

Bryan W. Weber

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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

TEACHING EXPERIENCE *University of Connecticut, Storrs, CT, USA* 2014–Present

Honors:

- Four-time recipient of the University of Connecticut Provost's Teaching Commendation, awarded to faculty for excellence on their end-of-semester teaching evaluations
- Three-time elected Commencement Marshal for Mechanical Engineering by the senior-class students
- Nominated for the 2018, 2019, and 2020 University Teaching Innovation Award by the Mechanical Engineering Department Chair

Courses Taught:

- ME 2233: Thermodynamic Principles Undergraduate, Major-required/Elective
 - Fall 2020: 85 students (1 regular section, 1 honors section)
 - Fall 2019: 155 students (2 regular sections, 1 honors section)
 - Summer 2019: 6 students (1 regular section)
 - Fall 2018: 148 students (2 regular sections, 1 honors section)
 - Fall 2017: 140 students (1 regular section, 1 honors section)
 - Summer 2017: 15 students (1 regular section)
 - Fall 2016: 76 students (1 regular section, 1 honors section)
 - Spring 2016: 76 students (1 regular section)
 - Fall 2015: 178 students (2 regular sections, 1 honors section)
 - Spring 2015: 36 students (1 regular section)
 - Fall 2014: 93 students (1 regular section, 1 honors section)
- ME2234: Applied Thermodynamics Undergraduate, Major-required
 - Spring 2019: 132 students (2 regular sections, 1 honors section)
 - Spring 2018: 98 students (1 regular section, 1 honors section)
 - Spring 2017: 160 students (2 regular sections, 1 honors section)
 - Spring 2016: 129 students (2 regular sections, 1 honors section)
- ME 3239: Combustion for Energy Conversion Undergraduate, Elective
 - Fall 2016: 49 students (1 regular section, 4 honors conversions)
- ME 3250: Fluid Dynamics 1 Undergraduate, Major-required
 - Fall 2017: 81 students (1 section, 9 honors conversions)
 - Fall 2015: 60 students (1 section)

- ME 3251: Fluid Dynamics 2 Undergraduate, Elective
 - Spring 2018: 59 students (1 section)
- ME 3264: Applied Measurements Laboratory Undergraduate, Major-required
 - Spring 2020: 181 students (1 section)
 - Spring 2019: 187 students (1 section)
- ME 3295: Aerodynamics & Flight Mechanics Undergraduate, Brand New Elective
 - Spring 2020: 60 students (1 section)
- ME 3295: Orbital Mechanics Undergraduate, Brand New Elective
 - Fall 2020: 60 students (1 section)
- ME 4972/4973W: Senior Capstone Design Project Co-Instructor/Team Mentor 2014–2019
 - Fall 2018: 178 students (1 section)
 - Fall 2017/Spring 2018: 162 students (1 section)
 - Fall 2016/Spring 2017: 153 students (1 section)
 - Spring 2016: 135 students (1 section)
 - Mentoring up to 4 teams per year of 2-4 students working on an industrially-sponsored capstone design project
- Independent Study Advisor Spring 2017
 - Conducted feasibility study of alternative user interfaces for Cantera
 - Initiated development of new MATLAB user interface for Cantera
- Undergraduate Research Advisor
 - Supervised 9 students conducting research, including a 12th-grade student at E.O. Smith High School
 - Projects included Cantera and PyKED user interface development, data analysis for ChemKED, and development of new PyKED features
 - Supervised two Honors Theses

US Research Software Sustainability Institute Winter School, Seattle, WA, USA 2019

- Workshop for 30 graduate students
- Taught on software best practices

PROFESSIONAL
EXPERIENCE

Director of Undergraduate Studies, Mechanical Engineering Department,
University of Connecticut 2019–Present

