T. Farouk, and M. Chaos, "Interpreting Chemical Kinetics from Complex Reaction-Advection Diffusion Systems: Modeling of Flow Reactors and Related Experiments", *Progress Energy Combust. Sci.* **44**, 19-39 (2014). <http://dx.doi.org/10.1016/j.pecs.2014.04.002>
- F.L. Dryer, S. Jahangirian, S. Dooley, S.H. Won, J. Heyne, V. Iyer, T.A., Litzinger, R.J. Santoro, "Emulating the Combustion Behavior of Real Jet Aviation Fuels by Surrogate Mixtures from Hydrocarbon Fluid Blends", *Energy Fuels* **28**, 3474–3485 (2014). <http://dx.doi.org/10.1021/ef500284x>
- V.R. Iyer, S.S. Iyer, M.J. Linevsky, T.A. Litzinger, R.J. Santoro, S. Dooley, F.L. Dryer, and C.J. Mordaunt, "Simulating the Sooting Propensity of JP-8 with Surrogate Fuels from Hydrocarbon Fluids", *AIAA J. Prop. Power*, **30**, 1410-1418 (2014). <http://dx.doi.org/10.2514/1.B35139>
- K. Morganti, T.M. Foong, M. Brear, G. Da Silva, Y. Yang, F.L. Dryer, "Design and Analysis of a Modified CFR Engine for the Octane Rating of Liquefied Petroleum Gases (LPG)", *SAE Int. J. Fuels Lubr.* 7(1):283-300, 2014, <http://dx.doi.org/10.4271/2014-01-1474>
- S.H. Won, S. Dooley, P.S. Veloo, H. Wang, M.A. Oehlschlaeger, F. L. Dryer and Y. Ju, "The Combustion Properties of 2,6,10-Trimethyl Dodecane and a Chemical Functional Group Analysis", *Combust Flame*, **161**, 826-834 (2014). <http://dx.doi.org/10.1016/j.combustflame.2013.08.027>
- J. Santner, F.M. Haas, F.L. Dryer, and Y. Ju, "Uncertainties in Interpretation of High Pressure Spherical Flame Propagation Rates Due to Thermal Radiation", *Combust Flame* **161**, 147–153 (2014). <http://dx.doi.org/10.1016/j.combustflame.2013.08.008>



