

# Bryan W. Weber

CONTACT INFORMATION	Department of Mechanical Engineering University of Connecticut 191 Auditorium Road U-3139 Storrs, CT 06269 USA	<i>E-mail:</i> <a href="mailto:bryan.weber@uconn.edu">bryan.weber@uconn.edu</a> <i>Work:</i> +1-860-486-2492 <i>Cell:</i> +1-412-443-6447 <i>Web:</i> <a href="http://bryanwweber.com">bryanwweber.com</a>
RESEARCH INTERESTS	<b>Combustion Engineering:</b> Alternative biofuels including alcohols and biodiesel; design of novel experimental methods for combustion analysis; computational analysis of reaction mechanisms for combustion	
EDUCATION	<b>University of Connecticut, Storrs, CT, USA</b>  Ph.D., Mechanical Engineering, Planned 2014 Working Dissertation Title: <i>High Pressure Ignition Chemistry of Alternative Fuels</i> Advisor: Professor Chih-Jen (Jackie) Sung  M.S., Mechanical Engineering, August 2010 Thesis Title: <i>Autoignition of n-Butanol at Low to Intermediate Temperature and Elevated Pressure</i> Advisor: Professor Chih-Jen (Jackie) Sung  <b>Case Western Reserve University, Cleveland, OH, USA</b>  B.S.E., <i>Cum Laude</i> Aerospace Engineering, May 2009 Senior Project Title: <i>Analysis of Heavy Hydrocarbon Fuels using Gas Chromatography with Mass Spectrometry</i> Advisor: Professor Chih-Jen (Jackie) Sung	
JOURNAL PUBLICATIONS	S.M. Sarathy, S. Park, <b>B.W. Weber</b> , 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. <i>A Comprehensive Experimental and Modeling Study of iso-Pentanol Combustion</i> . Combustion and Flame, vol. 160, no. 12, pp. 2712-2728, Dec. 2013. doi:10.1016/j.combustflame.2013.06.022  <b>B.W. Weber</b> and C.J. Sung. <i>Comparative Autoignition Trends in Butanol Isomers at Elevated Pressure</i> . Energy and Fuels, vol. 27, no. 3, pp. 1688-1698, Feb. 2013. doi:10.1021/ef302195c  T. Tsujimura, W.J. Pitz, F. Gillespie, H.J. Curran, <b>B.W. Weber</b> , Y. Zhang, and C.J. Sung. <i>Development of Isopentanol Reaction Mechanism Reproducing Autoignition Character at High and Low Temperatures</i> . Energy and Fuels, vol. 26, no. 8, pp. 4871-4886, Aug. 2012. doi:10.1021/ef300879k  <b>B.W. Weber</b> , K. Kumar, Y. Zhang, and C.J. Sung. <i>Autoignition of n-butanol at elevated pressure and low-to-intermediate temperature</i> . Combustion and Flame, vol. 158, no. 5, pp. 809-819, Mar. 2011. doi:10.1016/j.combustflame.2011.02.005	
CONFERENCE PUBLICATIONS AND PRESENTATIONS	S.S. Merchant (Presenting), W.H. Green, K.M. Van Geem, N. Hansen, <b>B.W. Weber</b> , and C.J. Sung. <i>Combustion of the Butanol Isomers: Reaction Pathways from High to Low Temperature</i> . 8 <sup>th</sup> International Conference on Chemical Kinetics, University Seville, Seville, Spain, July 2013.  <b>B.W. Weber</b> , W.J. Pitz, C.J. Sung, M. Mehl, E.J. Silke, and A.C. Davis. <i>Experiments and Modeling of the Autoignition of Methyl-Cyclohexane at High Pressure</i> . Paper 3A02, 8 <sup>th</sup> US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.	

