

## Yen-Lin Han

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### EDUCATION:

- 08/01-05/06      **University of Southern California**      Los Angeles, CA  
Ph.D., Mechanical Engineering, GPA 3.83  
Han, Y.-L. (2006). Investigation of Knudsen Compressors at Low Pressures (Doctoral dissertation). University of Southern California, Los Angeles, CA.  
Advisor: Dr. E. P. Muntz
- 01/07-08/08      **University of Southern California**      Los Angeles, CA  
Master of Science, Electrical Engineering, GPA 3.74  
Major Field: Optics, Photonics
- 08/99-05/01      **California State University Northridge**      Northridge, CA  
Master of Science Program, Mechanical Engineering, GPA 3.98  
Major Field: Heat Transfer, Thermal-Fluids
- 08/98-08/99      **California State University Dominguez Hills**      Carson, CA  
Master of Business Administration, General Management, GPA 3.93
- 10/89-05/93      **National Tsing-Hua University**      Hsin-Chu, Taiwan  
Bachelor of Science, Material Science and Engineering  
Minor, Economics

### APPOINTMENTS:

- 09/19- Present      **Seattle University**      Seattle, WA  
*Associate Professor, Department of Mechanical Engineering*
- 09/15-08/19      *Assistant Professor, Department of Mechanical Engineering*  
**Course Taught:**  
*Graduate Courses-*
  - *Advanced Energy Systems-* Topics include contemporary energy technologies such as operation and analysis of thermal power, fuel cell, renewables, combined heat and power systems, and energy storage, with emphasis on environmental and societal awareness.
  - *Advance Computational Methods (CFD)-* Theories and applications related to Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) are discussed. This course focuses on applications in structural mechanics, heat transfer and fluid dynamics. A combination of theoretical derivations and practical applications using commercially available FEA and CFD codes (ANSYS Fluent) are covered.*Undergraduate Courses-*
  - *Engineering Design Courses-* Coordinate Capstone Senior Design Projects (7 projects in 2020-21, 9 projects in 2019-20, 7 in 2018-19, 9 in 2017-18 & 9 in 2016-17). Advise teams of students completing engineering tasks provided by industrial sponsors. Prepare students with profession presentation and writing skills. Workshops on project management, and teamwork. Apply fundamental engineering theories including thermal fluids, dynamics, control, and materials. Complete each project with prototyping, testing, professional presentations, and technical reports to sponsors. Advise interdisciplinary and ME senior projects (1 project in 2020-21, 2 projects in 2019-20, 3 in 2018-19, 2 in 2017-18, 2 in 2016-17 & 2 in 2015-16)- Kenworth Truck Company (subsidiary of PACCAR) submitted six patent applications for the autonomous coupling of tractor and trailer project I advised in 2016-17. T-Mobile

submitted one patent application for the projects (automatic device testing platform) I advised in 2016-17.

- *Data Acquisition I & II*- Two-course sequence with contents integrating fundamentals of electrical engineering including simulation using Multisim, computer programming and data acquisition (DAQ) with application to mechanical engineering systems. The topics include DC/AC circuits, electronic components, sensors, microcontrollers, statistical analysis, frequency domain analysis, filtering and Internet of Things (IoT) applications. Implemented remote labs in Spring 2020 with positive responses from students.
- *Heat Transfer*- Topics included general principles underlying heat transfer by conduction, convection, and radiation for applying steady flow and transient flow. Conduct experiments to demonstrate selected heat transfer phenomena. Utilized authentic engineering problems (AEPs) and inverted classroom (IC). Added a service-learning project in Spring 2019 (Hilltop House Energy Audit).
- *Dynamic Systems*- Topics included modeling of mechanical, thermal, hydraulic, pneumatic, and electrical linear and non-linear systems, Laplace transforms, stability criteria, and frequency response. Re-designed laboratory experiments utilizing LabView/NI DAQ to observe time responses of selected mechanical, hydraulic and electromechanical systems.
- *Independent Study/Research*- Advised undergraduate students to conduct independent study/research. Subjects included microfluidics, aerospike nozzles, two phase flows, applications of thermodynamics and heat transfer, and density function theory.
- *Design, Simulation and Rapid Prototyping of Microfluidic Devices (SQ19)*- This course was one of the four pilot undergraduate research course supported by the Dean's office at the College of Science and Engineering. Combining simulation tools and 3D printing technologies, this course aimed to guide students to investigate the design and manufacturing process of microfluidics devices without traditional soft-lithography procedures to further remove the obstacles of applying microfluidics. Students were introduced to microfluidics theory, reviewed scholarly literatures, designed microfluidic devices for chosen applications, conducted simulations to visualize fluid behaviors in micro channels, prototyped microfluidic devices using 3D printers, and experimentally tested the performance of their prototypes.

