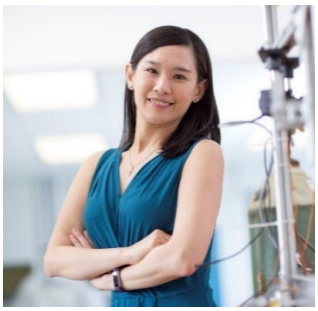
Curriculum Vitae

Ya-Ting T. Liao, Ph.D.

CONTACT INFORMATION



Department of Mechanical and Aerospace Engineering
Case Western Reserve University
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https://engineering.case.edu/research/labs/computational-fire-dynamics
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EDUCATION

Case Western Reserve University, Cleveland, Ohio
Doctor of Philosophy, Mechanical and Aerospace Engineering, June 2011

Case Western Reserve University, Cleveland, Ohio
Master of Science, Mechanical and Aerospace Engineering, August 2007

National Taiwan University, Taipei, Taiwan
Bachelor of Science, Mechanical Engineering, June 2004
Bachelor of Science, Physics, June 2004

EXPERIENCE

Visiting Faculty Fellow, LTX/Low–Gravity Exploration Technology Branch
NASA Glenn Research Center, Cleveland, Ohio, June 2024 to January 2025

- Supporting various projects on fire safety in space missions, including characterization of battery fires, material flammability in partial gravity and future exploration atmosphere, and burning of solid materials on the Lunar surface.

Associate Professor, Department of Mechanical and Aerospace Engineering
Case Western Reserve University, Cleveland, Ohio, July 2022 to present

- Faculty Director of the UL Fire and Combustion Laboratories.
- Research interests: solid pyrolysis, ignition, flame spread, material flammability, microgravity combustion, wildland fire, battery fire, fire dynamics, fire modeling.

George B. Mayer Assistant Professor in Urban and Environmental Studies
Department of Mechanical and Aerospace Engineering
Case Western Reserve University, Cleveland, Ohio, August 2020 to June 2022

Assistant Professor, Department of Mechanical and Aerospace Engineering
Case Western Reserve University, Cleveland, Ohio, May 2015 to June 2022

Thermo-Fluids Specialist, Multi-Physics Simulation Group
FMC Technologies, Houston, Texas, May 2014 to March 2015

- Evaluated flow conditions and thermal performance of various kinds of subsea equipment during pipeline start-up, production, and shut-down.
- Analyzed production fluid hydration formation time, Joule-Thomson effect in chocks, erosion rate inside pipelines, etc.
- Supported internal/external clients.
- Developed proprietary custom CFD software.

CFD Engineer
Yoya SciTech LLC, Cleveland, Ohio, January 2013 to December 2013

- Contracted for FMC Technologies.
- Built multi-phase flow analysis software from scratch, with a Fortran CFD backend and Java GUI front-end.
- Validated the program using classic benchmark cases and various published pipe flow experimental data.
- Documented physics models, numerical schemes, and code logic/structures.
- Prepared user manual and tutorials instructing users how to operate the program.

Software Developer, R&D Equity Fund Team
Bloomberg LP, New York, New York, July 2011 to June 2012

- Completed four-month intensive training in Unix, C, C++, JavaScript, Fortran, SQL, data structures, software engineering principles, comdb, comdb2, gtk, smrg/iceberg, UI design, and use of in-house development tools.
- Redesigned GUIs for several customer-facing Equity Fund terminal screens, to enhance functionality and clarity.
- Updated backend code to interface with comdb and comdb2 databases.
- Deployed code from development to alpha, beta, and production servers weekly.
- Maintained and enhanced financial database. Monitored intraday data flow.

Graduate Student Researcher, Computational Combustion Lab
Case Western Reserve University, Cleveland, Ohio, August 2005 to June 2011

- Used an unsteady three-dimensional model to simulate ignition and flame growth over solid fuel in reduced gravity.
- Investigated flame behavior in different pressures, oxygen percentages, gravity levels, forced flow conditions.
- Developed a Fortran program based on an in-house code to solve the problem numerically.
- Ran simulations mainly on university HPC Linux cluster.

HONORS AND AWARDS

ASME Rising Star of Mechanical Engineering, 2024
CWRU Veale Faculty Fellows, 2023
Finalist for the National Postdoctoral Association Gallagher Mentor Award, 2023
CWRU Case School of Engineering Research Award, 2022
George B. Mayer Assistant Professor in Urban and Environmental Studies, 2020 - 2022
Jack Watts Award for Outstanding Reviewer of Fire Technology, 2020
NSF CAREER Award, 2019
CWRU Glennan Fellowships Award, 2019
CWRU Case Prime Fellowships, 2005

LEADERSHIP

Faculty Director of the UL Fire and Combustion Laboratories at CWRU, July 2022 to present
Faculty advisor of the Society of Women's Engineers CWRU Chapter, February 2021 - present
Board of the United State Section of the Combustion Institute, February. 2020 – March 2025
Treasurer of the United State Section of the Combustion Institute, June 2021 – August 2024
Board of Advisors of the Central States Section of the Combustion Institute, May 2018 - present
ASME K11-Fire and Combustion Technical Committee (FCTC), 2020 - present
Editorial Advisory Board of Journal of Fire Science, August 2019 - present

GRANTS

Grant received as a PI

- **Primary Funding Agency:** U.S. Department of Energy
  Direct Funding Institution: The University of Toledo (PI: Mark R. Mason)
  Proposal Title: Hydrogen Academic Programs to Enhance the Hydrogen Economy
  CWRU Project Direction: Grant Goodrich; **CWRU Co-Is:** Julie Renner, Steve Hostler;
  Award Amount: $ 3,000,000 (CWRU portion: $278,047, my portion: $172,512);
  Project Period: April 2024 – August 2026; **Status:** ***Active***

- **Funding Agency:** Electrochemical Safety Research Institute, UL Research Institutes
  Proposal Title: Fire Propagation between Lithium-Ion Batteries
  Co-I: Chris Yuan; **Award Amount:** $198,000; **Project Period:** January 2024 – June 2026;
  Status: ***Active***.

- **Funding Agency:** National Aeronautics and Space Administration (NASA)
  Proposal Title: Predicting Material Flammability in Partial Gravity using Microgravity and Ground Data (Award # 80NSSC24K0310)
  Co-I: Ankit Sharma (CWRU); **Award Amount:** $224,998; **Project Period:** November 2023 – November 2026; **Status:** ***Active***.

- **Funding Agency:** NASA Glenn Research Center
  Proposal Title: Understanding Burning Behaviors of Solid Materials in Micro and Partial Gravities (Award # 80NSSC22M0011)
  Co-I: James S. T'ien (CWRU); **Award Amount:** $550,000 ($519,117 to PI Liao); **Project Period:** September 2021 – August 2026; **Status:** ***Active***

- **Funding Agency:** National Science Foundation (CBET: Combustion and Fire System)
  Proposal Title: CAREER: Understanding the Role of Buoyancy Flow for Accurate and Robust Scale Modeling of Upward Flame Spread
  Award Amount: $573,830; **Project Period:** July 2020 – June 2026; **Status:** ***Active***

- **Funding Agency:** Lubrizol
  Proposal Title: Gas Characterization of Thermal Runaway Venting with Immersed Battery – Phase 2
  Award Amount: $125,000; **Project Period:** March 2024 – February 2025; **Status:** Closed

- **Funding Agency:** Lubrizol
  Proposal Title: Gas Characterization of Thermal Runaway Venting with Immersed Battery
  Award Amount: $20,000; **Project Period:** August 2023 – February 2024; **Status:** Closed

- **Funding Agency:** Underwriters Laboratories, Inc.
  Proposal Title: Fire Characterization and Gas Analysis of Lithium-ion Cells and Modules
  Co-I: Chris Yuan, Fumiaki Takahashi; **Award Amount:** $200,000; **Project Period:** July 2021 – December 2023; **Status:** Closed

- **Primary Funding Agency:** Ministry of Trade, Industry and Energy, Republic of Korea
  Direct Funding Institution: Korea Testing Certification
  Proposal Title: Understanding the fire hazards for LIB-Based ESS
  Co-I: Chris Yuan; **Award Amount:** $111,494; **Project Period:** August 2020 – August 2023; **Status:** Closed

- **Funding Agency:** Case Western Reserve University
  Proposal Title: Development and Construction of Fire Dynamics Demonstration Box
  Award Amount: $7,500; **Project Period:** July 2019 – June 2022; **Status:** Closed

- **Funding Agency:** National Science Foundation (CBET: Combustion and Fire System)
  Proposal Title: Ignition Propensity of Structural Materials Exposed to Firebrand in Wildland-Urban Interface (WUI) fires
  Award Amount: $299,974; **Project Period:** September 2018 – August 2022; **Status:** Closed

- **Funding Agency:** Case Western Reserve University
  Proposal Title: Ignition propensity of structural materials exposed to firebrand in WUI fires
  Award Amount: $10,000; **Project Period:** June 2018 – May 2019; **Status:** Closed

- **Funding Agency:** Underwriters Laboratories, Inc.
  Proposal Title: Standards Training in University Curriculum through a Configurable Course Module- Phase I: Preparation and Demonstration
  Award Amount: $50,000; **Project Period:** December 2017– July 2022; **Status:** Closed
- **Funding Agency:** National Science Foundation (CBET: Combustion and Fire System)
  Proposal Title: Flame Spread in Confined Spaces – Study of the Interactions between Flame and Surrounding Walls (Award #1740478)
  Co-I: Paul Ferkul (USRA); **Award Amount:** $365,315 ($326,099 to PI Liao); **Project Period:** November 2017– October 2022; **Status:** Closed

- **Funding Agency:** NASA Glenn Research Center
  Proposal Title: Modeling Three-Dimensional Transient Flame Growth to Support the Saffire Microgravity Experiments (Award #NNX16AL61A)
  Co-I: James S. T'ien (CWRU); **Award Amount:** $500,000 ($461,746 to PI Liao); **Project Period:** June 2016 – December 2021; **Status:** Closed

Grant received as a Co-I

- **Funding Agency:** National Science Foundation
  Proposal Title: NSF Engines Development Award: Utilizing space research, development and manufacturing to improve the human condition (OH)
  PI: Carol Kory (USRA); **Co-Is:** Ya-Ting Liao (CWRU, site PI), Anthony Gillespie (OAI), Richard Verbus (USRA), Jason Ertel (Nottingham Spirk); **Award Amount:** $999,997 (my share: $50,000); **Project Period:** March 2024 – August 2026; **Status:** ***Active***

- **Funding Agency:** National Science Foundation (CBET: Fluid Dynamics)
  Proposal Title: Collaborative Research: Physics-Informed Background-Oriented Schlieren Tomography of Wildfire-Relevant Combustion (Award #2227764)
  PI: Bryan Schmidt; **Co-I:** Ya-Ting Liao; **Award Amount:** $246,734 (my share: $120,876); **Project Period:** October 2022 – September 2026; **Status:** ***Active***