Assistant Professor in Residence, *University of Connecticut* 2016–Present

Visiting Assistant Professor, *University of Connecticut* 2014–2016

- Teaching 3 undergraduate courses per semester in thermal-fluids engineering

- Integrating and developing open-source software tools to promote higher-level learning outcomes in undergraduate courses
- Mentoring undergraduate student teams during their industrially-sponsored capstone design project
- Mentoring graduate and undergraduate TAs in grading and tutoring
- Conducting research with undergraduate and high-school students to develop software for combustion kinetics
- Developing open-source software tools for combustion and chemical kinetic analysis

Co-Lead Developer, *Cantera* 2013–Present

Member, *Cantera Steering Committee* 2018–Present

- Contributing source code to the open-source software toolkit for chemical kinetics, thermodynamics, and transport processes
- *Cantera* has received over 12,000 downloads of the most recent version in less than 7 months
- Organized 4 workshops for approximately 300 *Cantera* users at regional and national meetings of the Combustion Institute
- Organized 3 annual workshops for 10 *Cantera* developers
- Awarded \$3,000 NumFOCUS Small Development Grant to redesign the *Cantera* website at <https://cantera.org>
- Code is available on GitHub: <https://github.com/Cantera/cantera>

Author and Technical Reviewer, *Real Python* 2019–Present

- Write detailed articles covering the use of Python and associated packages
- Edit articles from other authors for technical correctness and presentation style
- Written five articles that receive 12,000+ unique readers each week
- Articles were featured on the *Real Python* and *Python Bytes* podcasts

Lead Developer, *ThermoState* 2016–Present

- Developing an open-source package to evaluate thermodynamic properties of simple compressible systems
- Used in 6 undergraduate Thermodynamics courses at the University of Connecticut, with strong student approval
- Published in the *Journal of Open Source Education* doi: <https://doi.org/10.21105/jose.00033>
- Code is available on GitHub under a permissive open-source license: <https://github.com/bryanwweber/thermostate>

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 a 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 of combustion to determine the parameters controlling prediction of ignition delay and to improve the ability of the models to predict combustion events

GRANTS AND
FELLOWSHIPS






2020-01-01 – 2022-12-31	—	“Extensible and community-driven thermodynamics, transport, and chemical kinetics modeling with Cantera: expanding to diverse scientific domains” NSF CSSI Funding: \$132,245, Co-PI
2020-01-07 – 2020-05-23	—	“Investigating the Atomization Process of a Modern Pressure-Swirl Aero-Engine Injector at Engine Relevant Pressures” NASA Connecticut Space Grant Consortium Funding: \$20,000, PI
2019-07-01 – 2019-07-31	—	“Cantera Packaging and CI Infrastructure Upgrades” NumFOCUS Small Development Grant Funding: \$2,500, PI
2018-07-01 – 2018-07-31	—	“Modernize, Reorganize, and Update Cantera’s Documentation” NumFOCUS Small Development Grant Funding: \$3,000, Co-PI
2018-06-01 – 2018-06-30	—	“Integration of Software-Based Problem Solving in Thermodynamics Instruction” University of Connecticut Provost Mini-Grant Funding: \$5,000, PI
2018-01-01 – 2018-05-05	—	“Integrating KEEN E-Learning Module: Resolving Ethical Issues” University of New Haven/KEEN Mini-Grant Funding: \$2,000, PI
2017-01-01 – 2017-05-31	—	“Measurement of Chemical Pathways During Autoignition at High Pressure” NASA Connecticut Space Grant Consortium Funding: \$20,000, PI
2014-01-21 – 2014-05-02	—	“High Pressure Ignition Chemistry of Alternative Fuels” University of Connecticut Doctoral Dissertation Fellowship Funding: \$2,000
2013-04-01 – 2013-05-01	—	“Experiments and Detailed Modeling of Butanol Ignition” Department of Mechanical Engineering Graduate Predoctoral Fellowship Funding: \$2,000

- 2013-01-22 – 2013-05-03 — Graduate Teaching Fellowship
Department of Mechanical Engineering
University of Connecticut
- 2010-01-06 – 2010-05-22 — “Assessing the Feasibility of Substituting Biofuels
for Conventional Hydrocarbon Fuels”
University of Connecticut GAANN Fellowship
in Sustainable Energy Technologies
Funding: \$7,599
- 2008-06-01 – 2008-08-31 — “Investigation of Hydrocarbon Flame Structure
using Probe Sampling and GC/MS”
Case Western Reserve University Summer
Undergraduate Research in Energy Sciences Grant
Funding: \$3,500