***Research Interests:***

- Undergraduate STEM education.
- Soft Robotics for rehabilitations.
- Design of medical devices such as thermal ablation probes for tumor treatments and soft robots for rehabilitation.
- Renewable energy.
- Utilizing simulation techniques to design rarefied gas dynamics, heat transfer, microfluidics, nanofluidics and Microelectromechanical Systems (MEMS) including soft robots, micropumps, microvalves, microthrusters and micro heat sinks.
- Autonomous systems including self-driving vehicles and robotic testing utilizing image detection and various sensors.
- Applications of advanced materials including Aerogel and Carbon Nanotubes, and Dual Phase Oxygen Transport Membranes in innovated devices such as Single Chamber Solid Oxide Fuel Cells and self-driven micro combustor.
- Density Function Theory (DFT) simulations for perovskite oxides and MOF (metal-organic frameworks) CO<sub>2</sub> sequestration.
- Proficient at packaging simulation software such as COMSOL, ANSYS Fluent, SolidWorks, etc.

***External Professional Service in the Past Five Years:***

- Scientific Program Committee member and chair of the MEMS and 3D Printing track for 2021 Design of Medical Devices (DMD) Conference.
- Frontiers in Education (FIE) Conference Session Chair- IEEE FIE 2020.

- Biomedical Device Session Organizer- ASME IMECE 2020.
- Ad-Hoc Reviewer- NSF S-STEM, 2020.
- Proposal Review Panelist– NSF DUE/IUSE (Improving Undergraduate STEM Education), 2020.
- Scientific Program Committee member and chair of the MEMS and Nano track for 2020 Design of Medical Devices (DMD) Conference.
- Coordinator of SU ASME student chapter.
- Proposal reviewer for the French National Research Agency (ANR) in 2019.
- NSF GRFP reviewer, 2019.
- Chair of the MEMS and Nano track for 2019 Design of Medical Devices (DMD) Conference.
- Member of the NSF College of Reviewers for Undergraduate Education (CRUE) – expect to review up to four NSF proposals from July 2018 to June 2021.
- Proposal Review Panelist– NSF DUE/IUSE (Improving Undergraduate STEM Education: Education and Human Resources), 2016 & 2017.
- Fellowship Review Panelist– National Defense Science and Engineering Graduate (NDSEG) Fellowships, 2016, 2017 & 2018.
- Session Co-Chair- AIAA Forum Session FD25, 2017.
- Peer-reviewed papers during the past five years are listed in detail at the end.

***Internal Service in the Past Five Years:***

*University Level-*

- Member of the Academic Calendar Review (ACR) Working Group
- Member of Seattle University NSF ADVANCE grant Tenure and Promotion Guideline Task Force.
- Member of Seattle University NSF ADVANCE grant Internal Advisory Board and Multi-Track Promotion Standards Subcommittee member.
- Participated in University Service Learning and Community Engagement.

*College Level-*

- Member of the CSE Assessment Review Committee in 2020.
- Member of the College of Science and Engineering (CSE) Scholarship Review Committee in 2020.
- Member of the steering committee for the CSE Robotics Lab.
- Member of the Society of Women Engineers (SWE) Conference Travel Grant Committee in 2019.
- Member of the College of Science and Engineering (CSE) Scholarship Review Committee in 2019.
- Peer evaluator for colleagues in the college.
- Member of the Annual Performance Review committee for the CSE in 2017.
- Assisted the CSE Dean’s office to showcase the progress of my senior design teams and my technical research teams to attract attentions from potential supporters of Seattle University.
- Reviewed application materials for NSF-GRFP for the office of fellowships.
- Planned and hosted college wide faculty brown bag lunch discussion in teaching.

*Department Level-*

- Chair of the search committee for the ME Lab Manager.
- Student Advising.
- Planning social events for students, faculty, alumni and industry partners.
- Coordinating departmental seminars and inviting professionals from industry for campus visits.
- Arranging student field trips to various engineering companies.
- Connecting with current and potential donors.
- Contributed to the development of the Master of Science in Mechanical Engineering (MSME) program.
- Hiring committee member for the department personnel.
- Hosted potential students for campus visits.

- Regularly attend department events for students, alumni, and local professionals.
- Connected with Seattle University Community Engagement office and discussed collaborations.

09/12-08/15

**Seattle University**

Seattle, WA

Lecturer, Department of Mechanical Engineering

**Courses Taught:**

- *Engineering Design Courses*- Coordinated Capstone Senior Design Projects (7 projects in 2014-2015, 10 projects in 2013-2014 and 6 projects in 2012-2013). Advised senior design projects (5 total).
- *Heat Transfer*- Research supported by NSF (National Science Foundation) DUE (Division of Undergraduate Education)-TUES (Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics) on utilizing inverse classroom (IC) to facilitate authentic engineering problem centered learning (AEPCL) in Heat Transfer class was conducted for 2014 & 2015.
- *Dynamic Systems*- Emphasized on computer simulation using existing symbolic computer programs such as MATLAB Simulink.
- *Fluid Mechanics*- Topics included laws of conservation of mass, momentum, and energy in fluid systems, fluid statics, dimensional analysis, incompressible, inviscid and viscous flows, steady and unsteady flows, internal and external flows.
- *Introduction to MEMS (Microelectromechanical Systems)*- Topics included design, scaling, fundamental fabrication techniques, material selection, and actuation of microelectromechanical systems. Emphasize on state-of-the-art MEMS sensing technology to enhance understanding of contemporary issues and global awareness.