- **Funding Agency:** Nuclear Regulatory Commission
  Proposal Title: 'ThinkEnergy, ThinkNuclear:' The Next Generation of ThinkEnergy Scholars
  PI: Rohan Akolkar; **Co-Is:** Christine Duval, Jennifer Carter, Ya-Ting Liao, Brian Maxwell, YeongAe Heo, Xusheng Xiao; **Award Amount:** $212,893; **Project Period:** April 2021 – March 2023; **Status:** Closed

- **Funding Agency:** Underwriters Laboratories, Inc.
  Proposal Title: 2021 UL Fellowship Fund
  PI: Gary Wnek; **Co-Is:** Hatsuo Ishida, Svetlana Morozova, Valentin Rodionov, Ya-Ting Liao; **Award Amount:** $250,000 (my share: $52,406); **Project Period:** January 2021 – December 2022; **Status:** Closed

- **Funding Agency:** Underwriters Laboratories, Inc.
  Proposal Title: 2020 UL Fellowship Fund

PI: Gary Wnek; **Co-Is:** Hatsuo Ishida, Svetlana Morozova, Valentin Rodionov, Ya-Ting Liao; **Award Amount:** $250,000 (my share: $56,088); **Project Period:** January 2020 – December 2020; **Status:** Closed

- **Funding Agency:** Case Western Reserve University
  Proposal Title: Workshops for IoT-based Smart Fire Fighting in Urban/Suburban Environments
  PI: Fumiaki Takahashi; **Co-Is:** Kiju Lee, James S. T'ien, Ya-Ting. Liao, Roger Quinn, Kathryn Daltorio; **Award Amount:** $10,000; **Project Period:** March 2018 – February 2019; **Status:** Closed

PUBLICATIONS

Students under my direct supervision are underlined and marked brown (post-docs), blue (graduate), green (under-graduate) or orange (high school students). Superscripts: * denotes the corresponding authors and + denotes presenter authors.

Articles in refereed journals

Submitted

- A. Sharma, A. Zatania Lojo, **Y.-T. T. Liao***, P. V. Ferkul, M. C. Johnston: Computational Fluid Dynamics Analysis of Flame Dynamics in Partial Gravity Environments in a Rotating Centrifuge, Combustion and Flame, submitted.
- B. Wang, P. Kannan, **Y.-T. Liao***, B. Kwon, V. Premnath, J. Jeevarajan: A Numerical Model for Simulating Thermal Runaway Propagation Between Lithium-Ion Battery Cells with Detailed Heat Transfer Analysis, International Journal of Heat and Mass Transfer, under review.
- P. Kannan, B. Wang, **Y.-T. Liao***, A. Richenderfer, C. McFadden: Characterization and Off-gassing Analysis of Lithium-ion Battery Thermal Runaway under Immersion Cooling, Applied Thermal Engineering, under review.
- N. Thinnakornsutibutr, A. Su, A. Sharma, **Y.-T. Liao***: Fire Scale Modeling and Effects of Buoyant Flow on Upward Flame Spread, Applications in Energy and Combustion Science, in revision.

Published

J26. R. Neupane, **Y.-T. Liao***: Correlating concurrent-flow flame spread rates in different pressure and oxygen conditions: Ground experiments and comparisons with previous micro-, partial, and normal gravities experiments, Combustion and Flame, Vol. 272, 113880, 2025. https://doi.org/10.1016/j.combustflame.2024.113880

J25. A. Sharma*, Y. Li, **Y.-T. Liao***, P. V. Ferkul, M. C. Johnston, and C. Bunnell: Effects of confinement on opposed-flow flame spread over cellulose and polymeric solids in microgravity, Microgravity Science and Technology, Vol. 36, 20, 2024. https://doi.org/10.1007/s12217-024-10106-y

J24. W. Cui, **Y.-T. T. Liao***: Numerical Study of the Effects of Duct Height for Large Scale Spacecraft Fire Experiments, Combustion and Flame, Vol. 261, 113299, 2024. https://doi.org/10.1016/j.combustflame.2024.113299

J23. B. Kwon, W. Cui, A. Sharma, **Y.-T. Liao***, F. Takahashi, D. Juarez-Robles, M. Parhizi, J. Jeevarajan: In-Situ Gas Analysis and Fire Characterization of Lithium-Ion Cells During Thermal Runaway Using an Environmental Chamber, Journal of Visualized Experiments, Journal of Visualized Experiments, Vol. 193, e65051, 2023. http://doi.org/10.3791/65051

J22. W. Cui, A. Sharma, **Y.-T. T. Liao*:** Upward Flame Spread over Discrete Thin Solids Separated by Heat-Absorbing Inert Materials, Journal of Fire Sciences, Vol. 41, 32-50, 2023. https://doi.org/10.1177/07349041231153145

J21. S. L. Olson*, G. A. Ruff, P. V. Ferkul, J. C. Owens, J. Easton, **Y.-T. Liao**, J. S. T'ien, B. Toth, G. Jomaas, C. Fernandez-Pello, G. Legros, A. Guibaud, O. Fujita, N. Smirnov, D. L. Urban: The Effect of Duct Size, Sample size, and Fuel Composition on Concurrent Flame Spread over Large Cellulose Samples in Microgravity, Combustion and Flame, Vol. 248, 112559, 2023. https://doi.org/10.1016/j.combustflame.2022.112559

J20. X. Zhang, Y. Li, X. Fan, G. Wnek, **Y.-T. T. Liao**, X. Yu*: Development and characterization of novelly grown fire-resistant fungal fibers, Scientific Report, Vol. 12, 10836, 2022. https://doi.org/10.1038/s41598-022-14806-6

J19. B. Kwon and **Y.-T. T. Liao***: Effects of Spacing on Flaming and Smoldering Firebrands in Wildland-Urban Interface Fires, Journal of Fire Sciences, Vol. 40, Issue 3, pp. 155-174, 2022. https://doi.org/10.1177/07349041221081998

J18. Y. Li, **Y.-T. Liao***: Numerical Study of Flame Spread in a Narrow Flow Duct in Microgravity – Effects of Flow Confinement and Radiation Reflection, Combustion and Flame, Vol. 235, 111714, 2022. https://doi.org/10.1016/j.combustflame.2021.111714

J17. X. Zhang, X. Fan, C. Han, Y. Li, E. J. Price, G. Wnek, **Y.-T. T. Liao**, X. B. Yu*: Novel Strategies to Grow Natural Fibers with Improved Thermal Stability and Fire Resistance, Journal of Cleaner Production, Vol. 320, 128729, 2021. https://doi.org/10.1016/j.jclepro.2021.128729

J16. Y. Li, **Y.-T. Liao***, P. V. Ferkul, M. C. Johnston, and C. Bunnell: Confined Combustion of Polymeric Solid Materials in Microgravity, Combustion and Flame, Vol 234, 111637, 2021. https://doi.org/10.1016/j.combustflame.2021.111637

J15. Y. Li, **Y.-T. T. Liao***, P. V. Ferkul, M. C. Johnston, and C. Bunnell: Experimental Study of Concurrent-Flow Flame Spread over Thin Solids in Confined Space in Microgravity, Combustion and Flame, Vol. 227, pp. 39-51, 2021. https://doi.org/10.1016/j.combustflame.2020.12.042

J 14. A. Carney, Y. Li, **Y.-T. Liao***, S. Olson, and P. Ferkul: Concurrent-Flow Flame Spread Over Thin Discrete Fuels in Microgravity, Combustion and Flame, Vol. 226, pp. 211-221, 2021. https://doi.org/10.1016/j.combustflame.2020.12.005

J 13. C. Li and **Y.-T. T. Liao***: Effects of Ambient Conditions on Concurrent-Flow Flame Spread over a Wide Thin Solid in Microgravity, Proceedings of the Combustion Institute, Vol. 38, Issue 3, pp. 4775-4784, 2021. https://doi.org/10.1016/j.proci.2020.05.011

J 12. Y. Li, **Y.-T. T. Liao***, and P. Ferkul: Numerical Study of the Effects of Confinement on Concurrent-flow Flame Spread in Microgravity, Journal of Heat Transfer, Vol. 142, Issue 11: 111301, 2020. https://doi.org/10.1115/1.4047645

J 11. A. Vetturini, W. Cui, **Y.-T. T. Liao***, S. Olson, and P. Ferkul: Flame Spread over Ultra-Thin Solids: Effect of Area Density and Concurrent-Opposed Spread Reversal Phenomenon, Fire Technology, Vol. 56, Issue 1, pp. 91-111, 2020.

https://doi.org/10.1007/s10694-019-00878-w *(Editor's choice for the top 15 papers of the year)*

J 10. W. Cui and **Y.-T. T. Liao***: Experimental Study of Upward Flame Spread over Discrete Thin Fuels, Fire Safety Journal, Vol. 110, 102907, 2019. https://doi.org/10.1016/j.firesaf.2019.102907

J 9. C. Li, **Y.-T. T. Liao***, J. S. T'ien, D. L. Urban, P. Ferkul, S. Olson, G. A. Ruff, and J. Easton: Transient Flame Growth and Spread Processes over a Large Solid Fabric in Concurrent Low-Speed Flows in Microgravity – Model versus Experiment, Proceedings of the Combustion Institute, Vol. 37, Issue 3, pp. 4163-4171, 2019. https://doi.org/10.1016/j.proci.2018.05.168

J 8. D. L. Urban, P. Ferkul*, S. Olson, G. A. Ruff, J. Easton, J. S. T'ien, **Y.-T. T. Liao**, C. Li, A. C. Fernandez-Pello, J. L. Torero, G. Legros, C. Eigenbrod, N. Smirnov, O. Fujita, S. Rouvreau, B. Toth, and G. Jomaas: Flame Spread: Effects of Microgravity and Scale, Combustion and Flame, Vol. 199, pp. 168-182, 2019. https://doi.org/10.1016/j.combustflame.2018.10.012

J 7. C. Li, **Y.-T. T. Liao***: Numerical Investigation of Flame Splitting Phenomenon in Upward Flame Spread over Solids with a Two-Stage Pyrolysis Model, Combustion Science and Technology, Vol. 190, Issue 12, pp. 2082-2096, 2018. https://doi.org/10.1080/00102202.2018.1489380

J 6. Y. Li and **Y.-T. T. Liao***: Thermal Analysis and Pyrolysis Modeling of NOMEX IIIA Fabric, Combustion Science and Technology, Vol. 190, Issue 9, pp. 1580-1593, 2018. https://doi.org/10.1080/00102202.2018.1459587

J 5. J. Park, J. Brucker, R. Seballos, B. Kwon, and **Y.-T. T. Liao***: Concurrent Flame Spread over Discrete Thin Fuels, Combustion and Flame, Vol. 191, pp.116-125, 2018. https://doi.org/10.1016/j.combustflame.2018.01.008

J 4. X. Zhao, **Y.-T. T. Liao**, M. C. Johnston, J. S. T'ien*, P. V. Ferkul, and S. L. Olson: Concurrent Flame Growth, Spread, and Quenching over Composite Fabric Samples in Low Speed Purely Forced Flow in Microgravity, Proceedings of the Combustion Institute, Vol. 36, pp. 2971-2978, 2017. https://doi.org/10.1016/j.proci.2016.06.028

J 3. **Y.-T. T. Liao*** and J. S. T'ien: A Numerical Simulation of Transient Ignition and Ignition Limit of a Composite Solid by a Localised Radiant Source, Combustion Theory and Modelling, Vol. 17, Iss. 6, pp. 1096-1124, 2013. https://doi.org/10.1080/13647830.2013.831486

J 2. **Y.-T. Tseng*** and J. S. T'ien: A Comparison of Flame Spread Characteristics over Solids in Concurrent Flow using Two Different Pyrolysis Models, Journal of Combustion, Vol. 2011, Article ID 250391, 2011. http://dx.doi.org/10.1155/2011/250391

J 1. **Y.-T. Tseng** and J. S. T'ien: Limiting Length, Steady Spread and Non-growing Flames in Concurrent Flow over Solids, Journal of Heat Transfer, Vol. 132, Issue 9, 091201, 2010. http://doi.org/10.1115/1.4001645

Under preparation

1. A. Sharma, **Y.-T. Liao:** Effects of gravity and pressure levels on upward flame spread over a thin solid (Under preparation).
2. B. Kwon, **Y.-T. Liao***: Spot Ignition Caused by a Group of Burning Wooden Pieces, (Under preparation).

