

Sili Deng

Assistant Professor
Mechanical Engineering
Massachusetts Institute of Technology

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EDUCATION

Ph.D., Princeton University 09/2010-09/2016
Department: Mechanical and Aerospace Engineering
Dissertation: Chemistry-Transport Coupling in Flame Dynamics and Emissions
Co-advisers: Professor C. K. Law and Professor M. E. Mueller

M.A., Princeton University 09/2010-05/2012
Department: Mechanical and Aerospace Engineering

B.S., Tsinghua University 08/2006-07/2010
Department: Thermal Engineering (Graduation with Honor)

RESEARCH EXPERIENCE

Assistant Professor, Massachusetts Institute of Technology 01/2019-Present

Visiting Scientist, Massachusetts Institute of Technology 06/2017-12/2018

Postdoctoral Scholar, Stanford University 09/2016-12/2018
Supervisor: Professor Xiaolin Zheng

Graduate Research Assistant, Princeton University 09/2010-09/2016

Undergraduate Research Assistant, Tsinghua University 08/2008-07/2010

TEACHING EXPERIENCE

Assistant Professor, Massachusetts Institute of Technology 01/2019-Present

2.005: Thermal Fluids Engineering I (Spring 2020, Spring 2021)

2.006: Thermal Fluids Engineering II (Spring 2019, Fall 2019, Spring 2022)

2.671: Measurement and Instrumentation (Fall 2020, Fall 2021, Fall 2022)

McGraw Graduate Teaching Fellow, Princeton University 05/2014-09/2016

Teaching Assistant, Princeton University 02/2013-09/2016

MAE 221: Thermodynamics (Undergraduate)

MAE 426: Rocket and Air-Breathing Propulsion Technology (Undergraduate)

MAE/ELE 427: Energy Conversion and the Environment: Transportation Applications (Undergraduate)

MAE 531: Combustion (Graduate)

SELECTED AWARDS

Class of 1954 Career Development Chair , <i>Massachusetts Institute of Technology</i>	2022
Faculty Early Career Development (CAREER) Award , <i>National Science Foundation</i>	2022
d'Arbeloff Career Development Chair , <i>Massachusetts Institute of Technology</i>	2019
Bernard Lewis Fellowship , <i>Combustion Institute</i>	2016
Gordon Wu Prize for Excellence , <i>Princeton University</i>	2014
Excellence in Teaching Award , <i>Princeton University</i>	2014
Princeton Energy and Climate Scholarship , <i>Princeton University</i>	2013
Princeton University Graduate Fellowship , <i>Princeton University</i>	2010
Best Bachelor Thesis Award , <i>Tsinghua University</i>	2010
Tsinghua University Fellowships , <i>Tsinghua University</i>	2006-2010

