Yu Feng, Ph.D.

CONTACT INFORMATION

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MAJOR AREAS OF RESEARCH INTEREST

Advanced Modeling of Computational Fluid Particle Dynamics, Lung Aerosol Dynamics, Occupational Exposure Health Risks Assessment, Direct Drug-Targeting Delivery, AI-Empowered Smart Inhaler Design

EDUCATION

North Carolina State University, Raleigh, NC, USA — August 2013
Ph. D. in Mechanical Engineering, Minor in Mathematics

- **Ph.D. Dissertation:** "Computational Ellipsoidal Particle-Fluid Analysis and Discrete Element Method with Applications to Particle Transport and Deposition in Human Respiratory Models."
- **Relevant Coursework**: Modern Fluid Dynamics, Principle of Structure Vibration, Computational Fluid Mechanics, Heat Transfer Theory and Applications, Discrete Element Method
- **Advisor:** Dr. Clement Kleinstreuer

North Carolina State University, Raleigh, NC, USA — May 2010
M.S. in Mechanical Engineering, Minor in Mathematics

- **Master Thesis:** "A New Thermal Conductivity Model for Nanofluids with Convection Heat Transfer Application"
- **Relevant Coursework:** Particle Differential Equations, Finite Element Partial Differential Equations, Finite Element Analysis, Advanced Solid Mechanics, Microfluidics, Continuum Mechanics, C++, and Data Structures
- **Advisor:** Dr. Clement Kleinstreuer
- McDonald-Kleinstreuer Fellowship

Zhejiang University, Hangzhou, China — First-class graduate
B.S. in Engineering Mechanics — June 2007

- **Bachelor Thesis:** "Brownian Coagulation Efficiency of Spherical Dioctyl Phthalate Aerosol Particles during Collisions"
- **Advisor:** Dr. Jianzhong Lin

Hong Kong Polytechnic University, Hong Kong, China — August 2005-January 2006
Exchange Student in Mechanical Engineering

POSITIONS AND EMPLOYMENT

Full Professor — July 2026-Present
School of Chemical Engineering
Oklahoma State University, Stillwater, OK, USA

Affiliated Faculty July 2025 - Present
School of Mechanical and Aerospace Engineering
Oklahoma State University, Stillwater, OK, USA

Affiliated Faculty August 2026 - Present
Oklahoma Aerospace Institute for Research and Education (OAIRE)
Oklahoma State University, Stillwater, OK, USA

Associate Professor July 2022 – June 2026
School of Chemical Engineering
Oklahoma State University, Stillwater, OK, USA

Center Investigator June 2016-Present
Oklahoma Center for Respiratory and Infectious Disease (OCRID)
Stillwater, OK, USA

Visiting Scholar June 2025 – July 2025
Fielding School of Public Health
UCLA, Los Angeles, CA, USA

Assistant Professor June 2016-June 2022
School of Chemical Engineering
Oklahoma State University, Stillwater, OK, USA

Research Scientist II - Structural/Fluid Mechanics December 2015- June 2016
DoD Biotechnology HPC Software Applications Institute
Frederick, MD, USA

Research Assistant Professor and Lab Manager May 2015-December 2015
Department of Mechanical and Aerospace Engineering
North Carolina State University, Raleigh, NC, USA

Research Associate and Lab Manager August 2013-May 2015
Department of Mechanical and Aerospace Engineering
North Carolina State University, Raleigh, NC, USA

FUNDED RESEARCH PROJECTS

Ongoing Funded Projects

Title: Multiscale CFPD-PBPK Modeling of Human Exposure and Health Risk to Airborne Micro- and Nanoplastics in AAM/UAS Environments
Granting Agency: Oklahoma Aerospace Institute for Research and Education (OAIRE)
Grant Period: 08/2026-07/2027
Role: Principal Investigator
Total Cost: $10,000

Title: Computational Fluid Dynamics (CFD)-Informed AI-Empowered Digital Twin for Energy-Efficient and Sustainable Data Center Infrastructure Design
Granting Agency: Hamm Institute for American Energy
Grant Period: 07/2026-06/2027

Role: Principal Investigator
Total Cost: $25,000

Title: EPSCoR Research Fellows: NSF: Understanding Lung Exposures and Toxicity of E-cig and Cannabis Aerosols with Unregulated Synthetic Cooling Agents Using a Novel In Vitro Lung System
Granting Agency: National Science Foundation (NSF)
Grand Period: 09/2024-10/2026
Role: Principal Investigator
Total Cost: $282,862

Title: ML-CFD-DEM Based Reduced Order Models (ROM) to Quantify Variability in Inhalers, Drugs, and Users for Evaluating Comparability of Generic OIDP Complex Products
Granting Agency: Food and Drug Administration (FDA)
Grand Period: 09/2024-10/2026
Role: Principal Investigator
Total Cost: $599,999

Title: SCH: AI-Enhanced Risk Assessment for Mitigating Indoor Viral Transmission in Public Schools
Granting Agency: National Science Foundation (NSF)
Grant Period: 08/2024-07/2027
Role: Principal Investigator
Total Cost: $642,608