Book projects

B4. **Y.-T. Liao**, D. Solomon: Case Studies # 9 Fire Sciences, Teaching and Collecting Technical Standards: A Handbook for Librarians and Educators, Purdue University Press, West Lafayette, Indiana, 2023. https:/docs.lib.purdue.edu/pilh/5

B3. D. Solomon, **Y.-T. Liao**: Case Studies # 11 Mechanical and Aerospace Engineering, Teaching and Collecting Technical Standards: A Handbook for Librarians and Educators, Purdue University Press, West Lafayette, Indiana, 2023. https:/docs.lib.purdue.edu/pilh/5

B2. P. Ferkul, S. Olson, D. Urban, G. Ruff, J. Easton, J. T'ien, **Y.-T. Liao**, A. C. Fernandez-Pello, J. Torero, C. Eigenbrod, G. Legros, N. Smirnov, O. Fujita, S. Rouvreau, B. Toth, G. Jomaas: 4.4.3 Large Scale Flame Spread in Space, A Gallery of Combustion and Fire, Cambridge University Press, p. 98-98, June 2020. https://doi.org/10.1017/9781316651209.006

B1. X. Zhao, **Y.-T. T. Liao**, M. C. Johnston, J. S. T'ien, P. V. Ferkul, and S. L. Olson: 4.4.4 Concurrent Flame Growth, Spread, and Extinction over Composite Fabric Samples in Low Speed Purely Forced Flow in Microgravity, A Gallery of Combustion and Fire, Cambridge University Press, p. 100, June 2020. https://doi.org/10.1017/9781316651209.006

Technical reports

R1. B. L. Kutter, R. J. Fragaszy, C. Gaudin, T. J. Carey, Y. Chen, A. De, I. Einav, A. Fourie, T. Hueckel, **Y.-T. Liao**, R. Phillips, J. C. Santamarina, K. Soga, M. Veveakis, C. Vulpe, H. Yeh, and, D. Zhuang: Frontiers for hypergravity experiments and model tests. UCD/CGM-21/02, July 2021, https://ucdavis.app.box.com/s/fqs8srl0v0091p417s4c39jyt9lij34c

Conference papers

C44. J. Easton[+,*], R. Padilla, G. Berger, C. Fortenberry, **Y.-T. Liao**, D. Urban, D. Dietrich, T. Miller, J. Owens, T. DeMichael: Measurement of Heat Release Rate, Aerosol, and Gas Products During Lithium-Ion Battery Thermal Runaway in Devices, 54th International Conference on Environmental Systems, Prague, Czech Republic, July 13-17, 2025.

C43. D. Urban[+,*], C. Fernandez-Pello, M. Thomsen, S. Olson, P. Ferkul, **Y.-T. Liao**, D. Dietrich, S. Harper, A. Juarez, D. Stocekr, M. Johnston, J. Zayac, S. Peralta, H. Beeson, G. Harrigan: Solid Fuel Ignition Testing for Lunar Applications, Theory and Experimental Results, 54th International Conference on Environmental Systems, Prague, Czech Republic, July 13-17, 2025.

C42. J. Han[+,*], **Y.-T. Liao:** Numerical study of flame spread over thin solids in reduced pressure and enhanced oxygen environments under microgravity condition, 14th U.S. National Combustion Meeting, Boston Massachusetts, March 16-19, 2025.

C41. R. Neupane[+,*], **Y.-T. Liao:** Experimental study of downward flame spread over a thin sample in reduced and enhanced pressure, 14th U.S. National Combustion Meeting, Boston Massachusetts, March 16-19, 2025.

C40. P. Kannan[+,*], B. Wang, **Y.-T. Liao**, B. Kwon, V. Premnath, J. Jeevarajan: Effects of capacity scaling on thermal runaway propagation and off-gassing in lithium-ion battery, 14th U.S. National Combustion Meeting, Boston Massachusetts, March 16-19, 2025

C39. B. Wang[+,*], P. Kannan, **Y.-T. Liao**, B. Kwon, V. Premnath, J. Jeevarajan: Numerical study on heat transfer during thermal runaway propagation of lithium-ion batteries, 14th U.S. National Combustion Meeting, Boston Massachusetts, March 16-19, 2025

C38. T. Hafiz[+,*], E. Gassama, J. Covello, G. Wnek, **Y.-T. Liao**, A. K. Melaiye: Experimental and Numerical Approaches to Optimize Heat Blocking Efficiency in Intumescent Coatings, Engineering Modelling Analysis & Simulation, Vol. 2, No. 1, Sep. 2024. https://doi.org/10.59972/xny38fpw

C37. D. L. Urban[+,*], G. A. Ruff, P. Ferkul, J. Easton, M. Johnston, J. Owens, S. Olson, C. Fortenberry, J. Graf, O. George, B. Toth, F. Meyer, C. Eigenbrod, J. S. T'ien, **Y.-T. T. Liao**, C. Fernandez-Pello, G. Legros, A. Guibaud, N. Smirnov, O. Fujita, U. Rojas-Alva, G. Jomaas: Spacecraft habitability results from the Saffire VI experiment, 2024 Spring Technical Meeting of the Central States Section of The Combustion Institute, Cleveland Ohio, May 12-14, 2024.

C36. T. Hafiz[+,*], J. Covello, G. Wnek, **Y.-T. Liao**, A. Yousefi, A. K. Melaiye: Experimental and Numerical Approaches to Optimize Heat Blocking Efficiency in Intumescent Coatings, 2024 Spring Technical Meeting of the Central States Section of The Combustion Institute, Cleveland Ohio, May 12-14, 2024.

C35. R. Neupane[+], **Y.-T. Liao**[*]: Effects of Ambient Pressures and Oxygen on Upward Flame Spread, 2024 Spring Technical Meeting of the Central States Section of The Combustion Institute, Cleveland Ohio, May 12-14, 2024.

C34. A. A. Naqvi[+], B. E. Schmidt, **Y.-T. Liao**[*]: Study of Flaming Firebrand using Numerical Modeling and Background Oriented Schlieren Visualization, 2024 Spring Technical Meeting of the Central States Section of The Combustion Institute, Cleveland Ohio, May 12-14, 2024.

C33. B. Wang[+], P. Kannan, **Y.-T. Liao**[*], B. Kwon, M. Parhizi, S. Madhi, V. Premnath, J. Jeevarajan: Numerical Simulation of Fire and Thermal Runaway Propagation of Lithium-Ion Batteries, 2024 Spring Technical Meeting of the Central States Section of The Combustion Institute, Cleveland Ohio, May 12-14, 2024.

C32. P. Kannan[+], B. Wang, **Y.-T. Liao**[*], B. Kwon, M. Parhizi, S. Madhi, V. Premnath, J. Jeevarajan: Characterization of 18650 Single and Multi-Cell Thermal Runaway, 2024 Spring Technical Meeting of the Central States Section of The Combustion Institute, Cleveland Ohio, May 12-14, 2024.

C31. K. Cartwright[+], P. Kannan, Y. Gu, C. Yuan, **Y.-T. Liao**[*]: Heat Release Rate and Thermal Runaway Propagation in Lithium-ion Batteries using Surrogate Cells, 2024 Spring Technical Meeting of the Central States Section of The Combustion Institute, Cleveland Ohio, May 12-14, 2024.

C30. D. L. Urban[*], G. A. Ruff, P. Ferkul, J. Easton, M. Johnston, J. Owens, S. Olson, C. Fortenberry, J. Graf, O. George, B. Toth, M. Meyer, C. Eigenbrod, J. S. T'ien, **Y.-T. T. Liao**, A. C. Fernandez-Pello, G. Legros, A. Guibaud, N. Smirnov, O. Fujita, U. R. Alva, G. Jomaas: Preliminary Results from the Saffire VI Experiment, 53rd International Conference on Environmental Systems, Louisville, Kentucky, July 21-25, 2024. https://hdl.handle.net/2346/98994

C29. R. Neupane, A. Sharma, J. Fu, **Y.-T. Liao**[+], F. Takahashi[*]: Thermal Performance of Fire Blankets for Protection Against WUI Fires, 14th Asia-Pacific Conference on Combustion, Kaohsiung Exhibition Center, Kaohsiung, Taiwan, May 14-18, 2023.

C28. W. Cui, **Y.-T. Liao**[+,*]**:** Numerical Study on the Effects of Pressure, Oxygen, and Normoxic Conditions on the Burning Behavior of Large Thin Solid Samples in

Microgravity, 13th U. S. National Combustion Meeting, College Station, Texas, March 19–22, 2023.

C27. A. Zatania Lojo, A. Sharma[+,*], **Y.-T. Liao[*],** M. Johnston, and P. Ferkul: A Numerical Study of Liquid Fuel Wick Flames in Artificial Partial Gravity in a Centrifuge Facility, 51th International Conference on Environmental Systems, St. Paul, Minnesota, July 10-14, 2022. https://ttu-ir.tdl.org/handle/2346/89760

C26. B. Kwon[+,*], W. Cui, P. Kannan, Cole Compton, **Y.-T. Liao[*],** F. Takahashi, J. Jeevarajan, D. Juarez-Robles, M. Parhizi: Fire Characterization and Gas Analysis of Lithium-Ion Batteries During Thermal Runaway, 51th International Conference on Environmental Systems, St. Paul, Minnesota, July 10-14, 2022. https://ttu-ir.tdl.org/handle/2346/89734

C25. A. Sharma[+,*], Y. Li, **Y.-T. Liao[*],** P. V. Ferkul, M. Johnston, C. Bunnell: Effects of Confinement on Opposed-Flow Flame Spread over Thin Solids in Microgravity, 2022 Spring Technical Meeting of the Central States Section of the Combustion Institute, Detroit Michigan, May 15 - 17, 2022.

