

# Bryan W. Weber

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## CONTACT INFORMATION

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## RESEARCH INTERESTS

My research interests generally lie in developing tools to apply fundamental combustion insights to solve engineering problems. My recent work involves developing experimental methods to analyze intermediate species at practical combustion conditions. I am also interested in developing methods to analyze computational models, particularly kinetic models of combustion.

## EDUCATION

Ph.D., Mechanical Engineering, University of Connecticut, 2014  
M.S., Mechanical Engineering, University of Connecticut, 2010  
B.S.E., Aerospace Engineering, Case Western Reserve University, 2009

## PROFESSIONAL EXPERIENCE

Visiting Assistant Professor, University of Connecticut 2014–Present  
Conducting research on the combustion kinetics of alternative and traditional fuels. Teaching undergraduate courses in thermal-fluids engineering.

Graduate Research Assistant, University of Connecticut 2009–2014  
Undergraduate Research Assistant, Case Western Reserve University 2007–2009  
[Combustion Diagnostics Laboratory](#) — Director: C.-J. Sung  
Conducted experimental and computational studies of the ignition properties of several alternative fuels and foundational fuels, with focus on engine-relevant conditions. Designed a species sampling apparatus for time-resolved species measurements in the rapid compression machine, using gas chromatography/mass spectrometry to identify and quantify combustion intermediates. Analyzed kinetic models for combustion to determine the parameters controlling prediction of ignition delay and improve the ability of the models to predict combustion events.

## JOURNAL PUBLICATIONS

- [7] **B.W. Weber**, M.W. Renfro, and C.J. Sung. *On the Uncertainty of Temperature Estimation in a Rapid Compression Machine*. Under review at Combustion and Flame, Jan. 2015.
- [6] S.M. Burke, U. Burke, R. Mc Donagh, O. Mathieu, I. Osorio, C. Keese, 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. Nilsson, A.A. Konnov, M. Alrefae, F. Khaled, A. Farooq, P. Dirrenberger, P.A. Glaude, F. Battin-Leclerc, and H.J. Curran. *An Experimental and Modeling Study of Propene Oxidation. Part 2: Ignition Delay Time and Flame Speed Measurements*. Combustion and Flame,

vol. 162, no. 2, pp. 296–314, Feb. 2015.  
doi:10.1016/j.combustflame.2014.07.032

- [5] **B.W. Weber**, W.J. Pitz, M. Mehl, A.C. Davis, E.J. Silke, and C.J. Sung. *Experiments and Modeling of the Autoignition of Methylcyclohexane at High Pressure*. Combustion and Flame, vol. 161, no. 8, pp. 1972–1983, Aug. 2014. doi:10.1016/j.combustflame.2014.01.018
- [4] S.M. Sarathy, S. Park, **B.W. Weber**, W. Wang, P.S. Veloo, A.C. Davis, C. Togbé, C.K. Westbrook, O. Park, G. Dayma, Z. Luo, M.A. Oehlschlaeger, F.N. Egolfopoulos, T. Lu, W.J. Pitz, C.J. Sung, and P. Dagaut. *A Comprehensive Experimental and Modeling Study of iso-Pentanol Combustion*. Combustion and Flame, vol. 160, no. 12, pp. 2712–2728, Dec. 2013. doi:10.1016/j.combustflame.2013.06.022
- [3] **B.W. Weber** and C.J. Sung. *Comparative Autoignition Trends in Butanol Isomers at Elevated Pressure*. Energy and Fuels, vol. 27, no. 3, pp. 1688–1698, Mar. 2013. doi:10.1021/ef302195c
- [2] T. Tsujimura, W.J. Pitz, F. Gillespie, H.J. Curran, **B.W. Weber**, Y. Zhang, and C.J. Sung. *Development of Isopentanol Reaction Mechanism Reproducing Autoignition Character at High and Low Temperatures*. Energy and Fuels, vol. 26, no. 8, pp. 4871–4886, Aug. 2012. doi:10.1021/ef300879k
- [1] **B.W. Weber**, K. Kumar, Y. Zhang, and C.J. Sung. *Autoignition of n-butanol at elevated pressure and low-to-intermediate temperature*. Combustion and Flame, vol. 158, no. 5, pp. 809–819, Mar. 2011. doi:10.1016/j.combustflame.2011.02.005
- [8] S.S. Merchant (Presenting), W.H. Green, K.M. Van Geem, N. Hansen, **B.W. Weber**, and C.J. Sung. *Combustion of the Butanol Isomers: Reaction Pathways from High to Low Temperature*. 8<sup>th</sup> International Conference on Chemical Kinetics, University Seville, Seville, Spain, Jul. 2013.
- [7] **B.W. Weber**, W.J. Pitz, C.J. Sung, M. Mehl, E.J. Silke, and A.C. Davis. *Experiments and Modeling of the Autoignition of Methyl-Cyclohexane at High Pressure*. Paper 3A02, 8<sup>th</sup> US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.
- [6] **B.W. Weber**, S.S. Merchant, C.J. Sung, and W.H. Green. *An Autoignition Study of iso-Butanol: Experiments and Modeling*. Paper 3A01, 8<sup>th</sup> US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.
- [5] S.M. Sarathy, S. Park, W. Wang, P. Veloo, A.C. Davis, C. Togbé, **B.W. Weber**, C.K. Westbrook, O. Park, G. Dayma, Z. Luo, M.A. Oehlschlaeger, F. Egolfopoulos, T. Lu, W.J. Pitz, C.J. Sung, and P. Dagaut. *A Comprehensive Experimental and Modeling Study of iso-Pentanol Combustion*. Paper 2A12, 8<sup>th</sup> US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.

