

Haowei Wang

Associate Professor
Department of Mechanical Engineering
California State University Fullerton
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Education

Ph.D., Mechanical Engineering, Rensselaer Polytechnic Institute, Troy, NY, 2012
M.S., Mechanical Engineering, Rensselaer Polytechnic Institute, Troy, NY, 2009
B.Eng., Thermal Energy and Power Engineering, Southeast University, Nanjing, China, 2008

Professional Experience

Associate Professor, Department of Mechanical Engineering
California State University Fullerton, Fullerton, CA 8/2017-Present

Assistant Professor, Department of Mechanical Engineering
California State University Fullerton, Fullerton, CA 8/2012-8/2017

Research and Development Intern, Combustion Laboratory
General Electric Global Research Center, Niskayuna, NY 5/2010-8/2010

- Designed, prepared, and conducted tests for two gasifier combustor design projects. Worked closely with engineers, technicians, and vendors located worldwide to design, test, and improve gasifier nozzles.
- Set up optics and beam light for image capture. Wrote codes to process high-speed camera images of gasifier flows to optimize image quality for data extraction. Studied the fluid dynamics, formulated and organized results, performed analysis, and made recommendations for the commercialization of gasifier technology for stationary power generation.

Graduate Research Assistant, Advisor: Matt Oehlschlaeger
Rensselaer Polytechnic Institute, Troy, NY 8/2008-5/2012

- Developed experimental facilities (shock tube) and techniques for the measurement of autoignition delay times for heavy low vapor pressure hydrocarbon compounds and jet fuels. Set up data acquisition system. Simulation with Chemkin.
- Investigated the oxidation and ignition of individual hydrocarbon compounds, fuel surrogate mixtures, and traditional and alternative transportation fuels. Focused primarily on biodiesel, jet fuels (Jet-A (commercial), JP-8 (U.S. Military), alternative Fischer-Tropsch synthetic jet fuels) and jet fuel surrogates to aide in the development and validation of fuel chemical kinetic models used in engine development and design.
- Research funded by United States Air Force Office of Scientific Research.

Undergraduate Researcher, Department of Thermal Energy and Power Engineering
Southeast University, Nanjing, China

2006-2008

- Experiments and CFD modeling of the fundamentals of gas-solid two-phase flows for fluidized bed applications in clean energy technology. Fluidized bed reactor design using 3D CAD and fluid simulation using FLUENT with Gambit mesh generation; results published in journal and in B.Eng. thesis.
- Assessment of the technical and economic feasibility of CO₂ Capture and Sequestration as part of a climate change study; literature review, modeling, and data analysis of CO₂ emissions from different coal sources found in China.

Teaching

California State University Fullerton

- Digital Computation, EGME 205: Freshman level requirement for mechanical engineering majors. Focus is on computer programming with Matlab of importance to engineers. Arrays, operation, loops, regression, application in mathematics.
- Thermodynamics, EGME 304: Junior level requirement for mechanical engineering majors. This course covers fundamental energy relationships, thermodynamic properties, first and second laws of thermodynamics and power generation.
- Fluids & Thermal Laboratory, EGME 306B: Experimental studies of fluid friction and heat exchanger performance. Use of computers in data acquisition, reduction and analysis.
- Fluid Mechanics and Aerodynamics, EGME 333: Junior level requirement for mechanical engineering majors. Focus is on fluid properties, hydrostatic forces, conservation of mass, energy and momentum, Bernoulli Equation and Navier-Stokes equation, boundary layer and fluid flow in pipes and ducts.
- Heat Transfer, EGME 407: Junior and senior level requirement for mechanical engineering majors. This course covers conduction heat transfer, convection heat transfer, radiation heat transfer and heat exchangers.
- Rocket and Space Engineering, EGME 418: Fundamental concepts from thermodynamics and fluid mechanics to predict the general performance characteristics of propulsion systems used in aircraft and spacecraft.
- Combustion Systems, EGME 434: Introduction to flame propagation, explosions, detonations, and droplet combustion. Discussion of internal and external combustion engines.
- Computer Application in Engineering Design, EGME 540: Using ANSYS to design and optimize the design of various mechanical engineering problems in structure, heat transfer, fluid mechanics and dynamics.

Rensselaer Polytechnic Institute

- Teaching Assistant for Modeling and Analysis of Uncertainty (Fall 2008): conducted both group and one-on-one student instruction on probability and statistics and the application of the software Minitab.
- Teaching Assistant for Heat Transfer (Fall 2008): Led office hour sessions to help students with assignments and the software COMSOL.

- Teaching Assistant for Combustion (Spring 2010): Graded quizzes, homework and exams and held office hours.
- Teaching Assistant for Propulsion Systems (Fall 2011): Graded homework and exams and guest lectured.

Research Interests

Heat Exchangers, Energy, Propulsion, Combustion, Alternative Fuels.