C24. B. Kwon[+,*], **Y.-T. Liao:** Ignition propensity of structural materials exposed to multiple firebrands in wildland-urban interface (WUI) fires: effects of firebrand distribution and ambient wind, 2022 Spring Technical Meeting of the Central States Section of the Combustion Institute, Detroit Michigan, May 15 - 17, 2022.

C23. D. L. Urban[+,*], G. A. Ruff, P. Ferkul, J. Easton, J. Owens, S. Olson, M. Meyer, C. Fortenberry, J. Brooker, J. Graf, M. Casteel, G. Jomaas, B. Toth, C. Eigenbrod, J. S. T'ien, **Y.-T. T. Liao**, A. C. Fernandez-Pello, F. Meyer, G. Legros, A. Guibaud, N. Smirnov, O. Fujita: Fire Safety Implications of Preliminary Results from Saffire IV and V Experiments on Large Scale Spacecraft Fires, 50th International Conference on Environmental Systems (Virtual), July 11-15, 2021. https://ttu-ir.tdl.org/handle/2346/87224

C22. B. Kwon and **Y.-T. Liao[*]**: Burning Characteristics of Small Firebrands in Wildland-Urban Interface Fires, 12th U.S. National Combustion Meeting (Virtual), May 24 - 26, 2021.

C21. W. Cui and **Y.-T. Liao[*]**: Numerical Study of the Effects of Confinement on Large-Scale Fires in Microgravity, 12th U.S. National Combustion Meeting (Virtual), May 24 - 26, 2021.

C20. Y. Li, **Y.-T. Liao[*]**, P. V. Ferkul, M. C. Johnston, and C. Bunnell: Confined Combustion of Polymeric Solid Materials in Microgravity, 12th U.S. National Combustion Meeting (Virtual), May 24 - 26, 2021.

C19. Y. Li, **Y.-T. Liao[*]**, P. V. Ferkul, and M. C. Johnston: Concurrent-Flow Flame Spread in a Narrow Flow Duct in Microgravity – Effects of Flow Confinement and Radiation Reflection, 12th U.S. National Combustion Meeting (Virtual), May 24 - 26, 2021.

C18. Y. Li[+], **Y.-T. Liao[*]**, and P. Ferkul, M. Johnston, and C. Bunnell: Effects of Confinement on Flame Spread in Microgravity, International Conference on Environmental Systems, 2020. https://ttu-ir.tdl.org/handle/2346/86371

C17. Y. Li[+], **Y.-T. T. Liao[*]**, and P. V. Ferkul: Concurrent-Flow Flame Spread over a Thin Solid in a Narrow Confined Space in Microgravity, Proceedings of the ASME 2019 International Mechanical Engineering Congress and Exposition. Volume 8: Heat Transfer and Thermal Engineering. Salt Lake City, Utah, USA. November 11–14, 2019. V008T09A026. ASME. https://doi.org/10.1115/IMECE2019-11908

C16. J.-Y. Li[+], S.-Y. Hsu[*] and **Y.-T. T. Liao**: Numerical Investigation on Flame Spread over Extremely Thin Solid Fuel at Microgravity, 12th Asia-Pacific Conference on Combustion, Fukuoka, Japan, July 1-5, 2019.

C15. D. Solomon[+,*], **Y.-T. T. Liao**, and J. T. Chapin: Maximizing the Effectiveness of One-Time Standards Instruction Sessions with Formative Real-Time Assessment, 2019 ASEE Annual Conference & Exposition, Tampa, FL, June 15-19, 2019. https://peer.asee.org/33087

C14. Q. Li[+] and **Y.-T. T. Liao**[*]: Numerical Study of Fire Behavior between Two Inclined Plates, 11th U. S. National Combustion Meeting, Pasadena, CA, March 24–27, 2019.

C13. W. Cui[+] and **Y.-T. T. Liao**[*]: Upward Flame Spread over Discrete Thin Fuels, 11th U. S. National Combustion Meeting, Pasadena, CA, March 24–27, 2019.

C12. Y. Li[+], **Y.-T. T. Liao**[*], and P. V. Ferkul: Effect of Flow Duct Height on Concurrent-Flow Flame Spread and the Near-Limit Oscillation, 2018 Spring Technical Meeting of Central States Section of the Combustion Institute, Minneapolis, MN, May 20–22, 2018.

C11. B. Kwon[+] and **Y.-T. T. Liao**[*]: Experimental and Numerical Investigation of the Ignition and Burning Characteristics of a Group of Wooden Pieces, 2018 Spring Technical Meeting of Central States Section of the Combustion Institute, Minneapolis, MN, May 20–22, 2018.

C10. P. Ferkul[*], S. Olson, D. L. Urban, G. A. Ruff, J. Easton, J. S. T'ien, **Y.-T. T. Liao**, A. C. Fernandez-Pello, J. L. Torero, C. Eigenbrod, G. Legros, N. Smirnov, O. Fujuta, S. Rouvreau, B. Toth and G. Jomaas: Results of Large-Scale Spacecraft Flammability Tests, 47th International Conference on Environmental Systems, Charleston, SC, July 16-20, 2017. https://ttu-ir.tdl.org/handle/2346/73020

C9. C. Li[+] and **Y.-T. T. Liao**[*]**:** Transient Flame Growth and Spread Processes over Thin Solids in Concurrent Low-Speed Flows in Microgravity – a Comparison between Large and Small Sample Sizes, 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.

C8. Y. Li[+] and **Y.-T. T. Liao**[*]: Thermogravimetric Analysis and Modeling of NOMEX Fabric Pyrolysis, 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.

C7. P. Ferkul[*], D. L. Urban, S. Olson, G. A. Ruff, J. S. T'ien, **Y.-T. T. Liao**, A. C. Fernandez-Pello, J. L. Torero, G. Legros, C. Eigenbrod, N. Smirnov, O. Fujita, S. Rouvreau, B. Toth, G. Jomaas: The Saffire Experiment: Large-Scale Combustion aboard Spacecraft, 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.

C6. J. Park[+] and **Y.-T. T. Liao**[*]: Numerical Study of Upward Flame Spread over Discrete Fuels, Spring Technical Meeting of the Eastern States Section of the Combustion Institute, Princeton, NJ, March 13-16, 2016.

C5. C. Li[+] and **Y.-T. T. Liao**[*]: Numerical Simulation of Flame Splitting Phenomenon in Concurrent Flame Spread over Thin Solid Fuel with Two-Stage Pyrolysis, Spring Technical Meeting of the Eastern States Section of the Combustion Institute, Princeton, NJ, March 13-16, 2016.

C4. **Y.-T. Tseng**[+] and J. S. T'ien[*]: Ignition, Flame Flash and Flame Growth over solids in Concurrent Flows by a Three-Dimensional Transient Numerical Model, 7th U.S. National Combustion Meeting, Atlanta, GA, 2011.

C3. **Y.-T. Tseng**[+] and J. S. T'ien[*]: The Effect of Different Pyrolysis Descriptions on flame spread over Solids in Concurrent Flows, 6th U.S. National Combustion Meeting, Ann Arbor, MI, 2009.
C2. S.-Y. Hsu, **Y.-T. Tseng,** and J. S. T'ien[*]: Modeling Flame Spread and Extinction of Solids in Space Exploration Atmospheres, SAE Technical Paper 2009-01-2492, 2009 https://doi.org/10.4271/2009-01-2492
C1. **Y.-T. Tseng**[+] and J. S. T'ien[*]: Limiting Length and Non-growing Flames in Concurrent Flow over Thick Solids, Eastern States Section Meeting of the Combustion Institute, Charlottesville, VA, 2007.

Other Conference/Workshop Oral Presentations

O22. A. Aly, J. T'ien, Y.-T. Liao, C. Li, P. Ferkul, S. Olson, and M. Johnston: Solid Material Microgravity Combustion: Identifying the Boundaries Between Flame Growth, Limiting Length, and Quenching, Space Forum, September 11, 2025
O21. P. Ferkul, C. Li, S. Olson, M. Johnston[+], S.-Y. Hsu, J.-H. Huang, A. Aly, **Y.-T. Liao**, J. T'ien: Diffusion flame blowoff of a PMMA sphere: Comparison between 1g and 0g, 2024 Annual Meeting of the American Society for Gravitational and Space Research, San Juan, Puerto Rico, December 3-7, 2024.
O20. J. Han and **Y.-T. Liao**[+]: Numerical Investigation of Flame Spread over A Thin Solid Material in Microgravity in Enhanced Oxygen and Reduced Pressure Condition, 2024 Annual Meeting of the American Society for Gravitational and Space Research, San Juan, Puerto Rico, December 3-7, 2024.
O19. P. Kannan, B. Wang, **Y.-T. Liao**[+], A. Richenderfer, C. McFadden: Enhancing Safety with Immersive Battery Thermal Management Fluids, Cambridge EnerTech's 14th Annual Battery Safety Summit, Alexandria VA, November 4-5, 2024.
O18. C. Fortenberry[+], M. Johnston, P. Ferkul, G. A. Ruff, **Y.-T. Liao**, A. Guibaud, G. Legros, and J.-M. Citerne: Flammability testing with aerosol product measurement of spacecraft materials in partial gravity aboard Novespace parabolic aircraft, 2023 Annual Meeting of the American Society for Gravitational and Space Research, Washington, D.C., November 14-18, 2023.
O17. R. Neupane[+] and **Y.-T. Liao**: Experimental Study on Extinction and Flame Spread over a Thin Solid Sample in Different Pressure and Oxygen Environments, 2023 Annual Meeting of the American Society for Gravitational and Space Research, Washington, D.C., November 14-18, 2023.
O16. B. Kwon, W. Cui, B. Wang, P. Kannan, A. Sharma, **Y.-T. Liao**[+], F. Takahashi, D. Juarez-Robles, M. Parhizi, J. Jeevarajan: Experimental and Numerical Study on the Burning Behaviors of Lithium-ion Batteries during Thermal Runaway, International Battery Seminar & Exhibits, Orlando, Florida, March 20-23, 2023.
O15. A. Sharma[+], Y. Li, **Y.-T. Liao,** P. V. Ferkul, M. Johnston, C. Bunnell: Opposed-Flow Confined Combustion of Solid Materials in Microgravity, 2022 Annual Meeting of the American Society for Gravitational and Space Research, Houston, Texas, November 9-12, 2022.
O14. B. Kwon, W. Cui, B. Wang, P. Kannan, A. Sharma, **Y.-T. Liao**[+], F. Takahashi, J. Jeevarajan, D. Juarez-Robles, M. Parhizi: Experiments and Numerical Modeling of Fires Associated with Lithium-ion Batteries Thermal Runaway, 10th Triennial International Aircraft Fire and Cabin Safety Research Conference, Atlantic City, New Jersey, October 17-20, 2022.