Title: Improving Distillation Column Efficiency by Optimization of Vapor Distribution using an AI and CFD enabled Digital Twin System
Granting Agency: Oklahoma Center for the Advancement of Sciences & Technology (OCAST)
Grant Period: 02/01/2024-01/31/2027
Role: Principal Investigator
Total Cost: $159,243

Title: PFI-RP: Improving Inhaler Design and Efficacy with a Novel AI-assisted Digital Human Testing Platform
Granting Agency: National Science Foundation (NSF)
Grant Period: 08/01/2023-07/31/2026
Role: Principal Investigator
Total Cost: $549,999

Title: I-Corps: All-in-One Virtual Human Testing Platform for Inhalation
Granting Agency: National Science Foundation (NSF)
Grant Period: 05/01/2023-04/30/2025
Role: Principal Investigator
Total Cost: $50,000

Completed Funded Projects

Title: Add-on Jacket for Improving Dose Administration with Spray Inhalers
Granting Agency: NSF Hub: Southwest I-Corps
Grant Period: 06/2026-08/2026
Role: Principal Investigator and Technical Lead
Total Cost: $3000

Title: Revolutionizing Lung Health by Unraveling Disease-Specific Airway Cilia Motion
Granting Agency: Oklahoma State University President's Fellows Faculty Research Award
Grant Period: 03/2025-06/2026
Role: Principal Investigator
Total Cost: $20,000

Title: Determining the Effect of Airway Deformation on Pulmonary Air-Particle Dynamics
Granting Agency: National Science Foundation (NSF)
Grant Period: 07/01/2021-06/31/2024
Role: Principal Investigator
Total Cost: $249,959

Title: Flow control strategies for protection of aircraft passengers and workers against SARS-CoV-2
Granting Agency: Centers for Disease Control and Prevention (CDC)
Grant Period: 04/01/2021-03/31/2023
Role: Co-Investigator
Total Cost: $393,687.00

Title: Artificial Intelligence Empowered User-Centered Smart Inhaler for Targeted Drug Delivery to Small Airways for Effective Lung Disease Treatment
Granting Agency: Canopy Healthtech
Grant Period: 08/01/2023-07/31/2024
Role: Principal Investigator
Total Cost: $69,778

Title: SUPP: REU: Determining the Effect of Airway Deformation on Pulmonary Air-Particle Dynamics
Granting Agency: National Science Foundation (NSF)
Grant Period: 05/01/2023-04/30/2024
Role: Principal Investigator
Total Cost: $15,400

Title: Physics-Aware AI-Enhanced Inhalation Therapy Design for Precise Pulmonary Drug Delivery: Targeting Tumors in Juvenile Onset Recurrent Respiratory Papillomatosis
Granting Agency: Oklahoma State University CEAT Engineering Research and Seed Funding Program
Grant Period: 08/01/2023-07/31/2024
Role: Co-Principal Investigator
Total Cost: $25,000

Title: Predicting Health Endpoints of Inhaled Nicotine/THC-Containing Aerosols in Human and Rat Respiratory Tracts to Optimize the Therapeutic Effects using CFPD-PBTK Models
Granting Industry Company: Spectrum Dynamics Research Inc., Pheonix, AZ, USA
Grant Period: 04/01/2021-03/31/2023
Role: Principal Investigator
Total Amount: $159,994.00

Title: Understanding the effects of sphero-cylinder drug particle shape to enhance small-airway drug delivery for better emphysema treatment outcomes
Granting Agency: Oklahoma Center for the Advancement of Science & Technology (OCAST)
Grant Period: 09/01/2019 to 08/31/2022
Role: Principal Investigator
Direct Cost: $135,000

Title: Modeling Transmission Aerobiology of SARS-CoV-2 Aerosols in Human and Mouse Lungs
Granting Agency: National Institutes of Health (NIH) (P20GM103648)
Grant Period: 09/01/2022-06/31/2023
Role: Principal Investigator
Total Cost: $50,000

Title: DPI In-Silico Modeling - Predict Dry Powder Performance and Subsequent Depositions in a Whole-Lung Model
Granting Industry Company: Cipla R&D Center, Mumbai, India
Grant Period: 09/01/2019 to 03/31/2021
Role: Principal Investigator
Direct Cost: $109,094

Title: Evaluation of COVAS Effectiveness on the Clearance of the COVID-19 Aerosols in a Patient Room
Granting Industry Company: QuantBet Inc., England
Grant Period: 05/01/2020 to 08/21/2020
Role: Principal Investigator
Total Amount: $13,758

Title: Mitigating infection risks to airborne SARS-CoV-2 laden aerosols in a patient room via portable air sanitizers and smart ventilation control
Granting Agency: CDC/NIOSH/ SWCOEH (T42OH008421)
Grant Period: 11/01/2020 to 06/30/2021
Role: Mentor (The Principal Investigator is Jianan Zhao, a previous Ph.D. student in Dr. Feng's lab)
Total Award Amount: $10,000