Refereed Journal Publications

1. Christopher W. LaMorte*, Haowei Wang, "Utilizing Laser Cutting, 3D Printing and 3D Scanning to Create an Affordable Fully Interactive Prototype of a Full Size Animatronic Figure", *Journal of Engineering and Architecture*, 3(1), 1-9 (2015) (*CSUF Student)
2. S.H. Won, S. Dooley, P.S. Veloo, **H. Wang**, M.A. Oehlschlaeger, F.L. Dryer, Y. Ju, "The Combustion Properties of 2,6,10-Trimethyl Dodecane and a Chemical Functional Group Analysis," *Combustion and Flame*, 161, 826-834 (2014).
3. **H. Wang**, W. J. Gerken, W. Wang, and M.A. Oehlschlaeger, "Experimental Study of the High-Temperature Autoignition of Tetralin," *Energy & Fuels*, 27, 5483-5487 (2013).
4. M.A. Oehlschlaeger, **H. Wang** and M.N. Sexton, "Prospects for Biofuels: A Review," *Journal of Thermal Science and Engineering Applications*, 5(2), (2013).
5. **H. Wang** and M.A. Oehlschlaeger, "Autoignition Studies of Conventional and Fischer-Tropsch Jet Fuels," *Fuel*, 98, 249-258 (2012).
6. S. Dooley, S.H. Won, J. Heyne, T.I. Farouk, Y. Ju, F.L. Dryer, K. Kumar, C.J. Sung, **H. Wang**, M.A. Oehlschlaeger, V. Iyer, T.A. Litzinger, R.J. Santoro, T. Malewicki, K. Brezinsky, "The Experimental Evaluation of a Methodology for Surrogate Fuel Formulation to Emulate Gas Phase Combustion Kinetic Phenomena," *Combustion and Flame*, 159, 1444-1466 (2012).
7. 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," *Combustion and Flame*, 159, 3014-3020 (2012).
8. S.M. Sarathy, C.K. Westbrook, M. Mehl, W.J. Pitz, C. Togbe, P. Dagaut, **H. Wang**, M.A. Oehlschlaeger, U. Niemann, D. Seshadri, P.S. Vello, C. Ji, F.N. Egolfopoulos, T. Lu "Comprehensive Chemical Kinetic Modeling of the Oxidation of 2-Methylalkanes from C₇ to C₂₀," *Combustion and Flame*, 158, 2338-2357 (2011).
9. S. Dooley, S.H. Won, M. Chaos, J. Heyne, Y. Ju, F.L. Dryer, K. Kumar, C.J. Sung, **H. Wang**, M.A. Oehlschlaeger, R.J. Santoro, and T.A. Litzinger, "A Jet Fuel Surrogate Formulated by Real Fuel Properties," *Combustion and Flame*, 157, 2333-2339 (2010).

10. **H. Wang**, S.J. Warner, M.A. Oehlschlaeger, R. Bounaceur, P.A. Glaude, and F. Battin-Leclerc, "An Experimental and Kinetic Modeling Study of the Autoignition of α -Methylnaphthalene/Air and α -Methylnaphthalene/n-Decane/Air Mixtures at Elevated Pressures," *Combustion and Flame*, 157, 1976-1988 (2010).
11. **H. Wang**, Y. Zhu, Z. Zhong, and B. Jin, "Three-Dimensional Numerical Simulation of Gas-Solid Injector," *Energy Research and Utilization*, 1, 17-21 (2008).

Conference Articles

1. Christopher W. LaMorte*, **H. Wang**, Utilizing Laser Cutting, 3D Printing and 3D Scanning to Create an Affordable Fully Interactive Prototype of Full Size Animatronic Figure, International Conference on Sustainable Materials Science and Technology, Paris, France, (2015) (* CSUF Students)
2. **H. Wang**, Effects of Biodiesel on Engine Performance and Emissions, Council on Undergraduate Research Conference, poster session, Washington, DC, (2014)
3. A. Quilala*, H. Zazueta*, V. Gonzalez*, **H. Wang**, Experimental Study of the Effects of Biodiesel on Engine Performance and Emissions, Spring Meeting of Western States Section of the Combustion Institute, Pasadena, CA, (2014) (* CSUF Students)
4. S.H. Won, S. Dooley, P.S. Veloo, **H. Wang**, M.A. Oehlschlaeger, F.L. Dryer, Y. Ju, Quantification of Molecule Structure Impact on Combustion Properties for Synthetic Diesel Fuel: 2,6,10-Trimethyldodecane, 8th US National Technical Meeting of the Combustion Institute, Salt Lake City, UT, (2013)
5. S. Dooley, S.H. Won, S. Jahangirian, Y. Ju, F.L. Dryer, **H. Wang**, M.A. Oehlschlaeger, An Experimentally Validated Surrogate Fuel for the Combustion Kinetics of S-8, a Synthetic Paraffinic Jet Aviation Fuel, AIAA 2012-619, 50th AIAA Aerospace Sciences Meeting, Nashville, TN, (2012)
6. **H. Wang**, M.A. Oehlschlaeger, S. Dooley, F.L. Dryer, A Shock Tube and Kinetic Modeling Study of the Autoignition of n-Propylbenzene, 7th US National Technical Meeting of the Combustion Institute, Atlanta, GA, (2011)
7. S.M. Sarathy, C.K. Westbrook¹, M. Mehl, W.J. Pitz, C. Togbe, P. Dagaut, **H. Wang**, M.A. Oehlschlaeger, U. Niemann, K. Seshadri, P.S. Veloo, C. Ji, F. Egolfopoulos, T. Lu, Comprehensive Chemical Kinetic Modeling of the Oxidation of C₈ and larger n-alkanes and 2-methylalkanes, 7th US National Technical Meeting of the Combustion Institute, Atlanta, GA, (2011)