O13. W. Cui and **Y.-T. Liao**[+]: A Numerical Study of the Effects of Confinement on Large-Scale Fires in Microgravity, 2021 Annual Meeting of the American Society for Gravitational and Space Research, Baltimore, Maryland, November 3-6, 2021

O12. P. Ferkul[+], **Y.-T. Liao**, and G. Ruff: Fire on the Moon: Solid Fuel Combustion Experiments, Lunar Surface Science Workshop: Fundamental and Applied Lunar Surface Research in Physical Sciences. August 18–19, 2021 (virtual).

O11. A. Vetturini, **Y.-T. Liao**[+], S. Olson, and P. Ferkul: Concurrent-Opposed Flame Spread Reversal Phenomenon for Ultra-Thin Solid Samples, 35th Annual Meeting of the American Society for Gravitational and Space Research, Denver, Colorado, November 20-23, 2019.

O10. C. Li[+], **Y.-T. T. Liao**, J. T'ien, D. Urban, G. A. Ruff, P. V. Ferkul, S. Olson, and J. Easton: Effect of Flow Velocity on Flame Spread Processes over a Large Solid Fabric in Concurrent Flow, 34th Annual Meeting of the American Society for Gravitational and Space Research, Bethesda, Maryland, October 31-November 3, 2018.

O9. A. J. Vetturini[+], W. Cui, **Y.-T. T. Liao**, S. Olson, and P. V. Ferkul: Effects of Area Density on Concurrent Flow Flame Spread Over a Thin Fuel in Normal and Microgravity, 34th Annual Meeting of the American Society for Gravitational and Space Research, Bethesda, Maryland, October 31-November 3, 2018.

O8. Q. Li[+], Y. Li, and **Y.T. T. Liao**: Numerical Study of Flame Spread over Solid Combustible Beneath an Inert Parallel-Oriented Plate, 10th FM Global Open Source CFD Fire Modeling Workshop, Norwood, Massachusetts, May 30-31, 2018.

O7. C. Li and **Y.-T. T. Liao**[+]: Transient Flame Growth and Spread Processes over Thin Solids in Concurrent Low-Speed Flows in Microgravity – Effects of Sample and Flow Duct Sizes, 33rd Annual Meeting of the American Society for Gravitational and Space Research, Seattle, Washington, October 25-28, 2017.

O6. D. Urban, G. A. Ruff, P. V. Ferkul, S. Olson, J. Easton, J. T'ien, **Y.-T. T. Liao**, C. Fernandez-pello, J. L. Torero, G. Legros, C. Eigenbrod, N. Smirnov, O. Fujita, S. Rouvereau, B. Toth, and G. Jomaas: Saffire: A Novel Approach to Study of Spacecraft Fire Safety Using Un-manned Spacecraft, 33rd Annual Meeting of the American Society for Gravitational and Space Research, Seattle, Washington, October 25-28, 2017.

O5. **Y.-T. T. Liao**[+]: Ignition, Flame Growth, and Flame Spread over Solid Fuels in Concurrent Flows, The Symposium on Advanced Fire Science and Technology and Workshop, Cleveland, Ohio, July 19-29, 2017.

O4. J. Park and **Y.-T. T. Liao**[+]: Numerical Study of Upward Flame Spread over Discrete Fuels, 8th Triennial International Aircraft Fire and Cabin Safety Research Conference, Atlantic City, New Jersey, October 24-27, 2016.

O3. J. Park[+] and **Y.-T. T. Liao**: Numerical Study of Concurrent Flame Spread over an Array of Thin Discrete Solid Fuels, 32nd Annual Meeting of the American Society for Gravitational and Space Research, Cleveland, Ohio, October 26-29, 2016.

O2. C. Li[+], **Y.-T. T. Liao**, J. S. T'ien, D. L. Urban, and G. A. Ruff: Three-Dimensional Transient Numerical Simulation of the Large-Scale Spacecraft Fire Safety Test, Saffire I, 32nd Annual Meeting of the American Society for Gravitational and Space Research, Cleveland, Ohio, October 26-29, 2016.

O1. **Y.-T. T. Liao**[+], C. Li, X. Zhao, and J. S. T'ien: Development of Test-Based Solid Pyrolysis Model, 8th FM Global Open Source CFD Fire Modeling Workshop, Norwood, Massachusetts, May 19-20, 2016.

Invited Talks

I21. *Fire Scale Modeling and Effects of Buoyant Flow on Upward Flame Spread*, The 12th FLARE International Workshop, Mini Workshop - Fire safety and Flammability in Microgravity, Bremen, Germany, September 3, 2025 (delivered virtually).
I20. *Basic Research and Lab-scale Safety - Lab safety while conducting nominal/off-nominal testing*, Battery Safety Council Forum 15, Washington, D.C., August 27, 2025. ***Panel Speaker.***
I19. *Exploring Fire Science to Advance Safety on Earth and Beyond,* Kenyon College, Gambier, Ohio, February 7, 2024
I18. *Women in Workplace Diversity*, The Women's Network, CWRU Chapter, Cleveland, Ohio, November 11, 2024. ***Panel Speaker.***
I17. *Advancing Fire Science by Utilizing Microgravity Environments,* The 9th National Young Scholar Meeting on Combustion Research, April 20, 2024, Beijing China (delivered virtually). ***Keynote Talk.***
I16. *Numerical and Experimental Study on Materials Flammability in Partial Gravity*, The 11th FLARE International Workshop, Tsukuba Japan, September 4-6, 2024 (delivered virtually).
I15. *New Challenges in Fire Safety: From Earth to Space,* Physics Colloquium, Case Western Reserve University, Cleveland Ohio, September 28, 2023.
I14. *In-Situ Gas Analysis and Fire Characterization of Lithium-Ion Cells During Thermal Runaway,* Department of Vehicle Engineering, National Pingtung University of Science and Technology, Pingtung, Taiwan, May 17, 2023.
I13. *Fires in Micro- and Partial Gravity*, Department of Mechanical and Electro-Mechanical Engineering, National Sun Yat-sen University, Kaohsiung, Taiwan, May 16, 2023.
I12. *Advancing Fire Science by Utilizing Microgravity Environments*, 33rd National Conference on Combustion and Energy of the Combustion Institute of R.O.C., Kaohsiung, Taiwan, May 14, 2023. ***Keynote Talk.***
I11. *Experiments and Numerical Modeling of Fires Associated with Lithium-ion Batteries Thermal Runaway*, 10th Triennial International Aircraft Fire and Cabin Safety Research Conference, Atlantic City, New Jersey, October 17-20, 2022.
I10. *Exploring Fundamental Science Collaboration with the National Science Foundation*, ISS R&D Conference, Washington, D.C., July 25-28, 2022. ***Panel Speaker.***
I9. *Flame Spread in Confined Spaces – Study of the Interactions between Flame and Surrounding Walls,* NSF-CASIS Transport Phenomena Program Day, Virtual, January 14th, 2022. ***Panel Speaker.***
I8. *Advancing Fire Science by Utilizing Microgravity Environments*, Distinguished Lecture Seminar Series, Department of Mechanical and Aerospace Engineering, Case Western Reserve University, Cleveland, Ohio, March 2, 2021.
I7. *Engineering Workforce – Pursing a Career in Academia*, ASME Engineering Education Webinar Series, February 25, 2021. ***Panel Speaker***
I6. *Role of Gravity and Buoyancy Flows in Fire Scalability*, Workshop: Frontiers for Hypergravity Experiments and Model Tests, Center for Geotechnical Modeling, University of California Davis, December 9th, 2020.

I5. *Science briefing on Confined Combustion, What's on Board: SpaceX CRS-19 broadcast,* NASA Kennedy Space Center, Merritt Island, Florida, December 3rd, 2019.
I4. *Study of Material Flammability in Microgravity and its Application on Earth*, 2019 Multi-Agency Coordinating Committee for Combustion Research, Fuel/Combustion Research Review, Arlington, Virginia, September 9-12, 2019.
I3. *Microgravity Experiments of Concurrent Flame Spread over Thin Solid Fuels*, Department of Mechanical Engineering, National Taiwan University, Taipei, Taiwan, October 22, 2018.
I2. *Microgravity Experiments of Concurrent Flame Spread over Thin Solid Fuels*, Department of Mechanical Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan, October 18, 2018.
I1. *Meet the Scientists*, 32nd Annual Meeting of the American Society for Gravitational and Space Research, Cleveland, Ohio, October 26-29, 2016.

Poster Presentations

P19. A. Aly+, J. T'ien, **Y.-T. Liao,** C. Li, P. Ferkul, S. Olson, and M. Johnston: Solid Material Microgravity Combustion: Identifying the Boundaries Between Flame Growth, Limiting Length, and Quenching, Ohio Space Forum, Cleveland OH, September 11, 2025
P18. N. Thinnakornsutibutr+, **Y.-T. Liao** Fire scale modeling and effects of buoyant flow on upward flame spread, 14th U.S. National Combustion Meeting, Boston Massachusetts, March 16-19, 2025.
P17. A.A. Naqvi+, B. E. Schmidt, **Y.-T. Liao**: Numerical study of spacing effects on small burning wooden cubes, 14th U.S. National Combustion Meeting, Boston Massachusetts, March 16-19, 2025.
P16. R. Neupane, **Y.-T. Liao+**: Understanding the Role of Buoyant Flow for Accurate and Robust Scale Modeling of Upward Flame Spread, 2024 International Mechanical Engineering Congress and Exposition, Portland, Oregon, November 17-21, 2024.
P15. J. Han+, **Y.-T. Liao**, Numerical Investigation of Flame Spread over A Thin Solid Material in Microgravity in Enhanced Oxygen and Reduced Pressure Condition, American Astronautical Society Glenn Space Technology Symposium, Cleveland OH, July 15-17, 2024.
P14. B. Wang+, P. Kannan, **Y.-T. Liao**, M. Parhizi, B. Kwon, S. Madhi, V. Premnath, J. Jeevarajan: Numerical Simulation of Fire and Thermal Runaway Propagation of Lithium-Ion Batteries, American Astronautical Society Glenn Space Technology Symposium, Cleveland OH, July 15-17, 2024.
P13. R. Neupane+, **Y.-T. Liao**: Fire Behavior and Material Flammability in Reduced Pressure Environments, 2024 Ohio Space Forum, Cleveland OH, April 29-30, 2024.
P12. A. Sharma+, **Y.-T. Liao:** How things will burn differently in outer space and on Moon, CWRU Innovation Week, Cleveland OH, September 26-29, 2023.
P11. R. Neupane+, A. Sharma, **Y.-T. Liao**: Role of Gravity-Induced Buoyancy Flow on Material Flammability and Flame Spread Process, American Astronautical Society John Glenn Memorial Symposium, Cleveland OH, July 17-19, 2023
P10. P. Kannan+, B. Wang, A. Sharma, **Y.-T. Liao**, B. Kwon, M. Parhizi, and J. Jeevarajan: In-situ Analysis and Numerical Modeling of Li-Ion Battery Thermal Runaway: Characterization of Fire and Gas Emissions, American Astronautical Society John Glenn Memorial Symposium, Cleveland OH, July 17-19, 2023

P9. A. Zatania Lojo[+], A. Sharma, **Y.-T. Liao,** M. Johnston, and P. Ferkul: Effects of Coriolis Force on Liquid Fuel Wick Flames in Artificial Partial Gravity in a Centrifuge, 2022 Annual Meeting of the American Society for Gravitational and Space Research, Houston TX, November 9-12, 2022.