01/10-08/12

**University of Connecticut**

Storrs, CT

Assistant Professor-in-Residence (non-tenure track), Department of Mechanical Engineering

**Courses Taught:**

- *Senior Design Projects*- Coordinated Capstone Senior Design Projects (41 projects in 2010-2011, and 51 projects in 2011-2012). Advised teams of students completing engineering tasks provided by industrial sponsors. Successfully advised design projects include Robotic Silicon Wafer Grippers, Green Renewable Energy Sources Optimization, Restoration of Museum of Connecticut Glass, Voltage Regulators for Farmers in Developing Countries, An Innovative Phase Changing Material (PCM) Cooling Device for Firefighters, Re-design the Combustor of an Air-Steam Hybrid Engine, Tire Cage Failure Analysis, Design and Manufacturing of an Interface for the Laser Bake Stand, etc.
- *Thermodynamics Principles*- Topics included determining the properties of pure substances using the thermodynamic tables, ideal gas approximation and other equations of state and the applications of the conservation of energy to steady and unsteady flows and applying the second law of thermodynamics to steady and unsteady flows. *Taught on-line course in Summer 2012.*
- *Applied Thermodynamics*- Focused on the applications of thermodynamic principles to the design and optimization of engineering systems including the vapor power and refrigeration systems, gas power systems, applications concerning humidification, dehumidification, evaporative cooling, and thermodynamics of combustion systems such as furnaces, flow reactors etc. Characterized Turbosteamer hybrid engines in design projects.
- *Fluid Dynamics*- Lectured on fundamental fluid dynamics theories including applications of the Navier-Stokes equations and computational fluid dynamics (CFD) projects using ANSYS FLUENT.
- *Heat Transfer*- Lectured on general principles of heat transfer including conduction, convection, and radiation. Analyzed the design of heat sinks for computer CPU in design projects.

**Research Interests:**

- DSMC (Direct Simulation Monte Carlo) simulations and theoretical analyses of rarefied gas dynamics applications including the Knudsen Compressor and the Trace Gas Preconcentrator.
- Advanced materials including Aerogel and Carbon Nanotubes.

**Internal Service:**

- *Department seminar organizer*- Coordinated Mechanical Engineering Seminar Series and Distinguished Lectures. Invite twelve renowned seminar speakers in 2011-2012.

06/02-12/09

**University of Southern California**

Los Angeles, CA

Lecturer, Department of Aerospace and Mechanical Engineering

**Courses Taught:**

- *Senior Projects Laboratory*- Mentored individual engineering research projects designed and constructed to model and test physical principles or systems. Lectured on fundamental Mechatronics including computer-aided design (CAD) package software (SolidWorks, Solid Edge), data acquisition (LabView), and basic machining processes (conventional machining, CNC machining, and 3D printing).
- *Introduction to MEMS (Microelectromechanical Systems)*- Introduced principles of MEMS design, fabrications, and testing.
- *Thermal System Designs*- Topics included optimization techniques, engineering design, engineering economics, Lagrange multipliers, linear programming, finite element method (FEM) etc.
- *Strength of Materials*- Topics included stress and strain, torsion, pure bending, analysis and design of beams for bending, deflection of beams.
- *The Kinetic Theory of Gas Flows in Nano/Micro-Scale Environments (graduate level)*- Topics included Gas Kinetic Theory, gas surface interaction, Direct Simulation Monte Carlo (DSMC), Molecular Dynamics (MD) simulations.
- *Heat Transfer*- Lectured on general principles of heat transfer including conduction, convection, and radiation.
- *Thermodynamics*- Lectured on fundamental laws of thermodynamics.

Postdoctoral Research Associate, Department of Aerospace and Mechanical Engineering

- Experimental and computational investigation on molecular transport phenomena in micro/nano-scale channels including single-walled and multi-walled carbon nanotube membranes. Fabrication of multi-walled carbon nanotube membranes.
- Researching micro/nano-scale transport phenomena with an emphasis on the design and testing of the patented Continuous Trace Gas Preconcentrator for gas sensing technology.
- MEMS fabrication procedures for Knudsen Compressors, a micro-scale thermally driven gas pump.
- Investigating temperature driven flows by various wall temperature profiles in micro channels using DSMC simulation technique.
- Applications of radiometric forces on micro thrusters. Published results in highly respected peer reviewed journals.
- Submitted proposals to NASA, NSF and several private sectors.

Teaching Assistant, Department of Electrical Engineering

- *Solid State Processing*- Independently led students in the integrated circuit fabrication laboratory with basic micro-machining processes. Designed laboratory projects for Microelectromechanical System Laboratory class. Cleanroom certified.