- D.L. Dietrich, V. Nayagam, M.C. Hicks, P.V. Ferkul, F.L. Dryer, T. Farouk, B.D. Shaw, H.K. Suh, M.Y. Choi, Y.C.Liu, C.T. Avedisian, and F.A. Williams, “Droplet Combustion Experiments Aboard the International Space Station”, *Microgravity Sci. Technol.* **26**, 66-76 (2014). <http://dx.doi.org/10.1007/s12217-014-9372-2>
- T.I. Farouk and F.L. Dryer, “Isolated *n*-Heptane Droplet Combustion in Microgravity: “Cool Flames”-Two-stage Combustion”, *Combust Flame* **161**, 565–581 (2014). <http://dx.doi.org/10.1016/j.combustflame.2013.09.011>
- T.M. Foong, K.J. Morganti, M.J. Brear, G. da Silva, Y. Yang, F.L. Dryer, “The Octane Numbers of Ethanol Blended with Gasoline and its Surrogates”, *Fuel*, **115** 727-739, 2014. <http://dx.doi.org/10.1016/j.fuel.2013.07.105>
- F.M. Haas and F.L. Dryer, “Application of Blending Rules for Ignition Quality Metrics: A comment on “A linear-by-mole Blending Rule for Octane Numbers of n-heptane/iso-octane/toluene Mixtures”, *Fuel* **120** 240–242 (2014). <http://dx.doi.org/10.1016/j.fuel.2013.10.025>
- J.S. Heyne and F.L. Dryer, “Dehydration Rate Measurements for *tertiary*-Butanol in a Variable Pressure Flow Reactor”, *J. Phys. Chem. A*, **117** 8997–9004 (2013). <http://dx.doi.org/10.1021/jp404143f>
- J.S. Heyne and F.L. Dryer, “Uncertainty Analysis in the Use of Chemical Thermometry: A Case Study with Cyclohexene”, *J. Phys. Chem. A* **117** 5401–5406 (2013). <http://dx.doi.org/10.1021/jp402982y>
- K.J.Morganti, T.M. Foong, M.J. Brear, G. da Silva, Y. Yang, and F.L. Dryer, “ The Research and Motor Octane Numbers of Liquefied Petroleum Gas (LPG), *Fuel* **108** 797–811 (2013). <http://dx.doi.org/10.1016/j.fuel.2013.01.072>
- T.M. Foong, K.J. Morganti, M.J. Brear, G. da Silva, Y. Yang and F.L. Dryer, “The Effect of Charge Cooling on the RON of Ethanol/Gasoline Blends”, SAE 13PFL-0630, 2013. Published in *SAE Transactions*. <http://dx.doi.org/10.1016/j.fuel.2013.07.105>
- P. Diévar, H.H. Kim, S.H. Won, Y. Ju, S. Dooley, F. Dryer, W. Wang, and M. Oehlschlaeger, “The Combustion Properties of 1,3,5-Trimethylbenzene and a Kinetic Model”, *Fuel*, **109** (2013) 125–136. <http://dx.doi.org/10.1016/j.fuel.2012.11.069>
- Y.C. Liu, T. Farouk, A.J. Savas, F.L. Dryer, and C.T. Avedisian,” On the Spherically Symmetrical Combustion of Methyl Decanoate Droplets and Comparisons with Detailed Numerical Modeling”, *Combust Flame* **160** 641–655 (2013). <http://dx.doi.org/10.1016/j.combustflame.2012.11.006>.
- T.I. Farouk, Y.C. Liu, A.J. Savas, C.T. Avedisian, and F.L. Dryer, “Sub-millimeter Sized Methyl Butanoate Droplet Combustion: Microgravity Experiments and Detailed Numerical Modeling”, *Proc. Combust. Inst.* **34** (2013) 1609–1616. <http://dx.doi.org/10.1016/j.proci.2012.07.074>.
- J. Santner, F.L. Dryer, and Y. Ju, “The Effects of Water Dilution on Hydrogen, Syngas, and Ethylene Flames at Elevated Pressure *Proc. Combust. Inst.* **34** (2013) 719–726. <http://dx.doi.org/10.1016/j.proci.2012.06.065>.
- H. Guo, W. Sun, F. M Haas, F. L Dryer, and Y. Ju, “Measurements of H<sub>2</sub>O<sub>2</sub> in Low Temperature Dimethyl Ether Oxidation”, *Proc. Combust. Inst.* **34** (2013) 573–581. <http://dx.doi.org/10.1016/j.proci.2012.05.056>.
- T.I. Farouk and F.L. Dryer, “On the Extinction Characteristics of Alcohol Droplet Combustion under Microgravity Conditions – A Numerical Study”, *Combust Flame* **159** 3208–3223 (2012). <http://dx.doi.org/10.1016/j.combustflame.2012.04.005>.
- S. Dooley, S.H. Won, S. Jahangirian, Y. Ju, F.L. Dryer, H. Wang, M.A. Oehlschlaeger “The Combustion Kinetics of a Synthetic Paraffinic Jet Aviation Fuel and a Fundamentally Formulated, Experimentally Validated Surrogate Fuel”, *Combust Flame* **159** 3014-3020 (2012). <http://dx.doi.org/10.1016/j.combustflame.2012.04.010>
- X. Hui, A. Das, K. Kumar, K., C-J. Sung, S. Dooley, and F.L. Dryer, “Laminar Flame Speeds and Extinction Stretch Rates of Selected Aromatic Hydrocarbons”, *Fuel* **97**: 695-702 (2011). <http://dx.doi.org/10.1016/j.fuel.2012.02.045>.