P8. V. Mittal[+], T. Zeng[+], W. Black[+], A. Sharma, **Y.-T. Liao:** Fire Science in Micro and Partial Gravity Environments: Research Needs and Challenges, American Astronautical Society John Glenn Memorial Symposium, Cleveland OH, July 18-20, 2022 (*Winner of the Engineering– High School Category).*

P7. B. Kwon[+], W. Cui, P. Kannan, Cole Compton, **Y.-T. Liao,** F. Takahashi, J. Jeevarajan, D. Juarez-Robles, M. Parhizi: Fire Characterization and Gas Analysis of Lithium-Ion Batteries During Thermal Runaway, American Astronautical Society John Glenn Memorial Symposium, Cleveland OH, July 18-20, 2022.

P6. Y. Li[+] and **Y.-T. T. Liao**: Upward Flame Spread over a Thin Sample in a Confined Tunnel—Effects of Flow Confinement and Radiative Interactions, 11th U. S. National Combustion Meeting, Pasadena CA, March 24–27, 2019.

P5. C. Li, **Y.-T. T. Liao**[+], J. S. T'ien, D. L. Urban, P. Ferkul, S. Olson, G. A. Ruff, and J. Easton: Transient Flame Growth and Spread Processes over a Large Solid Fabric in Concurrent Low-Speed Flows in Microgravity, 11th Asia-Oceania Symposium on Fire Science and Technology, Taipei Taiwan, October 21-25, 2018.

P4. Y. Li, **Y.-T. T. Liao**[+], and P. Ferkul: Effect of Flow Duct Height on Concurrent-Flow Flame Spread and Near-Limit Oscillation, 11th Asia-Oceania Symposium on Fire Science and Technology, Taipei Taiwan, October 21-25, 2018.

P3. B. Kwon and **Y.-T. T. Liao**[+]: Experimental and Numerical Investigation of the Ignition and Burning Characteristics of a Group of Wooden Pieces, 11th Asia-Oceania Symposium on Fire Science and Technology, Taipei Taiwan, October 21-25, 2018.

P2. W. Cui and **Y.-T. T. Liao**[+]: Upward Flame Spread over Discrete Thin Fuels, 11th Asia-Oceania Symposium on Fire Science and Technology, Taipei Taiwan, October 21-25, 2018.

P1. Q. Li and **Y.-T. T. Liao**[+]: Numerical Study of Flame Spread over Solid Combustible Beneath an Inert Parallel-Oriented Plate, 11th Asia-Oceania Symposium on Fire Science and Technology, Taipei Taiwan, October 21-25, 2018.

SELECTED MEDIA COVERAGES

M11. ***Here's Why UL Research Institutes Podcast Series***, November 2023: Airlines Ask You About Lithium-Ion Batteries. Here's Why (https://ul.org/research/heres-why-podcast-series/airlines-ask-you-about-lithium-ion)

M10. ***Upward – Magazine of The ISS National Lab***, Volume 6, Issue 2, June 2023: Heating Things Up in Microgravity: Experiments in Space Answer Burning Questions About Fire Behavior. (https://www.issnationallab.org/upward-62-case-western-flame-study/)

M9. ***UL Electrochemical Safety Research Institute, Let's Talk! Podcast Series*****:** Fire Safety of Lithium-Ion Batteries, 2023. (https://ul.org/research/electrochemical-safety-research-institute/lets-talk-podcast-series/fire-safety-lithium-ion)

M8. ***ISS Benefits for Human,*** 2022 issue: You're Hot Then You're Cold. (https://www.nasa.gov/sites/default/files/atoms/files/iss_benefits_for_humanity_2022_book.pdf)

M7. ***Think: The Magazine of Case Western Reserve University****,* fall/winter 2021 issue: Space, Wind and Fire. (https://case.edu/think/fall2021/space-wind-fire.html#.YiepLhDMLmE)

M6. ***NASA,*** YouTube Channel, December 4th, 2019: What Launches to Space On SpaceX's 19th Cargo Mission?. (https://www.youtube.com/watch?v=w6BP5H7VOIU&fbclid=IwAR1-VtmFmP6TwYZ4Sjc-YwrYZRtAlL76j7e3RoFRjG8P7P9naaNTc3FYbMM)

M5. ***The Guardian***, January 1st, 2020: International Space Station astronauts play with fire for research (https://www.theguardian.com/science/2020/jan/01/international-space-station-astronauts-play-with-fire-for-research)

M4. ***ISS National Lab***, December 23th, 2019: Studying the Physics of Flame Spread to Minimize Structural Fire Hazards on Earth and in Space (https://www.issnationallab.org/blog/nsf-case-western-spacex-crs19-investigation/)

M3. ***ISS National Lab,*** YouTube Channel, December 2nd, 2019: SpaceX CRS-19 Research Overview: Confined Combustion (https://www.youtube.com/watch?v=JT0J-5GrkXY&feature=emb_title)

M2. ***Spaceflight Now***, December 8th, 2019*:* SpaceX resupply mission reaches International Space Station (https://spaceflightnow.com/2019/12/08/spacex-resupply-mission-reaches-international-space-station/)

M1. ***National Science Foundation,*** August 9th, 2017*:* Gravity's grip on2024 heat and fire to be studied in space (https://www.nsf.gov/news/news_summ.jsp?cntn_id=242772)

PROFESSIONAL SOCIETIES

Fire Safety in Space, International Topical Team, February 2016 to present
Combustion Institute, 2007 to present
The International Association for Fire Safety Science (IAFSS), 2015 to present
American Society for Gravitational and Space Research (ASGSR), October 2016 to present
American Society of Mechanical Engineers (ASME), May 2017 to present

ACADEMIC SERVICE

Conference/Workshop Organizer

- 41st International Symposium on Combustion, Colloquium Team Member, Fire and safety in combustion systems, Kyoto Japan, July 2026.
- 2025 Glenn Space Technology Symposium, Planning Committee Member, Cleveland OH, 2025.
- 2024 Glenn Space Technology Symposium, Planning Committee Member, Cleveland OH, 2024.
- 2024 Spring Technical Meeting of the Central States Section of the Combustion Institute, Meeting Organizer, Cleveland OH, 2024.
- 2023 John Glenn Memorial Symposium, Planning Committee Member, Cleveland OH, 2023.
- 13th US National Combustion Meeting, Combustion Art Competition Chair, College Station, TX, 2023.
- 2022 John Glenn Memorial Symposium, Planning Committee Member, Cleveland OH, 2022.

- 2022 Spring Technical Meeting of the Central States Section of the Combustion Institute, Combustion Art Competition Chair, Detroit MI, 2022.
- 2021 John Glenn Memorial Symposium, Planning Committee Member, Virtual 2021.
- 12th US National Combustion Meeting, Combustion Art Competition Chair, Virtual 2021.
- IMECE, Session Sub-Organizer for 08-13: CMS-General Combustion and Fire, 08-14: CMS-Biomass and Waste Gasification and Combustion, 11-26: Combustion power and propulsion systems (K11), 11-27: Emissions reduction technologies (K11), 11-28: Industrial and applied combustion systems (K11), 11-29: Fundamental processes - laminar and turbulent reacting flows (K11), Virtual 2021.
- 2019 Technical Standards Workshop, Workshop Organizer, Cleveland OH, 2019
- IoT-Enabled Smart Firefighting Ideation Workshop, Workshop Co-Organizer, Cleveland OH, 2018
- 34th Annual Meeting of ASGSR, Topic Organizer for Combustion, Bethesda MD, 2018
- 33rd Annual Meeting of ASGSR, Topic Organizer for Combustion, Seattle WA, 2017

Conference Session Chairs
2024 Annual Meeting of ASGSR, Combustion 2, San Juan, Puerto Rico, 2024
2021 Annual Meeting of ASGSR, Combustion 1 Session, Baltimore MD, 2021
38th International Symposium on Combustion, New Concepts Session, Adelaide, Australia, 2021
35th Annual Meeting of ASGSR, Combustion 1 Session, Denver CO, 2019
11th U.S. National Combust. Meeting, Environmental Session, Pasadena CA, 2019
34nd Annual Meeting of ASGSR, Solid Material Flammability Session, Bethesda MD, 2018
2018 Spring Technical Meeting of CSSCI, Fire Research Session, Minneapolis MN, 2018
10th U.S. National Combust. Meeting, Suppression/Protection Session, College Park MD, 2017
32nd Annual Meeting of ASGSR, Solid Material Flammability Session, Cleveland OH, 2016
36th International Symposium on Combustion, Fire Session, Seoul, South Korea, 2016

Grant Proposal Review
NSF, Review Panel, 2025
NSF, Ad Hoc Reviewer, 2024
NASA, Ad Hoc Reviewer, 2024
ANID (Chile) Competition for Initiation Into Research Fondecyt Projects, 2022
NSERC (Canada) Discovery Grant, 2021
NSF Review Panel, 2020
NASA EPSCoR Panel, 2018
NSF Review Panel, 2017
NASA Review Panel, 2016

Journal and Conference Paper/Abstract Review
Science/Combustion and Flame/Fire Technology/Fire Safety Journal/Combustion Science and Technology/Journal of Fire Sciences/Journal of Heat Transfer/Fuel/Microgravity Science and Technology/International Journal of Energy Research/Thermal Science and Engineering Progress/Shock Waves
Proceedings of the Combustion Institute, 2018, 2020, 2022, 2024
Mediterranean Combustion Symposium, 2023
Annual Meeting American Society for Gravitational and Space Research, 2017, 2018, 2019, 2024, 2025

International Conference on Environmental Systems, 2016, 2017, 2018, 2020, 2021, 2022, 2023, 2025
International Seminar on Fire and Explosion Hazards, 2019
International Symposium on Fire Safety and Science, 2016, 2019, 2023
IAFSS Shedon Tieszen Student Best Paper Award, 2023

Campus Service
Secretary of the Case School of Engineering, October 2022 to present
CSE Budget Committee, Spring 2022 to Spring 2023
MAE Department Graduate Studies Committee, August 2015 to September 2022
MAE Department Faculty Search Committee, 2017 to 2018
CIV Department Faculty Search Committee, 2022 to 2023
Case School of Engineering Research Committee, August 2015 to August 2019

TEACHING EXPERIENCE

Summary of teaching evaluation.