8. S. Dooley, S.H. Won, J. Heyne, Y. Ju, F.L. Dryer, K.I. Kumar, C.J. Sung, **H. Wang**, M.A. Oehlschlaeger, T.A. Litzinger, R.J. Santoro, The Formulation of Surrogate Fuels to Emulate the Combustion Behavior of Real Jet Aviation Fuels, 7th US National Technical Meeting of the Combustion Institute, Atlanta, GA, (2011)
9. S. Dooley, S.H. Won, M. Chaos, J. Heyne, Y. Ju, F.L. Dryer, K. Kumar, C.J. Sung, **H. Wang**, M.A. Oehlschlaeger, R.J. Santoro, and T.A. Litzinger, A Jet Fuel Surrogate Formulated by Real Fuel Properties, *Western States Meeting of the Combustion Institute*, Boulder, CO (2010).

Student Research Supervision

Graduate Students

1. Jonathan Nguyen, 2015-present
2. Elya Assourian, M.S. Project Advisor, 2014-present
3. Christopher LaMorte, M.S. Project Advisor, 2014-2015
4. Ace Quilala, 2013-2014

Undergraduate Students

5. Rafael Teran, 2014-2015
Funded by LSAMP (Louis Stokes Alliance for Minority Participation) Program.
6. Adrian Iniguez, 2014-present
Funded by LSAMP (Louis Stokes Alliance for Minority Participation) Program.
7. Hector Zezueta, 2013-2014
Funded by LSAMP (Louis Stokes Alliance for Minority Participation) Program. Outstanding Research in STEM Award from LSAMP
8. Valeria Gonzalez, Community College Student From Cypress College, Summer 2013
Funded by NSF (STEM)² Program
9. Michael Salas, Summer 2013
10. Jordan Tran, Summer 2013

Service

Departmental Service

Undergraduate Advisor	3/2016-Present
Faculty Search Committee	10/2013-Present
Continuous Improvement Committee	10/2013-Present
Master's Students Exam Committee	10/2012-Present
ABET Course Coordinator for EGME 333 and EGME 407	3/2013-8/2014
Master Thesis/Project Committee Member	
1. Jake Bailey, Project, M.S. 2014 (Advisor: Prof. Sang June Oh)	
2. Mohammed Ali Mohammed, Thesis, M.S. 2014 (Advisor: Prof. Hossein Moini)	
3. Ikechukwu Ukwuzor, Thesis, M.S. 2015 (Advisor: Dr. Medhat Azzazy)	

Student Club Advising

Advisor for TITAN Rocket Engineering Society on campus	3/2015-Present
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Campus Wide Service

Committee member of campus-wide Phase 3 of EPOCHS Faculty/Student Mentoring Program
(Enhancing Postbaccalaureate Opportunities at CSUF for Hispanic Students) 9/2012-4/2013

Professional Community Service – Research Paper and Proposal Reviewing

Council on Undergraduate Research (2013, 2014)

Energy and Fuel (2013, 2014)

Fuel (2013, 2012)

ASME Journal of Thermal Science and Engineering Applications (2013, 2014)

International Mechanical Engineering Congress & Exposition Conference (2013, 2014)

ASME Heat Transfer Conference (2013)

Recent Patents on Mechanical Engineering (2011)

Recent Patents on Chemical Engineering (2011)

American Chemical Society, Petroleum Research Fund (2013)

Faculty Enhancement and Instructional Development Proposals (2015)

European Research Council (2015)

SAE International Journal of Fuels and Lubricants (2017)

Professional Community Service – Conference Chairing

Chair of the Laminar Flames session at the Spring Meeting of Western States Section of the
Combustion Institute, Pasadena, CA, (2014)

Community Outreach

Instructor of Engineering Innovation - A summer program for high school students offered by
Johns Hopkins University and CSUF Partnership. 7/2013

Job-shadowing - Let four high school students from Troy High School job shadow me to gain
understanding and knowledge about a professor's job. 10/22/2013

Professional Society Membership

American Society of Mechanical Engineering (2012-present), member

Combustion Institute (2012-present), member