Teaching Assistant, Department of Aerospace and Mechanical Engineering

- *Senior Projects Laboratory*- Supervised and guided students on fundamental design and manufacturing processes as well as characterization procedures for various mechanical engineering systems.

- *Compressible Gas Dynamics*- Assisted students with their questions on fundamental compressible gas dynamics problems such as subsonic and supersonic flows, shock waves, and computational fluid dynamics (CFD).

Research Assistant, Department of Aerospace and Mechanical Engineering

- Developed micro/meso-scale low pressure Knudsen Compressor, adopting the rarefied gas dynamic theory of thermal transpiration (creep).
- Worked on many facets of the Knudsen Compressor; including design, experimental investigations, and DSMC Simulations.
- Investigated gas flow and thermal properties of nanoporous materials such as Aerogel, beds of glass microspheres, and porous glass.
- Manufactured Xerogel sample.
- Invented a Continuous Trace Gas Preconcentrator for advanced trace gas sensing technology.

10/96-06/98

**ATT Group**

Taipei, Taiwan

Brand Supervisor

- Managed famed European fashion brand *Mango* in Taiwan.
- Trained hundreds of sales representatives.
- Developed marketing strategy to generate sales from half a million dollars to more than two million dollars per year within two years.
- Researched fashion trends in major European cities.
- Planned and executed numerous fashion shows.

12/93-11/95

**Giordano, East Jean Co. Ltd.**

Taipei, Taiwan

Manager Trainee, Independent Store Manager, Human Resource Trainer

- Managed an individual retail store.
- Developed training courses.
- Trained and managed sales representatives.

**PATENTS (undergraduate student's name underlined):**

Provisional patent: *Mechanized Gladhand*, filed by PACCAR, June 5<sup>th</sup>, 2020, Stan DeLizo, Yen-Lin Han, Brian Celustka, Eenseung Kwak, Charles Lyford, and Mark Taylor.

Patent application: *Modular Wireless Communication Device Testing System*, filed by T-Mobile April 2019, Syed Toaha Ahmad, Eric Christie, Zachary Powers, Marguerite Eaton, Derek Klaas, Grant Taylor, Bradley Chew, Natasha Theodora Petrus, William Ah Tou, and Yen-Lin Han

Patent application: *Systems and Methods for Autonomously Backing a Vehicle to a Trailer*, filed by PACCAR, June 1<sup>st</sup>, 2018, Stan DeLizo, Ted Scherzinger, Yen-Lin Han, Austin Chong, Christian Heussy, Caroline Hofgaard, Oleksiy Khomenko, Pauline Shammami and Kirstin Schauble.

Patent application: *Autonomous Detection of and Backing to Trailer Kingpin*, filed by PACCAR, June 1<sup>st</sup>, 2018, Stan DeLizo, Yen-Lin Han, Austin Chong, Christian Heussy, Caroline Hofgaard, Oleksiy Khomenko, Pauline Shammami, Kirstin Schauble and Ted Scherzinger.

Patent application: *Selection of Range Sensors for Autonomous Vehicle Maneuvering*, filed by PACCAR, June 1<sup>st</sup>, 2018, Stan DeLizo, Yen-Lin Han, Austin Chong, Christian Heussy, Caroline Hofgaard, Oleksiy Khomenko, Pauline Shammami, Kirstin Schauble and Ted Scherzinger.

Patent application: *Systems and Methods for Automatically Updating a Model of Vehicle Turning*, filed by PACCAR, June 1<sup>st</sup>, 2018, Stan DeLizo, Yen-Lin Han, Austin Chong, Christian Heussy, Caroline Hofgaard, Oleksiy Khomenko, Pauline Shammami, Kirstin Schauble and Ted Scherzinger.

Patent application: *Systems and Methods for Determining a Height of an Object Above a Vehicle*, filed by PACCAR, June 1<sup>st</sup>, 2018, Stan DeLizo, Yen-Lin Han, Austin Chong, Christian Heussy, Caroline Hofgaard, Oleksiy Khomenko, Pauline Shammami, Kirstin Schauble and Ted Scherzinger.

Patent application: *Systems and Methods for Autonomously Backing a Vehicle to a Dock*, filed by PACCAR, June 1<sup>st</sup>, 2018, Stan DeLizo, Yen-Lin Han, Austin Chong, Christian Heussy, Caroline Hofgaard, Oleksiy Khomenko, Pauline Shammami, Kirstin Schauble and Ted Scherzinger.

Provisional patent: *Ablation Heating Probe with Expandable Electrodes*, filed on 04/07/2016, Yen-Lin Han.

Patent: *Pre-Concentrator for Trace Gas Analysis*, Pub. No: US2008/0178658 A1, Pub. Date: Jul. 31, 2008, E. P. Muntz, Y.-L. Han, M. Young.

Provisional patent: *A Thermally Driven Micropump with a Built-in Microvalve*, 09/09, Yen-Lin Han.