Title: CFD Simulations of Heat and Mass Transfer Performance of a Regeneration Process
Granting Industry Company: Exterran Corporation Product and Technology Center, Tulsa, OK, USA
Grant Period: 11/07/2018 to 02/15/2019
Role: Principal Investigator
Total Award Amount: $55,685

Title: A Precise Scale-up Method from Mice to Men on the Infection of Influenza A Virus
Granting Agency: National Institutes of Health (NIH) (P20GM103648)
Grant Period: 11/01/2018 to 06/30/2019
Role: Principal Investigator
Total Award Amount: $50,000

Title: A Virtual Human System for Health Risk Assessments in a Representative Whole-lung Configuration Associated with Welding Fume Exposure
Granting Agency: CDC/NIOSH/ SWCOEH (T42OH008421)
Grant Period: 01/30/2018 to 06/30/2018
Role: Principal Investigator
Total Award Amount: $10,800

Title: Multi-scale Dosimetry Modeling of Influenza Virus-Laden Droplets through the Pulmonary Route
Granting Agency: National Institutes of Health (NIH) (P20GM103648)
Grant Period: 07/01/2016 to 06/30/2018
Role: Principal Investigator
Total Award Amount: $100,000

ESTABLISHED ACADEMIC PARTNERSHIPS

CBBL-Ansys Academic Partnership (2016 to Present)

Our research group formed an academic partnership with Ansys Inc. (Canonsburg, PA) in 2016 to extend lung aerosol dynamics modeling to the cell level. As a result of the new partnership, Ansys Inc. provides our group **free computational licenses ($89,000 per year)** of the entire Ansys suite of mechanical, computational fluid dynamics, and Multiphysics software:

- 5 Ansys academic research, mechanical and CFD (5 tasks)
- 128 Ansys Academic Research HPC (per core)
- 3 Ansys Academic SpaceClaim Tools (5 tasks)
- 2 Ansys Academic Meshing Tools (5 Tasks)
- Ensight (5 Tasks)

CBBL-ESSS Academic Partnership (2017 to Present)

Our research group formed a new academic partnership with ESSS Inc. (Woburn, MA), to model and understand the underlying physics of interactions among irregularly shaped elastic particles using the Discrete Element Method (DEM). associated with multiple applications towards pulmonary health care and occupational exposure risk assessments. As a result of the new partnership, ESSS provides Dr. Yu Feng's group with Rocky DEM Academic licenses with GPU acceleration capabilities (worth **$160,000 per year**).

CBBL-Synopsys Academic Partnership (2023 to Present)

Our research group has established a new academic partnership with Synopsys Inc., based in Mountain View, CA, to advance our understanding and modeling of computational biofluid dynamics and biomechanics in human respiratory systems. This collaboration leverages Synopsys' cutting-edge tools and expertise to explore the reconstruction of the human respiratory system from medical images. As part of this partnership, Synopsys provides Feng's lab with access to their advanced software licenses, including Simpleware ScanIP with CAD and FE modules, providing an extensive selection of image visualization, measurement and processing tools for working with 3D and 4D image data, as well as the capability to generates volume and surface meshes from segmented image data, and can be used to define contact surfaces, boundary conditions and material properties. The waived software license is **$1500 per year**. This partnership enhances our capabilities in developing non-invasive, cost-effective, and accurate numerical tools for pulmonary healthcare and occupational safety assessments.

TEACHING EXPERIENCE

CHE3543 – Introduction to Chemical Process Analytics — Fall 2026

CHE5743 - Chemical Engineering Process Modeling — Fall 2016, 2017, Spring 2026, Spring 2027

CHE4773/5773 - Computational Fluid-Particle Dynamics: Basic Theory and Select Chemical and Biomedical Applications	Spring 2017, Spring 2021, Spring 2027, Fall 2023, Fall 2025
CHE4002 - Unit Operation Lab I	Spring 2018, 2019, 2020, 2022, 2023, 2025
CHE4112 - Unit Operation Lab II	Fall 2018-2025
CHE6010 - Chemical Engineering Seminar	Fall 2019, Spring 2020

POSTDOCTORAL RESEARCHERS MENTORED

Dr. Hang Yi, Oklahoma State University, 08/2025 to Present
Dr. Peace Umoru, Oklahoma State University, 06/2025 to 04/2026

GRADUATE STUDENTS MENTORED

Macey Fletcher (M.S. Student), Oklahoma State University, 08/2026 to Present
Abhijeet Patil (Ph.D. Student), Oklahoma State University, 08/2024 to Present
Alek Nino (M.S. Student), Oklahoma State University, 08/2024 to 12/2026
Rashed Islam (M.S. Student), Oklahoma State University, 08/2021 to 12/2025
Ted Sperry (Ph.D. Student), Oklahoma State University, 08/2019 to Present
Hamideh Hayati (Ph.D. Student), Oklahoma State University, 08/2018 to 08/2023
Jianan Zhao (Ph.D. Student), Oklahoma State University, 08/2017 to 08/2021
Hang Yi (Ph.D. Student), Oklahoma State University, 08/2016 to 12/2020
Max Kozak (M.S. Student), Oklahoma State University, 08/2017 to 08/2019
Ahmadreza Haghnegahdar (M.S. Student), Oklahoma State University, 01/2017 to 12/2019