Course	Semester	Number of Students	Survey Participation	Instructor Rating	Course Rating
EMAE/EMAC463 Fire Dynamics	Spring 2016	7	3	2.67/5	2.67/5
	Fall 2016	8	5	5.00/5	4.80/5
	Fall 2018	7	5	4.80/5	4.80/5
	Fall 2019	6	2	4.50/5	4.50/5
	Fall 2020	10	2	4.50/5	4.50/5
	Fall 2021	3	3	5.00/5	4.67/5
	Spring 2022	7	1	5.00/5	5.00/5
	Fall 2025	10	-	-	-
EMAE371/471 Computational Fluid Dynamics	Spring 2017	16	5	4.00/5	4.00/5
	Spring 2018	15	5	3.60/5	3.40/5
EMAE353 Heat Transfer	Spring 2019	96	24	3.04/5	2.71/5
	Spring 2020	110	33	4.18/5	3.94/5
	Spring 2021	124	35	3.86/5	3.60/5
	Spring 2022	81	15	3.2/5	3.27/5
	Spring 2023	86	37	3.08/5	3.16/5
	Spring 2024	85	25	3.28/5	3.17/5
EMAE/EMAC 464 Fire Protection Engineering	Fall 2022	9	1	5.00/5	4.00/5
EMAE 457 Combustion	Fall 2023	6	2	5.00/5	4.50/5
EMAE398 Senior Project	Fall 2023	21	2	3.00/5	3.00/5
	Fall 2025	28	-	-	-
EMAE252 Fluid Dynamics	Spring 2025	49	9	2.44/5	2.78

STUDENT AND POST-DOC ADVISING

Superscript * denotes the BS/MS student. Superscript # denotes under-represented minority in STEM.

Postdoctoral Scholars

1. **Ankit Sharma,** November 2021 to January 2024
   - awards received while in my lab: 2022-2023 SFPE Grand Challenges Initiatives Research Fellow, 2023 SFPE 5 under 35 award.
   - proposals involved: 3 (2 as a co-I, 1 awarded)
   - journal articles in my lab: 4 (1 as a first author, 3 as a co-author, 1 under review)
   - conference articles in my lab: 3 (2 as a corresponding author, 1 as a first author)
   - oral presentations made in conferences: 3
   - posters presented in conferences: 5
   - first job after graduating: postdoctoral researcher at NIST, Gaithersburg, Maryland.

2. **Nicharee Thinnakornsutibutr**#, October 2024 to present
   - journal articles in my lab: 1 (1 as a first author, 1 under review)
   - posters presented in conferences: 1

3. **Mithun Kumar Debnath**, August 2025 to present

PhD Students

1. **Chengyao Li,** July 2015 to August 2019
   Awardee of the 2019 EMAE Graduate Research Award in Memory of Xiaoyang Zhao
   - journal articles in my lab: 4 (3 as a first author, 1 as a co-author)
   - conference articles in my lab: 2 (both as a first author)
   - oral presentations made in conferences: 4
   - posters presented in conferences: 1
   - first job after graduating: postdoctoral researcher at Case Western Reserve University, Cleveland Ohio.

2. **Yanjun Li**, March 2016 to August 2021
   Awardee of the 2021 EMAE Graduate Research Award in Memory of Xiaoyang Zhao
   - journal articles in my lab: 9 (5 as a first author, 4 as a co-author)
   - conference articles in my lab: 7 (6 as a first author, 1 as a co-author)
   - oral presentations made in conferences: 5
   - posters presented in conferences: 2
   - first job after graduating: faculty member at Nanjing University of Aeronautics and Astronautics, Nanjing, China.

3. **Byoungchul Kwon,** December 2016 to January 2023
   Awardee of the 2022 EMAE Horsburgh Graduate Student Research Award
   - journal articles in my lab: 3 (2 as a first author, 1 as a co-author)
   - conference articles in my lab: 4 (all as a first author, 2 as a corresponding author)
   - oral presentations made in conferences: 4

- posters presented in conferences: 3
- first job after graduating: postdoctoral researcher at UL Research Institutes, Houston Texas.

4. **Wohan Cui,** June 2017 to March 2023
   Awardee of the 2020 EMAE Graduate Research Award in Memory of Xiaoyang Zhao
   - journal articles in my lab: 5 (3 as a first author, 2 as a co-author)
   - conference articles in my lab: 4 (3 as a first author, 1 as a co-author)
   - oral presentations made in conferences: 2
   - posters presented in conferences: 1
   - first job after graduating: analyst at Whirlpool, Benton Harbor, Michigan.

5. **Pushkal Kannan**, February 2020 to August 2025 (anticipated)
   Advanced to Candidacy in Summer 2024
   Awardee of the 2021 EMAE Graduate Student Teaching Award
   - journal articles in my lab: 2 (1 as a first author, as a co-author, 2 under review)
   - conference articles in my lab: 6 (2 as a first author, 4 as a co-author)
   - oral presentations made in conferences: 2
   - posters presented in conferences: 3
   - first job after graduating: analyst at Tesla, Reno, Nevada (start date: September 1, 2025)

6. **Boyu Wang,** August 2021 to present
   Advanced to Candidacy in Summer 2023
   Awardee of the 2021 Case School of Engineering Swanger Graduate Fellowship Award
   - journal articles in my lab: 2 (1 as a first author, 1 as a co-author, 2 under review)
   - conference articles in my lab: 4 (2 as a first author, 2 as a co-author)
   - oral presentations made in conferences: 2
   - posters presented in conferences: 2

7. **Robin Neupane**, August 2021 to present
   Advanced to Candidacy in Summer 2023
   Awardee of the 2023 EMAE Horsburgh Fellowship Award
   Awardee of the 2025 EMAE Excellent Graduate Student Research Awards
   in Memory of Xiaoyang Zhao
   - journal articles in my lab: 1 (1 as a first author)
   - conference articles in my lab: 3 (3 as a first author)
   - oral presentations made in conferences: 3
   - posters presented in conferences: 2

8. **Ali Naqvi,** January 2022 to present
   Advanced to Candidacy in Summer 2024
   (co-advised with Prof. Bryan Schmidt)
   - conference articles in my lab: 1 (1 as a first author)
   - oral presentations made in conferences: 1
   - posters presented in conferences: 1

9. **Robert Thacker**, January 2023 to present
   (part-time PhD student at CWRU, full-time employee at NASA Glenn Research Center)

(co-advised with Prof. Brian Maxwell at University of Ottawa)

10. **Jiaxuan Han**, January 2024 to present
    - conference articles in my lab: 1 (1 as a first author)
    - oral presentations made in conferences: 1
    - posters presented in conferences: 1

MS Students
(name, date, first job after graduating)

Thesis-based
1. JeanHyuk Park, June 2015 to December 2017, MPS Korea
2. Qian Li[#], September 2017 to May 2019, China Huaneng Group Co., Ltd, Beijing China
3. Ama Carney[*#], Spring 2019 to May 2020, Sierra Lobo, Ohio
4. Eli Healey[*#], Fall 2020 to May 2022
5. Enna Van Den Akker[*#], Spring 2021 to May 2022, Space X, Washington.
6. Arland Zatania Lojo[*], Summer 2021 to Dec. 2022, HX 5 at NASA GRC, Ohio
7. Nathan Kralik, Fall 2024 to present
8. Christopher Riviears[#], Spring 2025 to present
9. Jocelyn Schechter[#], Spring 2025 to present
   (2025-2026 Ohio Space Grant Consortium Master's Fellowship awardee)
10. Adam Aly (co-advised with Prof. James T'ien), Spring 2025 to present
11. Haolin Wen, Summer 2025 to present

Project-based
12. Shixun Gao, August 2015 to May 2016, COMAC, Shanghai China
13. Stephen Finnegan[*], Dec. 2015 to May 2018, Triumph Electronics & Controls, Forest Ohio
14. Minze Tao, August 2016 to May 2017, Tencent, Palo Alto California
15. Andrew Green[*], Fall 2019 to December 2020, FirstEnergy, Akron Ohio.
16. Keith Cartwright[*], Summer 2022 to Spring 2024, X Energy, Gaithersburg Maryland
17. Julian Crawford[#], Fall 2023 to Spring 2025

Undergraduate Students

1.	Drew Weibel	September 2015 to May 2016
2.	Kexin Wang	January 2016 to August 2016
3.	Shili Wu	November 2016 to August 2017
4.	Jared Brucker	Spring 2017 (senior project)
5.	Ryan Seballos	Spring 2017 (senior project)
6.	Anthony J. Vetturini	Summer 2017, 2018, Spring 2019
7.	Sarah Paquet[#]	Summer 2017
8.	Zitong Zhang	Summer 2017
9.	Ama Carney[*#]	Fall 2018 (continued to BS/MS)
10.	Andrew Jimenez	Spring 2019
11.	Jacob Chotiner	Spring 2019
12.	Jonah Sachs-Wetstone	Summer 2019, Spring 2020 to Spring 2021
13.	Andrew Green[*]	Fall 2019 (continued to BS/MS)
14.	Arland Zatania Lojo[*]	Fall 2019 to Spring 2021 (continued to BS/MS)

15. Darren Huang — Fall 2019 to Summer 2020
16. Emmett Donnelley-Power — Fall 2019 to Spring 2020
17. Josiah Cann[#] — Fall 2019 to Summer 2021
18. Matthew Tong — Fall 2019 to Spring 2020
19. Enna Van Den Akker[*#] — Spring 2020 to Fall 2020 (continued to BS/MS)
20. Eli Healey[*#] — Summer 2020 (continued to BS/MS)
21. Caroline Zhu[#] — Fall 2020 to Spring 2021
22. Leah Schachter[#] — Winter 2020 to Summer 2021
23. Avery Gould — Winter 2020 to Spring 2021
24. William Grier — Spring 2021
25. Ayham Ratrout — Spring 2021
26. Brandon Ferraro — Spring 2021, Fall 2021
27. Claire Daugherty[#] — Summer 2021
28. Curran Schmitt — Summer 2021 to Fall 2021
29. Yuhong Zheng — Fall 2021
30. Keith Cartwright[*] — Fall 2021 to Spring 2022 (continued to BS/MS)
31. Cole Compton — Spring 2022
32. Jonathan Fu — Fall 2022
33. Nate Ginn — Fall 2022 (senior project)
34. Andrew Smith — Spring 2023 (senior project)
35. Julia Edwards[#] — Spring 2023 (senior project)
36. Abigail Halsdorfer[#] — Spring 2023 (senior project)
37. Nathan Kralik — Summer 2024 (continued to BS/MS)
38. Alexander Calabrese — Spring 2025 (senior project)
39. Ethan Hutchinson — Spring 2025 (senior project)
40. Simon Cubas — Spring 2025 (senior project)