Provisional patent: *Quantum Separator – Continuous Micro and Meso Scale Pre-Concentration of Trace Molecules in Gases*, 60/729,679, 2005, E. P. Muntz, Y.-L. Han, M. Young.

Provisional patent: *Radiantly Driven Knudsen Compressor*, 60/613,366, 2004, M. Young, Y.-L. Han, E. P. Muntz.

**PEER-REVIEWED JOURNAL PUBLICATIONS (undergraduate student's name underlined):**

Han, Y.-L., Cook, K., Mason, G., & Shuman, T.R. (2018). Enhance Engineering Design Education in the Middle Years with Authentic Engineering Problems. *ASME Journal of Mechanical Design*, 140, 122001-1–122001-9. doi: 10.1115/1.4040880.

Cook, K., Han, Y.-L., Shuman, T.R., & Mason, G. (2017). Effects of Integrating Authentic Engineering Problem Centered Learning on Student Problem. *International Journal of Engineering Education*, 33(1(A)), 272–282.

Shuman, T.R., Mason, G., Han, Y.-L., & Cook, K. (2016). A Novel Approach to Educating Engineers: Learning in an Inverted Classroom through Problems Designed by Engineering Professionals. *Journal of Applied Engineering Science*, 14(3), 329–334.

Lau, L., & Han, Y.-L. (2016). Exploring a Novel Heating Probe Design for Tumor Ablation. *Journal of Medical Devices*, 10(3), 030930. doi:10.1115/1.4033802.

Zhao, S., Jiang, B., Maeder, T., Murali, P., Kim, N., Matam, S. K., Jeong, E., Han, Y.-L., and Koebel, M. M. (2015). Dimensional and Structural Control of Silica Aerogel Membranes for Miniaturized Motionless Gas Pumps. *ACS Applied Materials and Interfaces*, 7(33), 18803–18814.

Muntz, E.P., & Han, Y.-L. (2011). Performance Analysis of the Continuous Trace Gas Preconcentrator. *Physics of Fluids*, 23, 030605.

Han, Y.-L. (2010). Working Gas Temperature and Pressure Changes for Microscale Thermal Creep Driven Flow Caused by Discontinuous Wall Temperatures. *Fluid Dynamics Research*, 42, 045505.

Han, Y.-L., Young, M. (2009). Continuous Preconcentrator for Trace-Gas Analysis. *Recent Patents on Mechanical Engineering*, 2(3), 214-227.

Han, Y.-L. (2008). Thermal-Creep-Driven Flows in Knudsen Compressors and Related Nano/Microscale Gas Transport Channels. *Journal of Microelectromechanical Systems*, 13(4), 984-997.

Han, Y.-L., Muntz, E.P. (2007). An Experimental Investigation Micro/Meso-Scale Knudsen Compressors at Low Pressures. *Journal of Vacuum Science & Technology B: Microelectronics and Nanometer Structures*, 25(3), 703-714.

Han, Y.-L. Alexeenko, A. A., Young, M., Muntz, E. P. (2007). Experimental and Computational Studies of Temperature Gradient Driven Molecular Transport in Gas Flows Through Nano/Micro-Scale Channels. *Nanoscale*

and *Microscale Thermophysical Engineering*, 11(1&2), 151-175.

**INVITED BOOK CHAPTER:**

Han, Y.-L. (in preparation). Unveiling my engineering identity. In Margaret Bailey & Laura Shackelford (Eds.), *Women in Mechanical Engineering: Energy and the Environment*. Springer Publishing.

Han, Y.-L. (2012). Aerogel Materials for Aerospace. In S. Zhang & D. Zhao (Eds.), *Aerospace Materials Handbook* (pp. 699-743). Boca Raton, FL: CRC-Press.

**PEER-REVIEWED CONFERENCE PROCEEDINGS (undergraduate students' names underlined):**

Han, Y.-L., Cook, K., Mason, G., Shuman, T.R., and Turns, J. (2021). Engineering with Engineers: Fostering Engineering Identity, *2021 ASEE Annual Conference and Exposition, Abstract accepted*.

Mejia, K. Han, Y.-L., and Turns, J. (2021). Inclusivity Meter: Tracing How it Worked and What Was Learned, *2021 ASEE Annual Conference and Exposition, Abstract accepted*.

Mason, G., Han, Y.-L., Cook, K., Shuman, T.R., Hammel, J., Strebinger, C., Gilbertson, E., and Turns, J. (2021). Making the “New Reality” More Real: Adjusting a Hands-On Curriculum for Remote Learning, *2021 ASEE Annual Conference and Exposition, Abstract accepted*.

Taylor, M., Westra, K., & Han, Y.-L. (2020). Developing a Thermally Actuated Soft Robot for Finger Rehabilitation. *2020 ASME International Mechanical Engineering Congress and Exposition*, Virtual, Online: ASME.