JOURNAL
PUBLICATIONS







- [17] **B.W. Weber**. *Climbing Bloom’s Taxonomy With Jupyter Notebooks: Experiences In Mechanical Engineering*. Paper IMECE2019-10615, ASME 2019 International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, Nov. 2019.
 doi:10.1115/IMECE2019-10615
- [16] H. Wang, R. Fang, **B.W. Weber**, and C.J. Sung. *An experimental and modeling study of dimethyl ether/methanol blends autoignition at low temperature*. *Combustion and Flame*, vol. 198, pp. 88–99, Dec. 2018.
 doi:10.1016/j.combustflame.2018.09.012
- [15] V. Moreno, **B.W. Weber**, and T. Barber. *Post-Graduation Assessment of the Effectiveness of an Industrially Sponsored Senior Design Capstone Course*. Paper IMECE2018-86812, ASME 2018 International Mechanical Engineering Congress and Exposition, Pittsburgh, PA, Nov. 2018.
 doi:10.1115/IMECE2018-86812
- [14] **B.W. Weber**. *ThermoState: A state manager for thermodynamics courses*. *Journal of Open Source Education*, vol. 1, no. 8, pp. 33, Oct. 2018.
 doi:10.21105/jose.00033
- [13] D.G. Goodwin, R.S. Speth, H.K. Moffat, and **B.W. Weber**. *Cantera: An object-oriented software toolkit for chemical kinetics, thermodynamics, and transport processes*. <https://www.cantera.org>, 2018. Version 2.4.0.
 doi:10.5281/zenodo.170284
- [12] **B.W. Weber** and K.E. Niemeyer. *ChemKED: a human- and machine-readable data standard for chemical kinetics experiments*. *International Journal of Chemical Kinetics*, vol. 50, no. 3, pp. 135–148, Mar. 2018.
 doi:10.1002/kin.21142
 arxiv:1706.01987v3
- [11] **B.W. Weber**, J.A. Bunnell, K. Kumar, and C.J. Sung. *Experiments and Modeling of the Autoignition of Methyl Pentanoate at Low to Intermediate Temperatures*



- and Elevated Pressures in a Rapid Compression Machine*. Fuel, vol. 212, pp. 479–486, Jan. 2018.
doi:10.1016/j.fuel.2017.10.037
- [10] K. Kumar, J.A. Bunnell, **B.W. Weber**, and C.J. Sung. *Autoignition of Methyl Propanoate and its Comparisons with Methyl Ethanoate and Methyl Butanoate*. Combustion and Flame, vol. 188, pp. 116–128, Jan. 2018.
doi:10.1016/j.combustflame.2017.09.027
- [9] E.E. Dames, A.S. Rosen, **B.W. Weber**, C.W. Gao, C.J. Sung, and W.H. Green. *A Detailed Combined Experimental and Theoretical Study on Dimethyl Ether/Propane Blended Oxidation*. Combustion and Flame, vol. 168, pp. 310–330, Jun. 2016.
doi:10.1016/j.combustflame.2016.02.021
- [8] G. Kukkadapu, **B.W. Weber**, and C.J. Sung. *Autoignition study of tetralin in a rapid compression machine at elevated pressures and low-to-intermediate temperatures*. Fuel, vol. 159, pp. 436–445, Nov. 2015.
doi:10.1016/j.fuel.2015.06.093
- [7] **B.W. Weber**, C.J. Sung, and M.W. Renfro. *On the Uncertainty of Temperature Estimation in a Rapid Compression Machine*. Combustion and Flame, vol. 162, no. 6, pp. 2518–2528, Jun. 2015.
doi:10.1016/j.combustflame.2015.03.001
arxiv:1706.04243
- [6] S.M. Burke, U. Burke, R. McDonagh, 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. 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
arxiv:1706.02996
- [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
 arxiv:1706.02965
- [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
 arxiv:1706.00867