PUBLICATIONS

1. W. Ji, X. Su, B. Pang, Y. Li, Z. Ren, **S. Deng**, "SGD-based optimization in modeling combustion kinetics: Case studies in tuning mechanistic and hybrid kinetic models", *Fuel* 324 (2022) 124560.
2. J. Zhang, V.L. Muldoon, **S. Deng**, "Accelerated synthesis of Li(Ni_{0.8}Co_{0.1}Mn_{0.1})O₂ cathode materials using flame-assisted spray pyrolysis and additives", *Journal of Power Sources* 258 (2022) 231244.
3. J. Zhang, Y. Wang, V.L. Muldoon, **S. Deng**, "Crude glycerol and glycerol as fuels and fuel additives in combustion applications", *Renewable and Sustainable Energy Reviews* 159 (2022) 112206.
4. W. Ji, F. Richter, M.J. Gollner, **S. Deng**, "Autonomous kinetic modeling of biomass pyrolysis using chemical reaction neural networks", *Combustion and Flame* 240 (2022) 111992.
5. X. Su, W. Ji, L. Zhang, W. Wu, Z. Ren, **S. Deng**, "Neural differential equations for inverse modeling in model combustors", *Proceedings of the ASME International Mechanical Engineering Congress & Exhibition 2021*, IMECE2021-69657 (2021).
6. W. Ji, J. Zanders, J.-W. Park, **S. Deng**, "Data-driven approaches to learn Hychem models", *Proceedings of the ASME International Combustion Engine Division Fall Technical Conference 2021*, ICEF2021-67925 (2021).
7. X. Liang, Y. Wang, Y. Chen, **S. Deng**, "Advances in emission regulations and emission control technologies for internal combustion engines", *SAE Journal of Sustainable Transportation, Energy, Environment & Policy* 2 (2021).
8. W. Ji, W. Qiu, Z. Shi, S. Pan, **S. Deng**, "Stiff-PINN: Physics-Informed Neural Network for stiff chemical kinetics", *Journal of Physical Chemistry A* 125 (2021) 8098-8106.
9. S. Kim, W. Ji, **S. Deng**, Y. Ma, C. Rackauckas, "Stiff neural ordinary differential equations", *Chaos* 31 093122 (2021).
10. H. Zhao, D. Lu, J. Wang, W. Tu, D. Wu, S.W. Koh, P. Gao, Z.J. Xu, **S. Deng**, Y. Zhou, B. You, H. Li, "Raw biomass electroreforming coupled to green hydrogen generation", *Nature Communications* 12, 2008 (2021).

11. W. Ji, **S. Deng**, "Autonomous discovery of unknown reaction pathways from data by Chemical Reaction Neural Network", *Journal of Physical Chemistry A* 125 (2021) 1082-1092.
12. Y. Wang, Y. Chen, X. Liang, P. Tan, **S. Deng**, "Impacts of lubricating oil and its formulations on diesel engine particle characteristics", *Combustion and Flame* 225 (2021) 48-56.
13. S. Ou, X. He, W. Ji, W. Chen, L. Sui, Y. Gan, Z. Lu, Z. Lin, **S. Deng**, S. Przesmitzki, J. Bouchard, "Machine learning model to project the impact of COVID-19 on US motor gasoline demand", *Nature Energy* 5 (2020) 666-673.
14. W. Ji, T. Yang, Z. Ren, **S. Deng**, "Dependence of kinetic sensitivity direction in premixed flames", *Combustion and Flame* 220 (2020) 16-22.
15. Y. Jiang*, **S. Deng***, S. Hong*, S. Tiwari, H. Chen, K. Nomura, R.K. Kalia, A. Nakano, P. Vashishta, M.R. Zachariah, and X.L. Zheng, "Synergistically chemical and thermal coupling between graphene oxide and graphene fluoride for enhancing aluminum combustion", *ACS Applied Materials & Interfaces* 12 (2020) 7451-7458. *Equal contribution.
16. S. Huang, **S. Deng**, Y. Jiang, X.L. Zheng, "Experimental effective metal oxides to enhance boron combustion", *Combustion and Flame* 205 (2019) 278-285.
17. S. Huang, M. Pan, **S. Deng**, Y. Jiang, J. Zhao, B. Levy-Wendt, S.K.Y. Tang, X.L. Zheng, "Modified micro-emulsion synthesis of highly dispersed Al/PVDF composites with enhanced combustion properties", *Advanced Engineering Materials* (2019) 1801330.
18. Y. Jiang*, **S. Deng***, S. Hong*, J. Zhao, S. Huang, C.-C. Wu, J.L. Gottfried, K. Nomura, Y. Li, S. Tiwari, R.K. Kalia, P. Vashishta, A. Nakano, X.L. Zheng, "Energetic performance of optically activated aluminum/graphene oxide composites", *ACS Nano* 12 (2018) 11366-11345. *Equal contribution.
19. J. Pan, L. Chen, H. Wei, D. Feng, **S. Deng**, G. Shu, "On autoignition mode under variable thermodynamic state of internal combustion engines", *International Journal of Engine Research* (in press).
20. **S. Deng***, Y. Jiang*, S. Huang, X. Shi, J. Zhao, X.L. Zheng, "Tuning the morphological, ignition and combustion properties of micron-Al/CuO thermites through different synthesis approaches", *Combustion and Flame* 195 (2018) 303-310. *Equal contribution.
21. S. Huang*, **S. Deng***, Y. Jiang, J. Zhao, X.L. Zheng, "Electroless deposition and ignition properties of Si/Fe₂O₃ core/shell nanothermites", *ACS Omega* 2 (2017) 3596-3600. *Equal contribution.
22. S. Huang, V.S. Parimi, **S. Deng**, S. Lingamneni, X.L. Zheng, "Facile thermal and optical ignition of silicon nanoparticles and micron particles", *Nano Letters* 17 (2017) 5925-5930.
23. **S. Deng**, D. Han, C.K. Law, "Ignition and extinction of strained nonpremixed cool flames at elevated pressures", *Combustion and Flame* 176 (2017) 143-150.
24. **S. Deng**, M.E. Mueller, Q.N. Chan, N.H. Qamar, B.B. Dally, Z.T. Alwahabi, G.J. Nathan, "Hydrodynamic and chemical effects of hydrogen addition on soot evolution in turbulent nonpremixed bluff body ethylene flames", *Proceedings of the Combustion Institute* 36 (2017) 807-814.
25. D. Han, **S. Deng**, W. Liang, P. Zhao, F. Wu, Z. Huang, C.K. Law, "Laminar flame propagation and nonpremixed stagnation ignition of toluene and xylenes", *Proceedings of the Combustion Institute* 36 (2017) 479-489.
26. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Flame dynamics in oscillating flows under autoignitive conditions", *Combustion and Flame* 168 (2016) 75-82.

27. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Stabilization of laminar nonpremixed DME/air coflow flames at elevated temperatures and pressures", *Combustion and Flame* 162 (2015) 4471-4478.
28. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Autoignition-affected stabilization of laminar nonpremixed DME/air coflow flames", *Combustion and Flame* 162 (2015) 3437-3445.
29. P. Zhao, W. Liang, **S. Deng**, C.K. Law, "Initiation and propagation of laminar premixed cool flames", *Fuel* 166 (2015) 477-487.
30. **S. Deng**, J.A. Koch, M.E. Mueller, C.K. Law, "Sooting limits of nonpremixed n-heptane, n-butanol, and methyl butanoate flames: Experimental determination and mechanistic analysis", *Fuel* 136 (2014) 122-129.
31. **S. Deng**, P. Zhao, D. Zhu, C.K. Law, "NTC-affected ignition and low-temperature flames in nonpremixed DME/air counterflow", *Combustion and Flame* 161 (2014) 1993-1997.
32. Y. Zhang, S. Li, **S. Deng**, Q. Yao, S.D. Tse, "Direct synthesis of nanostructured TiO₂ films with controlled morphologies by stagnation swirl flames", *Journal of Aerosol Science* 44 (2012) 71-82.
33. **S. Deng**, S. Li, S.D. Tse, J. Wang, Y. Tao, Q. Yao, "Experimental studies on TiO₂ nanoparticles in a swirl-stabilized stagnation flame", *Journal of Engineering Thermophysics* 32 (2011) 157-160.
34. J. Wang, Y. Tao, Y. Zhang, **S. Deng**, S. Li, Q. Yao, "Sintering behavior of TiO₂ particles in a premixed stagnation flame", *Journal of Engineering Thermophysics* 32 (2011) 875-878.
35. D. Yun, **S. Deng**, Q. Song, Q. Yao, "Potassium deactivation and regeneration method of V₂O₅-WO₃/TiO₂ SCR catalyst", *Research of Environmental Sciences* 6 (2009) 730-735.