Han, Y.-L., Mason, G., Cook, K., Shuman, T.R., and Turns, J. (2020). WIP: Integrating Electrical Engineering Fundamentals with Instrumentation and Data Acquisition in an Undergraduate Mechanical Engineering Curriculum. *2020 Frontier in Education (FIE) Conference*, Uppsala, Sweden: IEEE.

Han, Y.-L., Cook, K., Mason, G., Shuman, T.R., and Turns, J. (2020). Engineering with Engineers: Fostering Engineering Identity through Industry Immersion. *2020 ASEE Annual Conference and Exposition*, Montreal, Québec, Canada: ASEE.

Roberts, K., & Han, Y.-L. (2019). Investigating Density Functional Theory’s Effectiveness in Studying Metal-Organic Frameworks Structures. *Proceedings of 2019 ASME International Mechanical Engineering Congress and Exposition*, Salt Lake City, UT: ASME.

Han, Y.-L., Cook, K., Mason, G., Shuman, T.R., and Turns, J. (2019). Engineering with Engineers: Revolutionizing a Mechanical Engineering Department through Industry Immersion and a Focus on Identity. *Proceedings of 2019 ASEE Annual Conference and Exposition*, Tampa, FL: ASEE.

Cook, K., Han, Y.-L., Mason, G., Shuman, T.R., & Turns, J. (2019) Implicit Engineering Identity in the Mechanical Engineering Major. *Proceedings of 2019 ASEE Annual Conference and Exposition*, Tampa, FL: ASEE.

Nakao, J., & Han, Y.-L. (2018). Preliminary Heat Transfer Simulation Model of a Novel Dynamic Thermal Ablation Probe. *Proceedings of 2018 ASME International Mechanical Engineering Congress and Exposition*, Pittsburgh, PA: ASME. doi:10.1115/IMECE2018-86874.

Han, Y.-L., Cook, K., Mason, G., Shuman, T.R., and Turns, J. (2018). Engineering with Engineers: Revolutionizing Engineering Education through Industry Immersion and a Focus on Identity. *Proceedings of 2018 ASEE Annual conference and Exposition*, Salt Lake City, UT: ASEE.

Cook, K., Han, Y.-L., Mason, G., Shuman, T.R., & Turns, J. (2018) Engineering Identity across the Mechanical Engineering Major. *Proceedings of 2018 ASEE Annual Conference and Exposition*, Salt Lake City, UT: ASEE.

Den Adel, C., Husler, Z.-M., & Han, Y.-L. (2017). Design of a Novel Radio Frequency Ablation Probe for Tumor



Ablation Treatment. *Proceedings of the 2017 Design of Medical Devices Conference DMD2017*, Minneapolis, Minnesota, USA: ASME. doi:10.1115/DMD2017-3508.

Han, Y.-L., Cook, K. E., Shuman, T. R., & Mason, G. S. (2016). Development of Authentic Engineering Problems for Problem-Centered Learning. *Proceedings of 2016 ASEE Annual Conference and Exposition*, New Orleans, Louisiana (10.18260/p.26821): ASEE.

Han, Y.-L. (2015). Computational Studies on the Effects of Non-linear Temperature Functions in Thermal Creep Membranes of Radiantly Driven Knudsen Compressors. *Proceedings of 2015 ASME International Mechanical Engineering Congress and Exposition*, Houston, Texas: ASME.

Bever, A. M., Brown, P. J., Lane, K. V., Levy-Wendt, B. L., Yasuda, N., Han, Y.-L., & Shih, F. J. (2015). Characterization of a Fast Responding Composite Thermal Bimorph Actuator Based on Carbon Nanotube Sheets. *Proceedings of 2015 ASME International Mechanical Engineering Congress and Exposition*, Houston, Texas: ASME.

Shuman, T.R., Mason, G., Han, Y.-L., & Cook, K. (2015). Facilitating Problem-Based Learning with an Inverted Classroom. *Proceedings of the 6th International Symposium on Industrial Engineering – SIE 2015*, Belgrade, Serbia: SIE.

Mason, G. S., Shuman, T. R., Han, Y.-L., and Cook, K. E. (2015). Facilitating Problem-Based Learning with an Inverted Classroom. *Proceedings of 2015 ASEE Annual Conference and Exposition*, Seattle, Washington (10.18260/p.24089): ASEE.

Han, Y.-L. (2014). Computational Study on a Novel Micropump Driven by a Built-In Thermal Bimorph Microvalve. *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, Montreal, Canada (IMECE2014-38708): ASME.

Bever, A. M., Levy-Wendt, B. L., del Rosario, V., Pentz, J. A., Han, Y.-L. and Shih, F. J. (2014). In-Plane Thermal Conductivities of CFRP Composites Interleaved with Dissimilar Conductive Media. *Proceedings of IMECE2014-38923, ASME International Mechanical Engineering Congress and Exposition*, Montreal, Canada: ASME.

Han, Y.-L. (2013). Performance Model for Optically Driven Micropumps with Carbon Opacified Aerogel Membranes. *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, San Diego, CA (IMECE2013-62197): ASME.