CONFERENCE
PUBLICATIONS
AND
PRESENTATIONS

- [20] **B.W. Weber**. *Work in Progress: Using Jupyter Notebooks to Climb Bloom's Taxonomy in Thermodynamics*. Paper 35700, 2020 ASEE Virtual Conference, Jun. 2020.
 <https://peer.asee.org/35700>
- [19] K.E. Niemeyer (Presenting), R.L. Speth, **B.W. Weber**, R.H. West. *A review of evidence-based best practices for developing research software in combustion*. Paper 2K01, 11th US National Technical Meeting of the Combustion Institute, Pasadena, CA, Mar. 2019.
 doi:10.5281/zenodo.2619549
- [18] **B.W. Weber** and K.E. Niemeyer (Presenting). *ChemKED: a human- and machine-readable data standard for chemical kinetics experiments*. Paper MUQ004, 10th International Conference on Chemical Kinetics, Chicago, IL, May 2017.
 arxiv:1706.01987v2
 figshare:10.6084/m9.figshare.5033417
- [17] **B.W. Weber** (Presenting) and C.J. Sung. *UConnRCMPy: Python-based data analysis for Rapid Compression Machines*. Paper 2D19, 10th US National Technical Meeting of the Combustion Institute, College Park, MD, Apr. 2017.
 arxiv:1706.01984
 figshare:10.6084/m9.figshare.5089597
- [16] **B.W. Weber** (Presenting) and K.E. Niemeyer. *ChemKED: a human- and machine-readable data standard for chemical kinetics experiments*. Paper 1D11, 10th US National Technical Meeting of the Combustion Institute, College Park, MD, Apr. 2017.
 arxiv:1706.01987v1
 figshare:10.6084/m9.figshare.5082709

- [15] **B.W. Weber** (Presenting), J. Bunnell, K. Kumar, and C.J. Sung. *Autoignition of Methyl Valerate at Low to Intermediate Temperatures and Elevated Pressures in a Rapid Compression Machine*. Paper 2D01, 10th US National Technical Meeting of the Combustion Institute, College Park, MD, Apr. 2017.
 arxiv:1706.01483
 figshare:10.6084/m9.figshare.5089594
- [14] H. Wang, **B.W. Weber**, R. Fang (Presenting), and C.J. Sung. *High-Pressure Autoignition of Binary Blends of Methanol and Dimethyl Ether*. Paper 3D01, 10th US National Technical Meeting of the Combustion Institute, College Park, MD, Apr. 2017.
 arxiv:1706.01485
- [13] **B.W. Weber** and K.E. Niemeyer (Presenting). *Introducing ChemKED: a human- and machine-readable data standard for chemical kinetics experiments*. 16th International Conference on Numerical Combustion, Orlando, FL, Apr. 2017.
 figshare:10.6084/m9.figshare.4818448
- [12] **B.W. Weber** (Presenting) and C.J. Sung. *UConnRCMPy: Python-based data analysis for Rapid Compression Machines*. 15th Python in Science Conference, Austin, TX, Jul. 2016.
 doi:10.25080/Majora-629e541a-005
 figshare:10.6084/m9.figshare.5089573
- [11] G. Kukkadapu (Presenting), **B.W. Weber**, and C.J. Sung. *Autoignition study of tetralin in a rapid compression machines at elevated pressures and low-to-intermediate temperatures*. Paper 1G05, 9th US National Technical Meeting of the Combustion Institute, Cincinnati, OH, May 2015.
- [10] K. Kumar (Presenting), J. Bunnell, **B.W. Weber**, and C.J. Sung. *Autoignition of methyl-propanoate and a comparison with its selected ester homologs*. Paper 1G07, 9th US National Technical Meeting of the Combustion Institute, Cincinnati, OH, May 2015.
- [9] E.E. Dames (Presenting), **B.W. Weber**, A. Rosen, C.W. Gao, C.J. Sung, and W.H. Green. *Towards a comprehensive DME/propane blended combustion kinetic model*. Paper 2F16, 9th US National Technical Meeting of the Combustion Institute, Cincinnati, OH, May 2015.
- [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*. 8th International Conference on Chemical Kinetics, University Seville, Seville, Spain, Jul. 2013.
- [7] **B.W. Weber** (Presenting), 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, 8th US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.