CONFERENCE PRESENTATIONS

1. J. Zhang, V.L. Muldoon, **S. Deng**, "Effects of the preheating temperature on flame-assisted spray pyrolysis of nickel-rich cathode materials", *39th International Symposium on Combustion*, Vancouver, Canada, July 24-July 29, 2022.
2. B.C. Koenig, W. Ji, **S. Deng**, "Universal kinetic subspace investigation using neural network for uncertainty quantification in nonpremixed flamelets", *39th International Symposium on Combustion*, Vancouver, Canada, July 24-July 29, 2022.
3. H. Chen, W. Ji, S.J. Cassady, A.M. Ferris, R.K. Hanson, **S. Deng**, "Using shock tube species time-histories in Bayesian parameter estimation: Effective independent-data number and target selection", *39th International Symposium on Combustion*, Vancouver, Canada, July 24-July 29, 2022.
4. S. Kim, A. Johns, J. Wen, **S. Deng**, "Burning structures and propagation mechanisms of nanohermites", *39th International Symposium on Combustion*, Vancouver, Canada, July 24-July 29, 2022.
5. J. Zhang, V.L. Muldoon, **S. Deng**, "Synthesis of single-crystal nickel-rich cathode materials using flame-assisted spray pyrolysis", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Orlando, FL, March 6-10, 2022.
6. V.L. Muldoon, J. Zhang, **S. Deng**, "Synthesis of Al-doped LLZO thin-tape electrolytes for all-solid-state batteries using flame-assisted spray pyrolysis", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Orlando, FL, March 6-10, 2022.

7. J. Zhang, V.L. Muldoon, **S. Deng**, "Effects of the preheating temperature on flame-assisted spray pyrolysis of nickel-rich cathode materials", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Orlando, FL, March 6-10, 2022.
8. M. Bhat, B.C. Koenig, **S. Deng**, "Investigation of on-substrate particle growth in TiO₂ layers deposited by flame synthesis", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Orlando, FL, March 6-10, 2022.
9. B.C. Koenig, W. Ji, **S. Deng**, "Universal kinetic subspace investigation using neural network for uncertainty quantification in nonpremixed flamelets", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Orlando, FL, March 6-10, 2022.
10. H. Chen, W. Ji, S.J. Cassady, A.M. Ferris, R.K. Hanson, **S. Deng**, "Using shock tube species time-histories in Bayesian parameter estimation: Effective independent-data number and target selection", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Orlando, FL, March 6-10, 2022.
11. S. Kim, A. Johns, J. Wen, **S. Deng**, "Non-uniform burning propagation of nanothermites", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Orlando, FL, March 6-10, 2022.
12. V.L. Muldoon, J. Zhang, **S. Deng**, "Flame assisted spray pyrolysis of LiAlO₂ thin film electrolytes for all-solid-state batteries", *2021 MRS Fall Meeting*, Boston, MA, November 29-December 2, 2021.
13. J. Zhang, V.L. Muldoon, **S. Deng**, "Flame spray synthesis of single crystal nickel-rich cathode materials of lithium-ion batteries", *2021 MRS Fall Meeting*, Boston, MA, November 29-December 2, 2021.
14. X. Su, W. Ji, L. Zhang, W. Wu, Z. Ren, **S. Deng**, "Neural differential equations for inverse modeling in model combustors", *ASME International Mechanical Engineering Congress & Exhibition (Virtual)*, November 1-5, 2021.
15. J. Zhang, V.L. Muldoon, **S. Deng**, "Flame spray synthesis of morphology controllable and performance enhanced Li(Ni_{0.8}Co_{0.1}Mn_{0.1})O₂ cathode materials with additives using urea and polyvinylpyrrolidone", *ASME International Mechanical Engineering Congress & Exhibition (Virtual)*, November 1-5, 2021.
16. W. Ji, J. Zanders, J.-W. Park, **S. Deng**, "Machine learning approaches to learn Hychem models", *ASME The International Combustion Engine Fall Conference (Virtual)*, October 13-15, 2021.
17. W. Ji, **S. Deng**, "Arrhenius.jl: A differentiable combustion simulation package", *12th U.S. National Combustion Meeting (Virtual)*, May 24-26, 2021.
18. W. Ji, F. Richter, M.J. Gollner, **S. Deng**, "Autonomous kinetic modeling of biomass pyrolysis using chemical reaction neural networks", *12th U.S. National Combustion Meeting (Virtual)*, May 24-26, 2021.
19. J. Zhang, V.L. Muldoon, **S. Deng**, "Flame spray synthesis of Li(Ni_{0.8}Co_{0.1}Mn_{0.1})O₂ cathode materials with additives for morphology control and performance optimization", *12th U.S. National Combustion Meeting (Virtual)*, May 24-26, 2021.
20. W. Ji, B. Yuan, C. Shen, A. Regev, C. Sanders, **S. Deng**, "Learn CellBox for perturbation biology using neural ordinary equations", *ICLR 2021 Deep Learning for Simulation Workshop (Virtual)*, May 7, 2021.