UNDERGRADUATE STUDENTS MENTORED

Camila Abdusattorova, 08/2026-Present (CEAT Undergraduate Research Scholarship)
Ceyda Kara, 08/2024-Present (Goldwater Scholarship, Two Wentz Scholarships, CEAT Freshman Undergraduate Scholarship)
Connor Westcott, 08/2023-08/2026 (CEAT Freshman Undergraduate Scholarship and Undergraduate Research Scholarship)
Ethan O'Connor (co-advised), 08/2024-08/2025 (Wentz Scholarship)
Alek Nino, Oklahoma State University, 06/2023-Present (NSF REU Scholarship and CEAT Undergraduate Research Scholarship)
Blake A. Bartlett, Oklahoma State University, 05/2021 to 06/2022 (Wentz Scholarship)
Sydney Turner, Oklahoma State University, 06/2020 to 06/2022 (CEAT Undergraduate Research Scholarship)
Avery Sessom, Oklahoma State University, 08/2019 to 08/2020 (CEAT Undergraduate Research Scholarship)

Ted Sperry, Oklahoma State University, 08/2018 to 06/2019

HIGH SCHOOL STUDENT MENTORED

Sherry Wang, Oklahoma School of Science and Mathematics, 06/2025 to Present

Ben Wang, TVT Community Day School, 09/2024 to 06/2025

Benjamin Li, North Carolina School of Science and Mathematics, 04/2021 to 04/2023

PUBLICATIONS

Symbols: co-first author (†)*, advised graduate student* (*)*, advised undergraduate student* (**)*, corresponding author* (+)

Journal Papers Published (2016-Present)

[62] Zhu, Y., Joseph, M., Fan, H., Ellis, M., **Feng, Y.**, Garcia-Contreras, L., Cai, C. (2026). Raman-Compatible Collection Substrates for Next Generation Impactor Analysis of Inhalation Aerosols: Evaluation of Silver Membranes. *Journal of Aerosol Medicine and Pulmonary Drug Delivery* (under review)

[61] Vannarath, S., Yi, H.*, **Feng, Y.**, Cai, C. (2026). Reducing submicrometer particle exposure in an aircraft cabin using overhead gaspers. *Journal of Occupational and Environmental Hygiene* (under review)

[60] Patil, A.*, **Feng, Y.**+ (2026). Development of a CFPD-Based Virtual Next Generation Impactor (vNGI) to Predict the Aerodynamic Particle Size Distribution (APSD) of Respiratory Drug Delivery Products. *International Journal of Pharmaceutics* (under review)

[59] Vannarath, S., Yi, H., Feng, Y., Cai, C. (2026). Reducing Exposure to Submicron Particles in an Aircraft Cabin using Overhead Gaspers. *Journal of Occupational and Environmental Hygiene* (under review).

[58] Zhang, Z., **Feng, Y.**, Liu, C. (2026). Teaming Finite Element Analysis and Deep Learning to Advance Inverse Design of Metamaterial with Adaptive Pressure Response in Footwear Design. *ASME Journal of Computing and Information Science in Engineering*, 26(6), 061006

[57] Zhang, Z.*, Yi, H.*, Kolanjiyil, A., Liu, C., **Feng, Y.**+ (2026). Computational Fluid Particle Dynamics-Informed Machine Learning Prototype for a User-Centered Smart Inhaler Enabling Uniform Drug Delivery to Small Airways. *Journal of Aerosol Science*, *125*, 106812

[56] Mi, H., Zhang, H., Zhou, R., Li, N., Huang A., **Feng, Y.**+, Shao, P., Wang, S., Niu, Y., Wang, W., Tang, G., Yi, H.* (2026). Rapid prediction of leakage dispersion at natural gas distribution stations: A practical prototype study using computational fluid dynamics and machine learning. *MDPI Fluids, 11,* 137

[55] Yi, H. *, **Feng, Y.**+ (2026). Impact of gas carrier on inhaled medicinal aerosolized particles transport and deposition in a human respiratory system: A CFPD Study. *Physics of Fluids*, *38*, 021908.

[54] Yangue, E., Tian, W., **Feng, Y.**, Liu, C. (2025). Noise-Conditioned Adversarial Diffusion Denoising Implicit Model (NCA-DDIM) for Data Augmentation in Engineering Applications. *IEEE Transactions on Automation Science and Engineering Information*. DOI: 10.1109/TASE.2025.3641161

[53] Nino, A.*, **Feng, Y.**+ (2025). Evaluation of Turbulence Models for Accurate Prediction of Airflow Structure in a Subject-Specific Upper Airway Geometry. A*SME Journal of Biomechanical Engineering*, *147*(10), 101007.