Han, Y.-L. (2009). Simulation Studies of Micro-Scale Gas Pumps Driven by Isolated Heating Elements Induced Thermal Creep Flows. *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, Lake Buena Vista, Florida (IMECE 2009-10856).

Han, Y.-L. (2008). Investigation of Temperature Driven Gas Flows in 4 nm Channels for Applications of Micro-Scale Compressors at above Atmospheric Pressure. *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, Boston (IMECE 2008-68170): ASME.

Han, Y.-L., Young, M., Muntz, E.P. (2004). Performance of Micro/Meso-Scale Thermal Transpiration Pumps at Low Pressures. *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, Anaheim, CA (IMECE 2004-61807): ASME.

Muntz, E.P., Young, M., Han, Y.-L. (2004). Continuous Low Power Pre-Concentrations for Distributed Microscale Trace Gas Analysis. *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, Anaheim, CA (IMECE 2004-60874): ASME.

Young, M., Han, Y.-L., Muntz, E.P., Shiflett, G. (2003). Characterization of a Radiantly Driven Multistage Knudsen Compressor. *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, Washington D.C. (IMECE 2003-41486): ASME.

#### **NON-PEER-REVIEWED CONFERENCE PROCEEDINGS:**

Alcantara, A., Dong, C., Cheung, J., & Han, Y.-L. (2017). Investigation of the Optimal Design of a Linear Aerospike

Nozzle for Microsatellite Thrust Vector Control. *Proceedings of 2017 AIAA AVIATION Forum*, Denver, Colorado: AIAA. <https://doi.org/10.2514/6.2017-3964>.

Han, Y.-L. (2008). Implications of Imposing Working Gas Temperature Change Limits on Thermal Creep Driven Flows. *Proceedings of 26<sup>th</sup> International Symposium on Rarefied Gas Dynamics*, Kyoto, Japan.

Muntz, E.P., Alexeenko, A.A. Gimelshein, S.F., Ketsdever, A.D., Han, Y.-L., Young, M.P., Park, J.H., Ngalande, C., Selden, N.P, Lee, R.H. (2007). Low Speed Nano/Micro/Meso-Scale Rarefied Flows Driven by Temperature and Pressure Gradients. In M. S. Ivanov & A.K. Rebrov (Eds.), *Rarefied Gas Dynamics* (pp. 1085-1092). Novosibirsk, Russia: Novosibirsk Publishing House of the Siberian Branch of the Russian Academy of Sciences.

Han, Y.-L. Alexeenko, A. A., Young, M., Muntz, E. P. (2006). Experimental and Computational Studies of Temperature Gradient Driven Molecular Transport in Gas Flows Through Nano/Micro-Scale Channels. *Proceedings of the 2<sup>nd</sup> International Conference on Transport Phenomena in Micro and Nanodevices*, Barga, Italy.

Han, Y.-L., Young, M., Muntz, E.P., Shiflett, S. (2005). Knudsen Compressor Performance at Low Pressures. In M. Capitelli (Ed.), *AIP Conference Proceedings 762- 24<sup>th</sup> International Symposium on Rarefied Gas Dynamics* (pp. 162-167). Melville, New York: American Institute of Physics.

Young, M., Han, Y.-L., Muntz, E.P., Shiflett, S. (2005). Characterization and Optimization of a Radiantly Driven Multi-Stage Knudsen Compressor. In M. Capitelli (Ed.), *AIP Conference Proceedings 762- 24<sup>th</sup> International Symposium on Rarefied Gas Dynamics* (pp. 174-179). Melville, New York: American Institute of Physics.

Young, M., Han, Y.-L., Muntz, E.P., Shiflett, S., Ketsdever, A, Green, A. (2003) Thermal Transpiration in Microsphere Membranes. In A. D. Ketsdever & E. P. Muntz (Eds.), *AIP Conference Proceedings 663- 23<sup>rd</sup> International Symposium on Rarefied Gas Dynamics* (pp. 743-751). Melville, New York: American Institute of Physics.

#### **PRESENTATIONS ONLY (delivered by faculty and without proceedings):**

Han, Y.-L., Cook, K., Mason, G., Shuman, T.R., and Turns, J. (2019). Engineering with Engineers: Revolutionizing a Mechanical Engineering Department through Industry Immersion and a Focus on Identity. *2019 NSF EEC Grantees Conference*, Crystal City, Virginia.

Han, Y.-L., Berger, E., Briody, E., Cook, K., Mason, G., Morrison, E., Shuman, T.R., Turns, J., and Wirtz, E. (2018). Revolutionizing Mechanical Engineering Departments. *ASME International Mechanical Engineering Congress and Exposition*, Pittsburg, Pennsylvania.

Han, Y.-L., Cook, K., Mason, G., Shuman, T.R., Turns, J. (2018). How Seattle University Plans to Revolutionize Engineering Through Industry Immersion. *Investment Casting Institute 65<sup>th</sup> Technical Conference and Exposition*, Kansas City, Missouri.