21. W. Ji, F. Richter, M.J. Gollner, **S. Deng**, "Chemical Reaction Neural Networks (CRNN) for autonomous biomass pyrolysis kinetic modeling", *13th International Symposium on Fire Safety Science (Virtual)*, April 27-May 1, 2021.
22. W. Ji, **S. Deng**, "KiNet: a deep neural network representation of chemical kinetics", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Columbia, SC, March 8-11, 2020.
23. W. Ji, T. Yang, Z. Ren, **S. Deng**, "Kinetic similarity between extinction strain rate and laminar flame speed", *Spring Technical Meeting of the Eastern States Section of the Combustion Institute*, Columbia, SC, March 8-11, 2020.
24. **S. Deng**, S. Huang, Y. Jiang, J. Zhao, X.L. Zheng, "Electroless deposition and ignition properties of Si/Fe₂O₃ core/shell nanothermites", *2017 MRS Fall Meeting*, Boston, MA, November 26-December 1, 2017.
25. S. Huang, V.S. Parimi, **S. Deng**, S. Lingamneni, X.L. Zheng, "Facile thermal and optical ignition of silicon nanoparticles and micron particles", *2017 MRS Fall Meeting*, Boston, MA, November 26-December 1, 2017.
26. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Dynamics of autoignitive DME/air coflow flames in oscillating flows", *69th Annual Meeting of the APS Division of Fluid Dynamics*, Portland, OR, November 20-22, 2016.
27. **S. Deng**, M.E. Mueller, Q.N. Chan, N.H. Qamar, B.B. Dally, Z.T. Alwahabi, G.J. Nathan, "Hydrodynamic and chemical effects of hydrogen addition on soot evolution in turbulent nonpremixed bluff body ethylene flames", *36th International Symposium on Combustion*, COEX, Seoul, Korea, July 31-August 5, 2016.
28. D. Han, **S. Deng**, W. Liang, P. Zhao, F. Wu, Z. Huang, C.K. Law, "Laminar flame propagation and nonpremixed stagnation ignition of toluene and xylenes", *36th International Symposium on Combustion*, COEX, Seoul, Korea, July 31-August 5, 2016.
29. **S. Deng**, M.E. Mueller, Q.N. Chan, N.H. Qamar, B.B. Dally, Z.T. Alwahabi, G.J. Nathan, "Soot evolution in turbulent nonpremixed ethylene/hydrogen bluff body flame", *ESSCI Spring Meeting*, Princeton, NJ, USA, March 13-17, 2016.
30. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Autoignited DME/air coflow flames in oscillating flows", *ESSCI Spring Meeting*, Princeton, NJ, USA, March 13-17, 2016.
31. D. Han, **S. Deng**, W. Liang, P. Zhao, F. Wu, Z. Huang, C.K. Law, "Laminar premixed flame propagation and nonpremixed ignition of toluene and xylenes", *ESSCI Spring Meeting, Princeton*, NJ, USA, March 13-17, 2016.
32. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Laminar nonpremixed coflow flame stabilization under autoignitive conditions", *Fourth International Education Forum on Environment and Energy Science*, Maui, HI, December 6-10, 2015.
33. **S. Deng**, M.E. Mueller, Q.N. Chan, N.H. Qamar, B.B. Dally, Z.T. Alwahabi, G.J. Nathan, "Hydrodynamic and chemical effects of hydrogen dilution on soot evolution in turbulent nonpremixed bluff body ethylene flames", *68th Annual Meeting of the APS Division of Fluid Dynamics*, Boston, MA, November 22-24, 2015.
34. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Stabilization of laminar nonpremixed DME/air coflow flames at elevated temperature and pressure", *9th U.S. National Combustion Meeting*, Cincinnati, OH, USA, May 17-20, 2015.