[52] Sperry, T.[*], **Feng, Y.**[+] (2025). Prediction of the Atomization Process in Respimat Soft Mist Inhalers Using a Volume of Fluids-to-Discrete Phase Model. MDPI Bioengineering, *12*, 264.

[51] Hayati, H.[*], Kurtz, C., Khattak, S., **Feng, Y.** (2025). Computational Fluid-Particle Dynamics Modeling of Tangential Flow Filtration in Perfusion Cell Culture. *Bioprocess and Biosystems Engineering*, 48, pp. 331-342

[50] **Feng, Y.** [+], Yi, H., Liu, R. (2024). Analytical Solution for Transient Electroosmotic and Pressure-Driven Flows in Microtubes. *MDPI Fluids*, *9*(6), 140 (Editor's Choice)

[49] Kuprat, A.P., **Feng, Y.**, Corley, R.A., Darquenne, C. (2024). Subject-Specific Multi-Scale Modeling of the Fate of Inhaled Aerosols (Invited Review). *Journal of Aerosol Science*, *183*,106471.

[49] Feng, Y. S., **Feng, Y.**, Fan, Y., Ge, J. (2024). Effects of table based air curtains on respiratory aerosol exposure risk mitigation at face-to-face meeting setups. *Journal of Hazardous Material, 477*, 135373.

[47] Mi, H., Luo, N., Shao, P., Yi, H., Wang, S., Wang, W., Niu, Y., Yang, A., Jiang X., **Feng, Y.**, Zhu, L., Shu, C. (2024). Interactive mechanisms of CF3CHFCF3 with H2-CH4-air mixture explosion: A synergistic study using chemical kinetic simulation and density functional theory. *Fuel, 381,* 133603

[46] Chen, H., Harui, A., **Feng, Y.**, Schmidt, J., Roth, M.D., Zhu, Y. (2024). An Innovative Ventilated Three-Dimensional Artificial Lung System for Realistic Inhalation Exposure Assessments. *Environmental Science & Technology*. 58, 22919-22929

[45] Yangue, E., Ranjan, A., **Feng, Y.**, Liu, C. (2024). Toward smart ultrasound image augmentation to advance tumor treatment monitoring: exploring the potential of diffusion generative model. *ASME Journal of Medical Devices*, 18, 031006

[44] Sperry, T.[*], **Feng, Y.**[†, +], Song, C., Shi, Z. (2024). CFPD-PK Simulation of Inhaled Delta-9-tetrahydrocannabinol Aerosol Dynamics: Transport, Deposition, and Translocation in a Subject-Specific Mouth-to-G10 Airway. *Journal of Aerosol Science*, *177*, 106334

[43] Islam, M.R.[*], Liu, C., Shah, J., Cai, C., **Feng, Y.**[+] (2024). A User-Centered Smart Inhaler Algorithm for Targeted Drug Delivery in Juvenile Onset Recurrent Respiratory Papillomatosis Treatment Integrating Computational Fluid Particle Dynamics and Machine Learning. *Physics of Fluids, 36,* 021912 (Editor's Pick and AIP Scilight Article https://doi.org/10.1063/10.0025061)

[42] Jin, Y., Chen, X., **Feng, Y.**, Jia, Z., Zhang, J., Xie, X. (2023). A Novel Experimental Approach to Measure Nebulized Droplet Deposition Pattern and Deposition Fraction in an Idealized Mouth-to-Throat Model, *Physics of Fluids*, *35,* 083322

[41] Bartlett, B.[*], **Feng, Y.**, Fromen, C.A., Ford Versypt, A. N. (2023). Computational Fluid Dynamics Modeling of Aerosol Particle Transport through Lung Airway Mucosa. *Computers and Chemical Engineering*, *179,* 108458

[40] Kolewe, E.L., Padhye, S., Woodward, I.R., **Feng, Y.**, Briddel, J.W., Fromen, C.A. (2023). A Pediatric Upper Airway Library to Evaluate Interpatient Variability of In Silico Aerosol Deposition. *AAPS PharmSciTech. 24(6)*, 162

[39] Haghnegahdar, A.[*], Bharadwaj, R., **Feng, Y.**[+] (2023). Exploring the Role of Nasal Hair in Inhaled Airflow and Coarse Dust Particle Dynamics in a Nasal Cavity: A CFD-DEM Study. *Powder Technology. 427,* 118710

[38] Bourlon, M., **Feng, Y.**, Garcia-Contreras, L. (2023). Designing Aerosol Therapies based on the Integrated Evaluation of In Vitro, In Vivo, and In Silico Data, *MDPI Pharmaceutics. 15,* 1695

[37] Sperry, T.*, **Feng, Y.**+, Zhao, J., Song, C., Shi, Z. (2023). Prediction of the transport, deposition, and absorption of multicomponent E-cigarette aerosols in a subject-specific mouth-to-G10 human respiratory system. *Journal of Aerosol Science*. *170,* 106157 (Cover Image)

[36] Hayati, H.*, **Feng, Y.**+, Chen, X., Kolewe, E., Fromen, C. (2023). Prediction of Transport, Deposition, and Resultant Immune Response of Nasal Spray Vaccine Droplets using a CFPD-HCD Model in a 6-Year-Old Upper Airway Geometry to Potentially Prevent COVID-19. *Experimental and Computational Multiphase Flow 5(3),* 272–289

[35] Islam, M.R.*, **Feng, Y.**+ (2023). Achieving Targeted Delivery of Chemotherapeutic Particles to Small Airway Tumors via Pulmonary Route using Endotracheal Catheters: A CFPD Study. *MDPI Pharmaceuticals*, *16*(2), 158.