	<p><b>B.W. Weber</b>, S.S. Merchant, C.J. Sung, and W.H. Green. <i>An Autoignition Study of iso-Butanol: Experiments and Modeling</i>. Paper 3A01, 8<sup>th</sup> US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.</p> <p>S.M. Sarathy, S. Park, W. Wang, P. Veloo, A.C. Davis, C. Togbé, <b>B.W. Weber</b>, 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. <i>A Comprehensive Experimental and Modeling Study of iso-Pentanol Combustion</i>. Paper 2A12, 8<sup>th</sup> US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.</p> <p><b>B.W. Weber</b> and C.J. Sung. <i>Comparative Investigation of the High Pressure Autoignition of the Butanol Isomers</i>. Paper A-01, Fall Technical Meeting of the Eastern States Section of the Combustion Institute, Storrs, CT, October 2011.</p> <p>M.R. Harper, W.H. Green (Presenting), K.M. Van Geem, <b>B.W. Weber</b>, C.J. Sung, I. Stranic, D.F. Davidson, and R.K. Hanson. <i>Combustion of the butanol isomers: Reaction pathways at elevated pressures from low-to-high temperatures</i>. Paper #84, 7<sup>th</sup> International Conference on Chemical Kinetics, Massachusetts Institute of Technology, Cambridge, MA, July 2011.</p> <p><b>B.W. Weber</b> and C.J. Sung. <i>A Rapid Compression Study of the Butanol Isomers at Elevated Pressure</i>. Paper 1B13, 7<sup>th</sup> US National Technical Meeting of the Combustion Institute, Georgia Institute of Technology, Atlanta, GA, March 2011.</p> <p><b>B.W. Weber</b>, K. Kumar, and C.J. Sung. <i>Autoignition of Butanol Isomers at Low to Intermediate Temperature and Elevated Pressure</i>. Paper AIAA-2011-0316, 49<sup>th</sup> Annual Aerospace Sciences Meeting, Orlando, FL, January 2011.</p>
CONFERENCE POSTERS	<p><b>B.W. Weber</b> and C.J. Sung. <i>Validation of Kinetic Models of the Butanol Isomers At High Pressure using a Rapid Compression Machine</i>. Poster T40, 7<sup>th</sup> International Conference on Chemical Kinetics, Massachusetts Institute of Technology, Cambridge, MA, July 2011.</p> <p><b>B.W. Weber</b>. <i>Autoignition of n-Butanol at Elevated Pressure and Low to Intermediate Temperature</i>. 1<sup>st</sup> Combustion Energy Frontier Research Center Annual Meeting, Princeton University, Princeton, NJ, September 2010.</p> <p><b>B.W. Weber</b>, K. Kumar, and C.J. Sung. <i>An Investigation of Hydrocarbon Flames using Probe Sampling and Gas Chromatography/Mass Spectrometry</i>. Support of Undergraduate Research and Creative Endeavors Symposium and Poster Session, Case Western Reserve University, Cleveland, OH, April 2009.</p>
OTHER PRESENTATIONS	<p><b>B.W. Weber</b> and C.J. Sung. <i>Analysis of Hydrocarbon Fuels using Gas Chromatography/Mass Spectrometry</i>. Summer Undergraduate Research in Energy Sciences Program, Dominion Energy East Ohio Branch, Cleveland, OH, August 2008.</p>
RESEARCH EXPERIENCE	<p><b>Combustion Diagnostics Laboratory</b> 2007-Present  University of Connecticut, Storrs, CT, USA  Case Western Reserve University, Cleveland, OH, USA</p> <p>Projects:</p> <ul style="list-style-type: none"> <li>Experimentally and computationally studying the ignition properties of the four butanol isomers, iso-pentanol, methylcyclohexane, and propene over a wide range of pressure, temperature, and fuel-loading conditions</li> <li>Designing a species sampling apparatus for time-resolved species measurements in the rapid compression machine</li> <li>Characterizing the components of heavy hydrocarbon fuels, including conventional and synthetic jet fuels, using gas chromatography/mass spectrometry</li> </ul>

TEACHING  
EXPERIENCE

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

Fall 2012 – Spring 2013

Spring 2013 – Instructor for ENGR 1166: Introduction to Mechanical Engineering  
Supervisor: Prof. Kevin Murphy

Lecture notes and sample homework problems are available on request

- Prepared and delivered lectures covering fundamental topics in Mechanical Engineering, including: Vector Math and Calculus, Statics, Dynamics, Solid Mechanics, Thermodynamics, Fluid Mechanics, and Heat Transfer
- Prepared and graded weekly homework assignments for 60 2<sup>nd</sup> semester engineering students
- Held weekly office hour sessions

Fall 2012 – Teaching Assistant for ME 3239: Combustion for Energy Conversion  
Supervisor: Prof. Chih-Jen Sung

Sample project assignments are available on request

- Assisted the preparation and delivery of lecture material covering: Thermochemistry and Equilibrium, Chemical Kinetics, Fuels and Emissions, and Reacting Flows
- Developed and presented lectures covering the fundamentals and operation of combustion modeling software
- Designed in-depth projects to explore combustion modeling using the CHEMKIN-Pro software

PROFESSIONAL  
EXPERIENCE

**Lead Chair, Junior Associates Committee**

2012-Present

**Combustion Energy Frontier Research Center**

- Coordinate monthly teleconferences for graduate students and post-doctoral researchers in the CEFRC
- Attend PI teleconferences on behalf of the junior members of the CEFRC

**EFRC Newsletter Editorial Board Member**

2013-Present

**U.S. Department of Energy**

- Contributed articles to the newsletter describing recent scientific advances resulting from EFRC research, including:  
"Burning Butanol in a Better Engine"
- Edited articles written by other board members for factual and grammatical correctness

**Journal Referee**

2013-Present

- Energy & Fuels

AWARDS AND  
FELLOWSHIPS

**Graduate Predoctoral Fellowship Award**

2013

**University of Connecticut, Department of Mechanical Engineering**

First Place, awarded for the best research presentation and poster at the 2013 Mechanical Engineering Graduate Research Competition

**Graduate Assistantship in Areas of National Need**

2010

**University of Connecticut**

Awarded in the area of Sustainable Energy Technologies

**Fred H. Vose Prize, Department of Mechanical and Aerospace Engineering  
Case Western Reserve University**

2009

Awarded to the senior showing the most promise for future leadership

**Summer Undergraduate Research in Energy Sciences Grant**

2008

**Case Western Reserve University**

Awarded for research to analyze the composition of traditional petroleum-based hydrocarbon fuels using GC/MS

PROFESSIONAL  
MEMBERSHIPS

AIAA - Student Member  
ASME - Student Member  
The Combustion Institute - Student Member

SKILLS

Programming/Scripting Languages:

- Python, MATLAB, FORTRAN 77, UNIX shell scripting (bash), LabView

Software Packages:

- CHEMKIN-II and associated programs (SENKIN, etc.)
- CHEMKIN-Pro
- Microsoft Office, T<sub>E</sub>X (X<sub>Y</sub>-T<sub>E</sub>X, L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>), Google Docs
- Solidworks 3D Modeling

Operating Systems:

- Microsoft Windows (XP, Vista, 7, 8), Linux (Ubuntu)