35. P. Zhao, W. Liang, **S. Deng**, C.K. Law, "On premixed cool flames in the counterflow", *9th U.S. National Combustion Meeting*, Cincinnati, OH, USA, May 17-20, 2015.
36. **S. Deng**, P. Zhao, M.E. Mueller, C.K. Law, "Detailed numerical simulations of the autoignition-affected stabilization of laminar nonpremixed DME/air coflow flames at elevated pressure", *High Pressure and High Reynolds Number Combustion Workshop*, King Abdullah University of Science and Technology, Saudi Arabia, March 24-26, 2015.
37. **S. Deng**, J.A. Koch, M.E. Mueller, C.K. Law, "Sooting limits of nonpremixed n-heptane, n-butanol, and methyl butanoate flames: Experimental determination and mechanistic analysis", *35th International Symposium on Combustion*, San Francisco, CA, USA, August 3-8, 2014.
38. **S. Deng**, P. Zhao, D. Zhu, C.K. Law, "NTC-affected ignition of DME by heated counterflowing air", *8th U.S. National Combustion Meeting, Park City*, UT, USA, May 19-22, 2013.

INVITED TALKS

1. **Gordon Research Conference**, The Confluence of Science- and Machine-Based Learning Approaches in Energetic Materials Research, "Building morphology-property-performance linkage for energetic materials", June 28, 2022.
2. **MIT Energy Initiative**, Future Energy Systems Webinar, "A new role for combustion in the manufacture of lithium-ion batteries for energy sustainability", June 15, 2022.
3. **National Academy of Engineering**, Frontiers of Engineering, "Combustion + X: Solutions for Energy and Environmental Challenges", September 22, 2021.
4. **Purdue University**, Mechanical Engineering Distinguished Seminar, "Chemical Reaction Neural Network (CRNN)", February 10, 2021.
5. **Combustion Webinar**, Combustion Institute, "Combustion + X: Attempts, challenges, and opportunities", October 3, 2020.
6. **Xi'an Jiaotong University**, School of Energy and Power Engineering, "Enabling energy conversion and materials synthesis with fundamental combustion research", June 13, 2019.
7. **Stanford University**, Department of Mechanical Engineering, "Material engineering for silicon-based nanoenergetics", May 17, 2017.
8. **Virginia Polytechnic Institute and State University**, Department of Mechanical Engineering, "Towards high-efficiency low-emission combustion design: Multi-modal combustion and soot emissions", March 21, 2017.
9. **University of Wisconsin-Madison**, Department of Mechanical Engineering, "Towards high-efficiency low-emission combustion design: Cool flames and soot emissions", March 15, 2017.
10. **Case Western Reserve University**, Department of Mechanical and Aerospace Engineering, "Towards high-efficiency low-emission combustion design: Cool Flames and soot emissions", March 8, 2017.
11. **Georgia Institute of Technology**, Department of Aerospace Engineering, "Towards high-efficiency low-emission combustion design: Multi-modal combustion and soot emissions", February 21, 2017.
12. **Massachusetts Institute of Technology**, Department of Mechanical Engineering, "Towards high-efficiency low-emission combustion design: Cool flames and soot emissions", February 15, 2017.

13. **Tsinghua University**, Department of Thermal Engineering, "NTC-affected combustion under engine condition", January 22, 2016.

14. **Peking University**, Department of Mechanics and Engineering Science, "NTC-affected combustion under engine conditions", January 20, 2016.