[34] **Feng, Y.** +, Cai, J. (2023). Optimization of the Vapor Flow Distribution in a Distillation Column Using Computational Fluid Dynamics. *SMP Chemical Engineering Science, 1(1),* 1-7

[33] Wang, S., Xiao, G., **Feng, Y.**, Mi, H. (2023). Investigation of premixed hydrogen/methane flame propagation and kinetic characteristics for continuous obstacles with gradient barrier ratio. *Energy, 267,* 126620

[32] Wang, S., Xiao, G., Mi, H., **Feng, Y.**, Chen, J. (2023). Experimental and numerical study on flame fusion behavior of premixed hydrogen/methane explosion with two-channel obstacles. *Fuel, 333,* 126530

[31] Tao, F., **Feng, Y.**, Sun, B., Wang, J., Chen, X., Gong, R. (2022). Septoplasty Effect on the Enhancement of Airflow Distribution and Particle Deposition in Nasal Cavity: A Numerical Study. *MDPI Healthcare, 10,* 1702

[30] Kolewe, E., Padhye, E., Woodward, I., Wee, J., Rahman, T., **Feng, Y.**, Briddell, J., Fromen, C. (2022). Spatial aerosol deposition correlated to anatomic feature development in 6-year-old upper airway computational models, *Computers in Biology and Medicine, 149,* 106058

[29] Sun, Y., Yu, D., Li, J., Zhao, J., **Feng, Y.**, Zhang, X., Mao, S. (2022). Elucidation of lactose fine size and drug shape on rheological properties and aerodynamic behavior of dry powders for inhalation. *European Journal of Pharmaceutics and Biopharmaceutics*, *179*, 47-57

[28] Wang, J., Zhang, Y., Chen, X., **Feng, Y.**, Ren, X., Yang, M., Ding, T. (2022). Targeted Delivery of Inhalable Drug Particles in a Patient-Specific Tracheobronchial Tree with Moderate COVID-19: A Numerical Study. *Powder Technology, 405,* 117520

[27] Yi, H. *, **Feng, Y.** +, Fahlenkamp, H. (2022). Analysis of Topical Dosing and Administration Effects on Ocular Drug Delivery in a Human Eyeball Model using Computational Fluid Dynamics. *Computers in Biology and Medicine,* 141, 105016

[26] Zhao, J.*, Haghnegahdar, A., **Feng, Y.**+, Patil, A., Kulkarni, N., Singh, G. J. P., Malhotra, G., Bharadwaj, R. (2022). Prediction of the Carrier Shape Effect on Particle Transport, Interaction and Deposition in Two Dry Powder Inhalers and a Mouth-to-G13 Human Respiratory System: A CFD-DEM Study. *Journal of Aerosol Science,* 160, 105899

[25] Li, B. *, **Feng, Y.**+ (2022). In Silico Study to Enhance Delivery Efficiency of Charged Nanoscale Nasal Spray Aerosols to the Olfactory Region Using External Magnetic Fields. *MDPI Bioengineering, 9(1)*, 40.

[24] Hu, P., Cai, C., Yi, H. *, Zhao, J. *, **Feng, Y.**+, Wang, Q. (2022). Aid Airway Obstruction Diagnosis with Computational Fluid Dynamics and Convolutional Neural Network: A New Perspective and Numerical Case Study. *ASME Journal of Fluids Engineering, 144,* 081206

[23] Zhao, J. *, **Feng, Y.** +, Koshiyama, K., Wu, H. (2021). Prediction of Airway Deformation Effect on Pulmonary Air-Particle Dynamics: A Numerical Study. *Physics of Fluids, 33,* 101906

[22] Yi, H. *, Wang, Q., **Feng, Y.** + (2021). Computational analysis of chronic obstructive pulmonary disease (COPD) and expiration intensity effects on the cough-driven mucus movement and clearance in an idealized upper airway model using Volume of Fluid (VOF) method. *Physics of Fluids, 33,* 021903

[21] **Feng, Y.**+, Zhao, J. *, Spinolo, M., Lane, K., Laung, D., Marshall, D., Mlinaric, P. (2021). Assessing the Filtration Effectiveness of an Air Sanitizer on Airborne SARS-CoV-2 Laden Droplets in a Patient Room: A CFPD Study. *Aerosol and Air Quality Research, 21(5)*, 20608

[20] **Feng, Y.**+, Zhao, J. *, Hayati, H. *, Sperry, T. *, Yi, H. * (2021). Tutorial: Understanding the transport, deposition, and translocation of particles in human respiratory systems using Computational Fluid-Particle Dynamics and Physiologically Based Toxicokinetic models. *Journal of Aerosol Science, 151, 105672*