 arxiv:1706.01828
 figshare:10.6084/m9.figshare.5089564

- [6] **B.W. Weber** (Presenting), S.S. Merchant, C.J. Sung, and W.H. Green. *An Autoignition Study of iso-Butanol: Experiments and Modeling*. Paper 3A01, 8th US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.

 arxiv:1706.01827
 figshare:10.6084/m9.figshare.5089555



- [5] S.M. Sarathy, S. Park, W. Wang, P. Veloo, A.C. Davis, C. Togbé, **B.W. Weber** (Presenting), 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, 8th US National Technical Meeting of the Combustion Institute, Park City, UT, May 2013.

- [4] **B.W. Weber** (Presenting) 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.



 arxiv:1706.01842
 figshare:10.6084/m9.figshare.5089540

- [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, 7th International Conference on Chemical Kinetics, Cambridge, MA, Jul. 2011.

- [2] **B.W. Weber** (Presenting) 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, Atlanta, GA, Mar. 2011.

 arxiv:1706.01832
 figshare:10.6084/m9.figshare.5089519


- [1] **B.W. Weber** (Presenting), 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, Jan. 2011.

 arxiv:1706.01837
 figshare:10.6084/m9.figshare.5089537


CONFERENCE
POSTERS

- [6] F. Ferliga, S. Dooley, M. Horward, L. Leahy, A. Comandini, A. Farooq, A. Heufer, A. Zyada, B. Moreau, **B. Weber**, C. Strozzi, C. Wadkar, E. Toulson, F. Foucher, G. Goldsborough, G. Issyev, G. Vanhove, J. Santner, J. Sotton, K. Niemeyer, M. Bellenoue, M. Fuller, N. Chaumeix, O. Samimi Abianeh, R. Büttgen, R. Schiessl, S.S. Vasu, Y. Yu. *Rapid Compression Machine Workshop*

2nd Characterization Initiative - Ethanol Ignition. 37th International Symposium on Combustion, Dublin, Ireland, Aug. 2018.

- [5] K.E. Niemeyer and **B.W. Weber**. *PyKED: a Python-based tool supporting data analysis and experimental reproducibility in combustion* Poster, 17th Scientific Computing with Python Conference, Austin, TX, Jul. 2018.
 doi:10.5281/zenodo.1312239
- [4] R. Fang, N. Curtis, **B.W. Weber**, and C.J. Sung. *Fast sampling system for simultaneous speciation and ignition delay measurements in a rapid compression machine*. Poster P11, 10th US National Technical Meeting of the Combustion Institute, College Park, MD, Apr. 2017.
- [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, 7th International Conference on Chemical Kinetics, Cambridge, MA, Jul. 2011.
 figshare:10.6084/m9.figshare.5089456
- [2] **B.W. Weber**. *Autoignition of n-Butanol at Elevated Pressure and Low to Intermediate Temperature*. 1st Combustion Energy Frontier Research Center Annual Meeting, Princeton University, Princeton, NJ, Sep. 2010.
 figshare:10.6084/m9.figshare.5084803
- [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.
 figshare:10.6084/m9.figshare.5084797

OTHER
PRESENTATIONS

- [2] **B.W. Weber**. *Climbing Bloom's Taxonomy With Jupyter Notebooks: Experiences In Mechanical Engineering*. UConn CETL Innovation Seminar Series, Apr. 2019.
- [1] **B.W. Weber** and C.J. Sung. *An Investigation of Hydrocarbon Flames using Probe Sampling and Gas Chromatography/Mass Spectrometry*. Summer Undergraduate Research in Energy Sciences Program, Dominion Energy East Ohio Branch, Cleveland, OH, Aug. 2008.
 figshare:10.6084/m9.figshare.5098933