- P. Diévar, S-H Won, S. Dooley, F.L Dryer, and Y. Ju, "Development and Validation of a Kinetic Model for Methyl Decanoate Oxidation", *Combust Flame* **159**, 1793-1805 (2012). <http://dx.doi.org/10.1016/j.combustflame.2012.01.002>
- S. Dooley, S-H. Won, J. Heyne, T.I. Farouk, Y. Ju, F.L. Dryer, K. Kumar, X. Hui C-J Sung, H. Wang, M.A. Oehlschlaeger, V. Iyer T.A. Litzinger, R.J. Santoro, T. Malewicki, and K. Brezinsky, "The Experimental Evaluation of a Methodology to Surrogate Fuel Formulation for the Emulation of Gas Phase Combustion Kinetic Phenomena by a Theory of Real Fuel Oxidation", *Combust Flame* **159** 1444-1466 (2012). <http://dx.doi.org/10.1016/j.combustflame.2011.11.002>
- S. Dooley, M. Uddi, S-H. Won, W. Sun, F.L. Dryer, and Y. Ju, "The Mechanism of Methyl Butanoate Inhibition of *n*-heptane Diffusion Flames through an Evaluation of Transport and Chemical Kinetics", *Combust. Flame* **159** 1371-1384 (2012). . <http://dx.doi.org/10.1016/j.combustflame.2011.09.016>
- M.P. Burke, M. Chaos, Y. Ju, F.L. Dryer, and S.J. Klippenstein, "Comprehensive H<sub>2</sub>/O<sub>2</sub> Kinetic Model for High-Pressure Combustion", *Int. J. Chem. Kin.* **44** 444 474 (2012). <http://dx/doi.org/10.1002/kin.20603>
- J.K. Lefkowitz, J.S. Heyne, S-H Won, S. Dooley, H-H. Kim, F.M. Haas, S. Jahangirian, F.L. Dryer, and Y. Ju, "Chemical Kinetic Study of tertiary-Butanol in a Flow Reactor and a Counterflow Diffusion Flame" *Combust Flame* **159** 968–978 (2012). <http://dx.doi.org/10.1016/j.combustflame.2011.10.004>
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### **Graduate Students Advised Since 1990**

M. Haas, Ph.D., 2016; J. Santner, Ph.D., 2015 (co-advised with Y. Ju); J. Heyne, Ph.D., 2014; M.P. Burke, Ph.D., 2010 (co-advised with Y. Ju); K. Kroenlein, Ph.D., 2007; Z-W Zhao, Ph.D., 2005; J. Li, Ph.D., 2004; P. Ricklin, M.S.E., 2002; J. Scire, Ph.D., 2002; Z-W Zhou, M.S.E. 2002; L. Ernst, M.S.E., 2001; M. Mueller, Ph.D., 2000; S. Fischer, M.S.E., 1998; P. Bucher, Ph.D., 1998; J. Eng, Ph.D., 1998; W. Zhou, Ph.D., 1998; J. Gatto, M.S.E., 1997; D. Zarubiack, M.S.E., 1997; J.M. Fielding, M.S.E., 1997; A.J. Marchese, Ph.D., 1996; J.C.Y. Lee, Ph.D., 1996; C. Callahan, MSE, 1995; M. Allen, Ph.D., 1995; N. Ilincic, M.S.E., 1995; J. Roesler, Ph.D., 1994; T. Kim, M.S.E., 1994; T. Held, Ph.D., 1993; S. Kowalski, MSE, 1993; S. Huey, M.S.E., 1991; M.Y. Choi, Ph.D., 1991; M.L. Vermeersch, Ph.D., 1991; S. Hochgreb, Ph.D., 1991; G.T. Linteris, Ph.D., 1990; T.S. Norton, Ph.D., 1990.

### **Sponsored Postdoctoral Scholars**

P. Vello, T. Wada, S. Jahangirian, T. Farouk, S. Dooley, W. Metcalfe, Z. Yang, H. Xu, M. Chaos, Z. Zhao, M. Angioletti, A. Kozakov, S. Zeppieri, S. Klotz, S. Gurin, K. Southerland, D. Urban, S.Y. Cho, C. Corre, F. Takahashi, I.M. Kennedy.

### **Thesis Degreed Graduate Students**

40, and in addition, 8 co-advised with I. Glassman prior to 1981.

### **Patents**

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