CONFERENCE  
PUBLICATIONS  
AND  
PRESENTATIONS

- [4] **B.W. Weber** and C.J. Sung. *Comparative Investigation of the High Pressure Autoignition of the Butanol Isomers*. Paper A-01, Fall Technical Meeting of the Eastern States Section of the Combustion Institute, Storrs, CT, Oct. 2011.
- [3] M.R. Harper, W.H. Green (Presenting), K.M. Van Geem, **B.W. Weber**, C.J. Sung, I. Stranic, D.F. Davidson, and R.K. Hanson. *Combustion of the butanol isomers: Reaction pathways at elevated pressures from low-to-high temperatures*. Paper #84, 7<sup>th</sup> International Conference on Chemical Kinetics, Massachusetts Institute of Technology, Cambridge, MA, Jul. 2011.
- [2] **B.W. Weber** and C.J. Sung. *A Rapid Compression Study of the Butanol Isomers at Elevated Pressure*. Paper 1B13, 7<sup>th</sup> US National Technical Meeting of the Combustion Institute, Georgia Institute of Technology, Atlanta, GA, Mar. 2011.
- [1] **B.W. Weber**, K. Kumar, and C.J. Sung. *Autoignition of Butanol Isomers at Low to Intermediate Temperature and Elevated Pressure*. Paper AIAA-2011-0316, 49<sup>th</sup> Annual Aerospace Sciences Meeting, Orlando, FL, Jan. 2011.

CONFERENCE  
POSTERS

- [3] **B.W. Weber** and C.J. Sung. *Validation of Kinetic Models of the Butanol Isomers At High Pressure using a Rapid Compression Machine*. Poster T40, 7<sup>th</sup> International Conference on Chemical Kinetics, Massachusetts Institute of Technology, Cambridge, MA, Jul. 2011.
- [2] **B.W. Weber**. *Autoignition of n-Butanol at Elevated Pressure and Low to Intermediate Temperature*. 1<sup>st</sup> Combustion Energy Frontier Research Center Annual Meeting, Princeton University, Princeton, NJ, Sep. 2010.
- [1] **B.W. Weber**, K. Kumar, and C.J. Sung. *An Investigation of Hydrocarbon Flames using Probe Sampling and Gas Chromatography/Mass Spectrometry*. Support of Undergraduate Research and Creative Endeavors Symposium and Poster Session, Case Western Reserve University, Cleveland, OH, Apr. 2009.

OTHER  
PRESENTATIONS

- [1] **B.W. Weber** and C.J. Sung. *Analysis of Hydrocarbon Fuels using Gas Chromatography/Mass Spectrometry*. Summer Undergraduate Research in Energy Sciences Program, Dominion Energy East Ohio Branch, Cleveland, OH, Aug. 2008.

TEACHING  
EXPERIENCE

**University of Connecticut, Storrs, CT, USA**

Fall 2014, Spring 2015 — Thermodynamic Principles

Spring 2013 — Introduction to Mechanical Engineering (Instructor)

PROFESSIONAL SERVICE	Combustion Energy Frontier Research Center (CEFRC) Lead Chair, Junior Associates Committee Coordinate monthly teleconferences for graduate students and post-doctoral researchers in the CEFRC where junior members of the CEFRC present recent research results to the group. Act as the liaison between the Center's principle investigators and the junior members.	2012–2014
	U.S. Department of Energy Member, EFRC Newsletter Editorial Board Contribute articles to the Energy Frontier Research Centers (EFRC) newsletter describing recent scientific advances resulting from EFRC research, including: <a href="#">“Burning Butanol in a Better Engine”</a> <a href="#">“The Advantage of Renewable Fuels in High-Efficiency Engines”</a> <a href="#">“Confined Catalysts Last Longer”</a> The audience for the articles is scientifically literate, but not expert in the fields relevant to each article. Edit articles written by other board members for factual and grammatical correctness.	2013–2014
	Journal Referee Energy & Fuels Proceedings of the Combustion Institute Combustion Science & Technology SAE World Congress	
AWARDS AND FELLOWSHIPS	Doctoral Dissertation Fellowship, University of Connecticut, 2014 Graduate Predoctoral Fellowship, Department of Mechanical Engineering, 2013 Graduate Teaching Fellowship, Department of Mechanical Engineering, 2013 Graduate Assistantship in Areas of National Need, University of Connecticut, 2010 Fred H. Vose Prize, Department of Mechanical and Aerospace Engineering, 2009 Summer Undergraduate Research in Energy Sciences Grant, Case Western Reserve University, 2008	
PROFESSIONAL MEMBERSHIPS	AIAA - Member ASME - Member The Combustion Institute - Member ACS - Member	