[19] Ford Versypt, A. N., Carpenter, S. L., Adkins, T. L., Sperry*, T. A., **Feng, Y.** (2021). Kidney and Lung Demonstrations to Introduce Engineering Concepts to Middle School Students and Their Grandparents *ASEE*. https://peer.asee.org/37415

[18] Zhao, J. *, **Feng, Y.** +, Tian, G., Taylor, C., Arden, S. N. (2021). Influences of Puff Protocols and Upper Airway Anatomy on Cannabis Pharmacokinetics: A CFPD-PK Study. *Computers in Biology and Medicine*, 132, 104333

[17] Hayati, H. *, **Feng, Y.** +, Hinsdale, M. (2021). Inter-species Variabilities of Droplet Transport, Size Change, and Deposition in Human and Rat Respiratory Systems: An *In Silico* Study, *Journal of Aerosol Science, 154,* 105761

[16] Kolewe, E., **Feng, Y.**, Fromen, C. (2020). Realizing Lobe-Specific Aerosol Targeting in a 3D Printed In Vitro Lung Model. *Journal of Aerosol Medicine and Pulmonary Drug Delivery, 34*(1), 42-56

[15] Chen, X., Zhou, X., Xia, X., Xie, X., Lu, P., **Feng, Y.** (2020). Modeling of the transport, hygroscopic growth, and deposition of multi-component droplets in a simplified airway with realistic thermal boundary conditions. *Journal of Aerosol Science, 151,* 105626

[14] **Feng, Y.**+, Marchal, T., Sperry, T. *, Yi, H. * (2020). Influence of Wind and Relative Humidity on the Social Distancing Effectiveness to Prevent COVID-19 Airborne Transmission: A Numerical Study. *Journal of Aerosol Science, 147,* 105585

[13] Yi, H. *, **Feng, Y.**+, Park, H., Wang, Q. (2020). Configuration predictions of large liquefied petroleum gas (LPG) pool fires using CFD method. *Journal of Loss Prevention in the Process Industries, 116*, 104099

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[3] Hu, P., Cai, C., **Feng, Y.**, & Wang, Q. (2022). Machine Learning and Deep Learning Applications in Medical Image Analysis. *Machine Learning in Chemical Safety and Health: Fundamentals with Applications*, 183-197.

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Patents

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Unrefereed/Internet Publications (At Oklahoma State University)

[7] **Feng, Y.**$^{+}$ (2024). Exploring Inhaled Air-particle-vapor Mixtures in the Human Respiratory System with Ansys Fluent® Simulations. https://www.ansys.com/academic/educators/education-resources/exploring-inhaled-air-particle-vapor-mixtures-in-the-human-respiratory-system-with-ansys-fluent-simulations

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Invited Lectures

[40] CFPD-Informed AI/ML for Pulmonary Digital Twins: From Noninvasive Diagnosis to Patient-Specific Targeted Delivery, SIAM TXLA 2026, Dallas, TX, USA.

[39] **Feng, Y.** (2026). Advancing Next-Generation Human Digital Twin Systems: CFPD-AI for Indoor Exposure Risk Assessment and Inhalation Therapy Innovation (Invited Keynote). The 12th International Aerosol Conference (IAC 2026), Xi'an, Shanxi, China.

[38] **Feng, Y.** (2026). Integrating CFPD and PBPK/TK/PD Modeling: Predicting Health Endpoints for Inhaled Therapeutics and Toxic Particulate Matter. HUST Frontiers Forum on Respiratory Flow (Virtual)

[37] **Feng, Y.** (2025). Paving the way to the Next-Generation Human Digital Twin System for Exposure Risk Assessment, UCLA, Los Angeles, CA, USA

[36] **Feng, Y.** (2025). Artificial Intelligence (AI) Empowered User-Centered Smart Inhaler for Targeted Drug Delivery to Designated Airway Sites. 25th Congress of the International Society for Aerosols in Medicine (ISAM), College Park, MD, USA.

[35] **Feng, Y.** (2024). Revolutionizing Pulmonary Disease Management: Integrating CFD and AI/ML for Enhanced Diagnostics and Smart Inhaler-Driven Targeted Therapy. Department of Mathematics, Oklahoma State University, Stillwater, OK, USA.

[34] **Feng, Y.** (2024). Artificial Intelligence (AI) Empowered User-Centered Smart Inhaler for Achieving Personalized Targeted Drug Delivery. RESCON Summit 2024, New York City, NY, USA.

[33] **Feng, Y.** (2024). Integrating CFD and PBPK/TK/PD Modeling: Predicting Health Endpoints for Inhaled Therapeutics and Toxic Particulate Matter. Mini-Symposium: Numerical Modeling of Cardiovascular System and Pulmonary Airflow (Virtual), Dalian, Liaoning, China.

[32] **Feng, Y.** (2024). Paving the way to the Next-Generation Human Digital Twin System for Exposure Risk Assessment. Northeast University, Shenyang, Liaoning, China.