MENTORING

- Ph.D. committee co-chair, Ruozhou Fang, Mechanical Engineering, exp. 2022
- Ph.D. committee member, Kyle Twarog, Mechanical Engineering, exp. 2023
- Ph.D. committee member, Nicholas Curtis, Mechanical Engineering, 2018
- Ph.D. committee member, Taofeek Orekan, Electrical Engineering, 2017

- Ph.D. committee member, Goutham Kukkadapu, Mechanical Engineering, 2016
- M.S. committee member, Peter Vannorsdall, Mechanical Engineering, 2019
- M.S. committee member, Sara Kloczko, Mechanical Engineering, 2019
- M.S. committee member, Rishi Roy, Mechanical Engineering, 2018
- M.S. committee member, Kyle Twarog, Mechanical Engineering, 2018
- M.S. committee member, Justin Bunnell, Mechanical Engineering, 2015

PROFESSIONAL
SERVICE

NumFOCUS Small Development Grant Committee 2019–Present
Co-Chair

- Reviewing small development grant proposals from NumFOCUS sponsored and affiliated projects
- Grants can be up to \$5,000 and approximately 30 proposals are submitted per round
- Overall funding budget of \$25,000 to be awarded
- Coordinating meetings for the 8 members of the committee

University of Connecticut RFP Committee 2019–Present
Member

- RFP #DD020120
- Digital Assessment and Evaluation Software and Related Services
- Assisting development of RFP scope

Cantera Steering Committee 2018–Present
Member

- Coordinating Cantera development and activities for the benefit of the community
- As representative for the Cantera project, attended 2018 and 2019 NumFOCUS Summit Meetings
- Establishing roadmap for Cantera development, including objectives related to technical features and community engagement

NumFOCUS Summit Planning Committee 2018
Member

- Planning the 2018 NumFOCUS Summit for all sponsored projects
- Summit attended by 100 members of the sponsored projects
- Planning seminars and unconference sessions for attendees

Worcester Polytechnic Institute Institute for Project-Based Learning 2018
University of Connecticut Team Leader

- Led team of 7 faculty from Engineering, Computer Science, Accounting, and Education

- Developed plan to implement project-based learning in the School of Engineering Curriculum at UConn
- Worked with UConn Administration to identify key stakeholders, roadblocks, and resources required to implement Project-Based Learning

University of Connecticut, Department of Mechanical Engineering 2017–Present

Member, ABET Committee

Member, Ph.D. Qualifier Committee

- Developing materials to demonstrate continuing improvement for 2019 ABET accreditation visit
- Developed pre- and post-quizzes for undergraduate Thermodynamics courses in Mechanical Engineering to demonstrate student achievement of ABET outcomes
- Developed Ph.D. qualifying exam questions in collaboration with other department faculty

Combustion Energy Frontier Research Center (CEFRC)

2012–2014

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 principal investigators and the junior members.

U.S. Department of Energy

2013–2014

Member, EFRC Newsletter Editorial Board

- Contribute articles to the Energy Frontier Research Centers (EFRC) newsletter describing recent scientific advances resulting from EFRC research, including:
 - “Burning Butanol in a Better Engine”
 - “The Advantage of Renewable Fuels in High-Efficiency Engines”
 - “Confined Catalysts Last Longer”
- Edit articles written by other board members for factual and grammatical correctness.

Journal Referee

- Combustion and Flame
- Energy & Fuels
- Proceedings of the Combustion Institute
- Fuel
- Combustion Science & Technology
- Industrial & Engineering Chemistry Research
- Society of Automotive Engineers World Congress
- Measurement
- Journal of Open Source Software

PROFESSIONAL MEMBERSHIPS American Chemical Society - Member
American Institute of Aeronautics and Astronautics - Member
American Society of Mechanical Engineers - Member
The Combustion Institute - Member