ADVISING AND MENTORING EXPERIENCE

Postdoctoral Scholars: Weiqi Ji (2019-2021), Jianan Zhang (2020-present), Yuesen Wang (2021-2022), Qiaofeng Li (2022-present).

Graduate Students: Suyong Kim (2019-present), Maanasa Bhat (2019-present), Valerie Muldoon (2020-2022), Benjamin Koenig (2021-present), Huaibo Chen (2021-present), Gwendolyn Tsai (2022-present), Chuwei Zhang (2022-present), Stefan Borjan (2022-present).

Undergraduate Students: Bowen Ge (Visiting Undergraduate Student, 2019), Alex Aguilar (Undergraduate Thesis, 2019), Sophie Longawa (UROP, 2020), Averitt Johns (UROP, 2020), Meghana Vemulapalli (UROP, 2020), Matthew Morris (UROP, 2020), Ritaank Tiwari (UROP, 2020), Barak Davidi (MSRP, 2020), Christian Belser (UROP, 2020), William Zhao (UROP, 2020), David Ologan (UROP, 2020), Benjamin Koenig (SuperUROP, 2020), Lucia Vina Lopez (Co-op, 2021), Jason Chen (UROP, 2021-), Pedro Alonso Hernandez (UROP, 2022), Evan Bell (UROP, 2022-), Ian Rivera (MSRP, 2022).

INSTITUTE SERVICE

Graduate Student Admission Committee: Department of Mechanical Engineering, MIT (2018-present).

General Faculty Search Committee: Department of Mechanical Engineering, MIT (2019-2020).

Gender Equity Committee: School of Engineering, MIT (2019-present).

ACADEMIC COMMUNITY SERVICE

Guest Editor: Fluids, Special Issue on Flame Dynamics and Combustion Instability, 2021

Guest Editor: Aerospace, Special Issue on Combustion Emissions in Propulsion and Power Systems, 2021

Journal Reviewer: ACS Applied Energy Materials, ACS Omega, Aerosol Science & Technology, Annual Review of Heat Transfer, Applications in Energy and Combustion Science, Applied Mathematical Modelling, Chemical Engineering Science, Combustion and Flame, CrystEngComm, Energy & Fuels, Flow, Turbulence, and Combustion, Fuel, IEEE Transactions on Nanotechnology, International Journal of Hydrogen Energy, Journal of Computational Physics, Journal of Taiwan Institute of Chemical Engineers, Proceedings of the Combustion Institute, Physical Chemistry Chemical Physics, Sensors and Actuators A: Physical, The Journal of Physical Chemistry

Conference Reviewer: Annual Meeting of Chinese Society of Engineering Thermophysics, SAE, Turbo Expo

NSF GRFP Reviewer: Mechanical Engineering, 2019 and 2021

Committee Member: Bernard Lewis Fellowship of the Combustion Institute, 2020-present

Executive Board Member: Eastern State Section of the Combustion Institute, 2022-present

Colloquium Co-Chair: 39th International Symposium on Combustion, 2021-2022

Symposium Organizer: Advances in the Fundamental Understanding and Functionalization of Reactive Materials, 2019 MRS Fall Meetings

Conference Organizer and Program Track: 2019 Applied Energy Symposium: MIT A+B

Conference Session Chair: Laminar Flames, 38th International Symposium on Combustion

Conference Session Chair: Stationary and Low Carbon, 38th International Symposium on Combustion

Conference Session Chair: Novel Combustion Technologies, 2020 Spring Technical Meeting of the Eastern States Section

Conference Session Chair: Reaction Kinetics, 2020 Spring Technical Meeting of the Eastern States Section

Conference Session Chair: Advances and Upcoming Research Strategies in Reactive Materials, 2017 MRS Fall Meetings

Conference Organizer: Student Working Group Co-Chair, 2020 International Combustion Symposium New York City Bid

PROFESSIONAL ASSOCIATIONS

The Combustion Institute

American Physical Society, Division of Fluid Dynamics

Materials Research Society

American Society of Mechanical Engineers