Cook, K., Han, Y.-L., Mason, G., Shuman, T.R., and Turns, J. (2018). Revolutionizing Engineering Education through Industry Immersion and a Focus on Identity. *AERA Annual Conference*, NY, New York.

Han, Y.-L. (2017). Performance Study of Linear Aerospike Nozzles with Various Contour Functions. *ASME International Mechanical Engineering Congress and Exposition*, Tampa, Florida.

Han, Y.-L. (2012). Single-chamber solid-oxide fuel cells driven by thermal transpiration Knudsen Compressors. *The Energy & Materials Research Conference (EMR2012)*, Torremolinos-Malaga, Spain.

Han, Y.-L. (2011). Flow and Structural Studies on An Innovated Micropump with A Built-in Thermal Bimorph Microvalve. *Direct Simulation Monte Carlo (DSMC) Conference 11*, Santa Fe, New Mexico, USA.

#### **RESEARCH PROPOSALS IN THE PAST FIVE YEARS:**

*Funded (Intramural)*

11/2020

Seattle University Thomas J Bannan Chair- Wearable Assistive Soft Robots for Finger and Hand Rehabilitation- \$10,000. Awarded.

*Declined (Intramural)*  
3/2020 Seattle University PACCAR Endowed Professorship- Wearable Assistive Soft Robots for Finger, Hand, or Elbow Rehabilitation- \$52,713. Declined.

*Funded (Extramural)-*  
01/19 National Renewable Lab (NREL) Collegiate Wind Competition (PI)- \$9,999. Awarded.  
01/17 NSF IUSE/PFE- RED #1730354 Revolutionizing Engineering Education through Industry Immersion and a Focus on Identity (Co-PI)- \$1,861,527. Awarded 07/01/2017 – 06/30/2022.

*Funded (Intramural)-*  
10/17 Seattle University Summer Faculty Fellowship- Design, Prototyping, and Testing of a Novel Thermal Ablation Probe for Cancer Treatment- \$7,100. Awarded.

*Declined (Extramural)-*  
00/17 NSF DMREF- Collaborative Research: Investigating novel dual-phase CO<sub>2</sub> resistant membranes for carbon sequestration through a combined experimental and computational approach (PI)- \$206,708. Declined.

*Declined (Intramural)-*  
10/16 Seattle University Summer Faculty Fellowship- *Nanoscale Gas Transport Phenomena in a Continuous Trace Gas Pre-Concentrator*- \$7,100. Declined.

**AWARDS IN THE PAST FIVE YEARS:**

2020 Accepted to the Society of Women Engineers (SWE) Academic Leadership for Women Engineers (ALWE) program 2020-21

2019 2019 CSE Dean’s Award to the ME department

2018 2018 LEVERAGE Summer Institute LEVERAGE travel grant- NSF EEC #1649384.

2017 Society of Women Engineers (SWE) Academic Leadership for Women Engineers (ALWE) program ASSIST travel grant- NSF EEC #1548200.

2017 2017 Summer Faculty Fellowship Program, Seattle University.

**MEMBERSHIPS:**

Member of ASME and ASEE

**REFEREED PAPERS IN PAST FIVE YEARS:**

ASEE Annual Conference 2021: 6 abstracts from NSF grantee & Mechanical Engineering divisions (Oct 2020).  
FIE Conference 2020: 2 draft papers & 1 revised paper (Spring 2020).  
ASEE Annual Conference 2020: 3 Abstracts and 1 draft paper from NSF grantee & Mechanical Engineering divisions (Feb. 2020)  
Conference Proceedings, Design of Medical Devices: 3 draft papers (Jan 2020)  
International Journal of Kinesiology in Higher Education: UKHE-2019-0034 (Oct. 2019)  
ASEE Annual Conference 2018 & 2019: 3 Abstracts and 1<sup>st</sup> draft & revised paper from NSF grantee & Mechanical Engineering divisions (2018 & 2019)  
Vacuum: VAC\_2018\_401 (September 2018)  
IEEE Access: Access-2018-13020 (August 2018)  
Micromachines: 275329 (1<sup>st</sup> draft, January & revision, March 2018)  
ASEE Annual Conference 2018: 6 Abstracts and 1<sup>st</sup> draft & revised paper from NSF grantee & Mechanical Engineering divisions (2017 & 2018)  
Aerospace: 255468 (Dec. 2017)  
Physics of Fluids: POF17-AR-01766 (Dec. 2017)  
Physics of Fluids: 17-1334 (Sep. 2017)  
Physics of Fluids: 17-1261 (Sep. 2017)  
IEEE Transactions on Education: TE-2017-000052.R1(Jul. 2017)  
IEEE Transactions on Education: TE-2017-000052 (Apr. 2017)  
Conference Proceedings, Design of Medical Devices: 2017-3525, 2017-3513, 2017-3511(Dec. 2016)  
Physics of Fluids: 16-1090 (Sep. 2016)