High School Students

1.	Alessandra Vucenovic[#]	Hathaway Brown	April 2017 to May 2020
2.	Margaret LeMay[#]	Hawken School	Summer 2017
3.	Eric Liao	Solon High School	Summer 2021
4.	Cecilija Rowane[#]	Beaumont School	Fall 2021
5.	Amira Horowitz[#]	Hathaway Brown	Summer 2022
6.	Wyatt Black	Berea-Midpark High School	Summer 2022
7.	Tienna Zeng[#]	Solon High School	Summer 2022
8.	Viresh Mittal	Solon High School	Summer 2022
9.	Aidan Flynn	Gilmour Academy	Fall 2022
10.	Lily Prebul[#]	Gilmour Academy	Fall 2023
11.	Arianna Su[#]	Hathaway Brown	Spring 2024 – present
12.	Calvin Lei	Hawken School	Summer 2024

PhD Dissertation Committee Member

1. **Sangjin Lee**, Macromolecular Science and Engineering, September 2016
   "Structure-Property Relationships in Composite Layers Polymeric Film/Foam Systems"
   Thesis Advisor: Joao Maia

2. **Ming-Fang Kang**, Mechanical and Aerospace Engineering, November 2016
   "Investigation of Passive Cyclonic Gas-Liquid Separator Performance for Microgravity Applications"
   Thesis Advisor: Yasuhiro Kamotani
3. **Taneisha Deans**[#], Macromolecular Science and Engineering, April 2017
   "Using Nature as a way to Flame Retard Synthetic Materials"
   Thesis Advisor: David A. Schiraldi
4. **Michael Johnston**, Mechanical and Aerospace Engineering, October 2017
   "Growth and Extinction Limits: Ground Based Testing of Solid Fuel Combustion in Low Stretch Conditions in Support of Space Flight Experiments"
   Thesis Advisor: James S. T'ien
5. **Abdullah Al Amin**, Mechanical and Aerospace Engineering, November 2017
   "Multiscale Multiphysics Thermo-Mechanical Modeling of an MgB_2 Based Conduction Cooled MRI Magnet System"
   Thesis Advisors: Ozan Akkus and Michael Martens
6. **Jiyuan Kang**, Mechanical and Aerospace Engineering, November 2018
   "Morphology and Performance Characterization of Intumescent Coatings for Fire Protection of Structural Steel"
   Thesis Advisor: Fumiaki Takahashi
7. **Jingxing Feng**, Macromolecular Science and Engineering, January 2019
   "Transport Phenomena in Polymeric Blends and Multilayer Films"
   Thesis Advisor: Eric Baer
8. **Chengyao Li**, Mechanical and Aerospace Engineering, August 2019
   "Material Flammability and Burning Behavior of This Solids in Concurrent Forced Flow in Microgravity: A Numerical Study in Support of Large Scale Microgravity Burning Experiments"
   Thesis Advisor: Ya-Ting Liao
9. **Hao Wang**, Mechanical and Aerospace Engineering, June 2020
   "The Hot Optimal Transportation Meshfree (HOTM) Method for Extreme Multi-Physics Problems"
   Thesis Advisor: Bo Li
10. **Ci Zhang**, Macromolecular Science and Engineering, September 2020
    "Electromechanical Deformation and Failure of Polymeric Films"
    Thesis Advisor: Eric Baer
11. **Gustavo Schinazi**, Macromolecular Science and Engineering, October 2020
    "Bio-Based Flame Retardation of Acrylonitrile-Butadiene-Styrene"
    Thesis Advisor: David Schiraldi (CWRU), Jonathan Pokorski (UCSD), José Roberto d'Almeida (PUC-Rio)
12. **Zongyue Fan**, Mechanical and Aerospace Engineering, January 2021
    "A Largangian Meshfree Simulation Framework for Additive Manufacturing of Metals"
    Thesis Advisor: Bo Li
13. **Erik Price**, Macromolecular Science and Engineering, March 2021
    "Extreme-Environment Protection Using Macromolecular Composite Technology"
    Thesis Advisor: Gary Wnek
14. **Fenfen Wang**, Mechanical and Aerospace Engineering, April 2021
    "Sustainable Manufacturing of Silicon-based Lithium-Ion Batteries for Energy Storage"
    Thesis Advisor: Chris Yuan

15. **Yanjun Li,** Mechanical and Aerospace Engineering, April 2021
"Flame Spread in Confined Spaces: Microgravity Experiments and Numerical Simulations"
Thesis Advisor: Ya-Ting Liao
16. **Yumi Matsuyama[#],** Mechanical and Aerospace Engineering, August 2021
"Fire Smoke and Combustion Characterization of Material in an Enclosed Chamber"
Thesis Advisor: Fumiaki Takahashi
17. **Maryam Mortazavi[#]**, Civil Engineering, August 2021
"Enhanced Seismic Resiliency of Steel Concentrically Braced Frame (CBF) Buildings through Rapidly Repairable Components"
Thesis Advisor: Micheal Pollino
18. **Yuncheng Man,** Mechanical Engineering, October 2021
"Biomimetic Microfluidic Platforms for Assessing Red Blood Cell Deformability and Microvascular Occlusion"
Thesis Advisor: Umut Gurkan
19. **Ziyou Zhang**, Macromolecular Science and Engineering, April 2022
"Micro and Nano Shape Memory Film Systems"
Thesis Advisor: Eric Baer
20. **Xijin Zhang[#]**, Civil and Environmental Engineering, June 2022
"Fungal-Mediated and Fungi-Sourced Sustainable Civil Engineering Material"
Thesis Advisor: Xiong (Bill) Yu
21. **Cho-Ning Huang,** Mechanical and Aerospace Engineering, June 2022
"Modeling Two-Phase Configurations: Theoretical Model for Flow Boiling Critical Heat Flux and Computational Model for Variable Conductance Heat Pipe"
Thesis Advisors: Chirag Kharangate and Yasuhiro Kamotani
22. **Byoungchul Kwon,** Mechanical and Aerospace Engineering, January 2023
"Ignition and Burning Behavior of Modern Fire Hazards: Firebrand Induced Ignition and Thermal Runaway of Lithium-Ion Batteries"
Thesis Advisor: Ya-Ting Liao
23. **Wohan Cui,** Mechanical and Aerospace Engineering, March 2023
"Burning Behaviors of Thin Solids in Normal and Microgravity – Effects of Sample Configuration and Environmental Conditions"
Thesis Advisor: Ya-Ting Liao
24. **Yue Qiu,** Mechanical and Aerospace Engineering, December 2023
"Experimental and Machine Learning Investigation on Mini/Micro-Channel for High Heat Flux Applications"
Thesis Advisors: Chirag Kharangate
25. **Zaid Alajlan**, Civil and Environmental Engineering, July 2024
"Innovative Fungi-Mediated Soil Erosion Control for Climate Resilience"
Thesis Advisor: Xiong (Bill) Yu

MS Thesis Committee Member

1. **Wei Shang**, Mechanical and Aerospace Engineering, January 2016
"Laboratory-Scale Evaluation of Meta-Aramid Material as a Fire Barrier for Flexible Polyurethane Foam"
Thesis Advisor: James S. T'ien
2. **JeanHyuk Park**, Mechanical and Aerospace Engineering, June 2017
"Numerical Study of Concurrent Flame Spread Over an Array of Thin Discrete Solid

Fuels"
Thesis Advisor: Ya-Ting T. Liao

3. **Yumi Matsuyama**[#], Mechanical and Aerospace Engineering, January 2019
"Toxic Gas and Particulates Characterization in a Smoke Density Chamber"
Thesis Advisor: Fumiaki Takahashi
4. **Chenran Wen**, Mechanical and Aerospace Engineering, January 2019
"A Laboratory Scale Study of Particulates Generation from Charring and Non-Charring Polymers"
Thesis Advisor: Fumiaki Takahashi
5. **Evan N. Rose**, Mechanical and Aerospace Engineering, March 2019
"*Autoignition Dynamics and Combustion of n-Dodecane Droplets Under Transcritical Conditions*"
Thesis Advisor: Vedha Nayagam
6. **Ye Tian**, Mechanical and Aerospace Engineering, April 2019
"A Study of Charring Behavior of Woods Based on Internal Temperature and CT-Scan Measurements"
Thesis Advisor: Fumiaki Takahashi
7. **Qian Li**[#], Mechanical and Aerospace Engineering, May 2019
"Numerical Study of Fire Behavior Between Two Inclined Panels"
Thesis Advisor: Ya-Ting T. Liao
8. **Ama Carney**[#], Mechanical and Aerospace Engineering, April 2020
"Concurrent-Flow Flame Spread Over Ultra-Thin Discrete Fuels in Microgravity"
Thesis Advisor: Ya-Ting T. Liao
9. **Daniel T. Souza**, Mechanical and Aerospace Engineering, January 2021
"Effects of Inert Gases and Flow Velocities on the Structure and Stability of Coflow Diffusion Flames"
Thesis Advisor: Fumiaki Takahashi
10. **Genesis Mlakar**, Mechanical and Aerospace Engineering, April 2021
"Effects of Surface Engineering on HFE-7100 POOL Boiling Heat Transfer"
Thesis Advisor: Chirag Kharangate
11. **Enna Van Den Akker**[#], Mechanical and Aerospace Engineering, April 2022
"Numerical Study of fire Spread between Thin Parallel Samples in Microgravity"
Thesis Advisor: Ya-Ting T. Liao
12. **Eli Healey**[#], Mechanical and Aerospace Engineering, April 2022
"A Numerical Study of Concurrent-Flow Flame Spread over Ultra-Thin Solid Samples in Microgravity"
Thesis Advisor: Ya-Ting T. Liao
13. **Arland Zatania Lojo**, Mechanical and Aerospace Engineering, April 2022
"Effects of Coriolis Force on Liquid Fuel Wick Flames in Artificial Partial Gravity in a Centrifuge"
Thesis Advisor: Ya-Ting T. Liao

PhD Proposal Defense Committee Member

- Jiyuan Kang, Mechanical and Aerospace Engineering, June 2016
- Abdullah Al Amin, Mechanical and Aerospace Engineering, July 2016
- Maryam Mortazavi[#], Civil Engineering, October 2017
- Chengyao Li, Mechanical and Aerospace Engineering, February 2018

- Zongyue Fan, Mechanical and Aerospace Engineering, February 2018
- Yeyuan Li, Mechanical and Aerospace Engineering, March 2018
- Gustavo Schinazi, Macromolecular Science and Engineering, March 2018
- Byoungchul Kwon, Mechanical and Aerospace Engineering, August 2018
- Yanjun Li, Mechanical and Aerospace Engineering, August 2018
- Erik Price, Macromolecular Science and Engineering, December 2018
- Fenfen Wang, Mechanical and Aerospace Engineering, December 2019
- Yuncheng Man, Mechanical and Aerospace Engineering, September 2020
- Ziyou Zhang, Macromolecular Science and Engineering, January 2021
- Zaid Alajlan, Civil Engineering, December 2022
- Jason Hartwig, Mechanical and Aerospace Engineering, August 2023
- Taher Hafiz[#], Macromolecular Science and Engineering, February 2024