

Bryan W. Weber

CONTACT INFORMATION

University of Connecticut
Department of Mechanical Engineering
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RESEARCH INTERESTS

Combustion Engineering: Alternative biofuels including alcohols and biodiesel; design of novel experimental methods for combustion analysis

EDUCATION

University of Connecticut, Storrs, CT, USA

Doctor of Philosophy, Mechanical Engineering, 2014 (Planned)

Working Dissertation Title: *High Pressure Ignition Chemistry of Alternative Fuels*

Master of Science, Mechanical Engineering, 2010

Thesis Title: *Autoignition of n-Butanol at Low to Intermediate Temperature and Elevated Pressure*

Advisor: Dr. Chih-Jen (Jackie) Sung

Case Western Reserve University, Cleveland, OH, USA

Bachelor of Science, Aerospace Engineering, 2009

Senior Project Title: *Analysis of Heavy Hydrocarbon Fuels using Gas Chromatography with Mass Spectrometry*

Advisor: Dr. Chih-Jen (Jackie) Sung

RESEARCH EXPERIENCE

Combustion Diagnostics Laboratory

2007-Present

University of Connecticut, Storrs, CT, USA

Case Western Reserve University, Cleveland, OH, USA

Ongoing Projects:

- Experimentally and computationally studying the ignition properties of the butanol isomers over a wide pressure range
- Designing a species sampling apparatus for time-resolved species measurements in the rapid compression machine

Completed Projects:

- Characterized the components of heavy hydrocarbon fuels, including conventional and synthetic jet fuels, using gas chromatography/mass spectrometry
- Experimentally investigated the autoignition of iso-pentanol, an alternative biofuel, in the rapid compression machine
- Experimentally investigated the autoignition of methylcyclohexane, a surrogate for gasoline, in the rapid compression machine

TEACHING EXPERIENCE

University of Connecticut, Storrs, CT, USA

- ENGR 1166: Introduction to Mechanical Engineering Spring 2013
Lecturer
- ME 3239: Combustion for Energy Conversion Fall 2012
Teaching Assistant and substitute lecturer

ADMINISTRATIVE EXPERIENCE

**Co-chair, Combustion Energy Frontier Research Center Junior Associates Committee
2012-Present**

AWARDS,
FELLOWSHIPS,
AND GRANTS

Graduate Assistantship in Areas of National Need

Spring 2010

Awarded in the area of Sustainable Energy Technologies

Fred H. Vose Prize

Spring 2009

Awarded to the senior in Mechanical and Aerospace Engineering at Case Western Reserve University showing the most promise for future leadership

Summer Undergraduate Research in Energy Sciences Grant

Summer 2008

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

JOURNAL
PUBLICATIONS

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. doi:10.1021/ef302195c

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. doi:10.1021/ef300879k

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. doi: 10.1016/j.combustflame.2011.02.005

CONFERENCE
PRESENTATIONS

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, October 2011.

M.R. Harper, W.H. Green, K.M. Van Geem, **B.W. Weber**, C.J. Sung, I. Stranic, D.F. Davidson, R.K. Hanson. *Combustion of the butanol isomers: Reaction pathways at elevated pressures from low-to-high temperatures*. Paper #84, 7th International Conference on Chemical Kinetics, Massachusetts Institute of Technology, Cambridge, MA, July 2011.

B.W. Weber and C.J. Sung. *A Rapid Compression Study of the Butanol Isomers at Elevated Pressure*. Paper 1B13, 7th US National Technical Meeting of the Combustion Institute, Georgia Institute of Technology, Atlanta, GA, March 2011.

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, 49th Annual Aerospace Sciences Meeting, Orlando, FL, January 2011.

POSTER
PRESENTATIONS

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, 7th International Conference on Chemical Kinetics, Massachusetts Institute of Technology, Cambridge, MA, July 2011.

B.W. Weber. *Autoignition of n-Butanol at Elevated Pressure and Low to Intermediate Temperature*. 1st Combustion Energy Frontiers Research Center Annual Meeting, Princeton University, Princeton, NJ, September 2010.

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, April 2009.

OTHER
PRESENTATIONS

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, August 2008.