[31] **Feng, Y.** (2024). Transforming pulmonary disease diagnosis and treatment: optimizing drug delivery and treatment through CFD-AI/ML-Driven Lung Obstruction Detection and Smart Inhaler Precision Therapy. International Conference of Inhalation Drug Delivery Association, Shenyang, Liaoning, China.

[30] **Feng, Y.** (2024). Revolutionizing Pulmonary Disease Management: Integrating CFD and AI/ML for Enhanced Diagnostics and Smart Inhaler-Driven Targeted Therapy. In Silico Pharmaceutical and Consumer Healthcare Conference, Hinxton Hall, Cambridge, UK.

[29] **Feng, Y.** (2024). Transforming Pulmonary Disease Diagnosis and Treatment: Optimizing Drug Delivery and Treatment through CFD-AI/ML-Driven Lung Obstruction Detection and Smart Inhalation Precision Therapy. Ansys Healthcare Industry Webinar Series (Virtual)

[28] **Feng, Y.** (2024). Bridging Interspecies and Intersubject Variability in Pulmonary Drug Delivery: The Role of Computational Fluid-Particle Dynamics, Eli Lilly and Company, Cambridge, MA, USA

[27] **Feng, Y.** (2023). Build the Next-Generation Physiologically Realistic Human Respiratory Digital Twin System for Pulmonary Healthcare. Formulation and Delivery US 2023, San Diego, USA.

[26] **Feng Y.** (2023). Integrating CFD and PBPK/TK/PD Modeling: Predicting Health Endpoints for Inhaled Therapeutics and Toxic Particulate Matter. Avicenna Alliance Webinar (Virtual).

[25] **Feng, Y.** (2023). Build the Next-Generation Physiologically Realistic Human Respiratory Digital Twin System for Pulmonary Healthcare. Fall 2023 Seminar Series, Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK, USA.

[24] **Feng, Y.** (2023). Build the Next-Generation Physiologically Realistic Human Respiratory Digital Twin System for Pulmonary Healthcare. 24th Congress of the International Society for Aerosols in Medicine (ISAM), Saarbruecken, Germany.

[23] **Feng, Y.** (2023). Predicting Health Endpoints for Respirable Aerosols using Multiscale CFPD-PBPK/TK/PD Virtual Human Model. NIH Interagency Modeling and Analysis Group (IMAG/MSM) Multiscale Modeling and Viral Pandemics Virtual Seminar Series. https://www.imagwiki.nibib.nih.gov/working-groups/multiscale-modeling-and-viral-pandemics

[22] **Feng, Y.** (2022). A CFD-DEM Modeling Framework to Predict Particle Dynamics in Dry Powder Inhalers (Keynote). 5th International Conference on Recent Advances in Nonlinear Mechanics (RANM2021+1), Hangzhou, China.

[21] **Feng, Y.**, Zhao, J., Haghnegahdar, A., Bharadwaj, R. (2022). An In Silico Modeling Framework to Predict Particle Dynamics in Dry Powder Inhalers. Respiratory Drug Delivery 2022, Orlando, FL, USA.

[20] **Feng, Y.** (2022). Computational Fluid Dynamics based Digital Twin System for Pulmonary Healthcare. Health and Life Sciences Technology Showcase, Tulsa, OK, USA.

[19] **Feng, Y.** (2021). Developing the Next-Generation Elastic Whole-Lung Model using Computational Fluid Particle Dynamics. INTERACT Research Symposium 2021, Stillwater, OK, USA

[18] **Feng, Y.** (2021). A Disease-specific "All-in-One" Modeling Framework to Predict IVIVCs of orally inhaled drug products (OIDPs). Triple Helix Expertise Exchange Workshop On Modeling Drug-Device Interaction (Virtual Presentation)

[17] **Feng, Y.** (2021). Developing the Next-Generation Virtual Lung Model using Computational Fluid Particle Dynamics. Baylor University (Virtual Presentation)

[16] **Feng, Y.** (2021). Invited Tutorial: Dynamic Modeling of Aerosol Transport, Deposition, and Translocation in Human Respiratory Systems. AAAR 2021 (Virtual Presentation)

[15] **Feng, Y.** (2020). Paving the way to the Next-Generation Virtual Lung Model for Exposure Risk Assessment. Department of Occupational and Environmental Health, Hudson College of Public Health, University of Oklahoma, Oklahoma City, OK.

[14] **Feng, Y.** (2020). Towards Human Respiratory Digital Twin using CFPD and PBPK Models. ANSYS Healthcare Industry Webcast Series. https://www.ansys.com/resource-library/webinar/towards-human-respiratory-digital-twin-using-cfpd-and-pbpk-models

[13] **Feng, Y.** (2020). Paving the way to the Next-Generation Virtual Lung Model for Exposure Risk Assessment, Oral Robert University, Tulsa, OK

[12] **Feng, Y.** (2020). Paving the way to the Next-Generation Virtual Lung Model for Personalized Pulmonary Healthcare. School of Industrial Engineering and Management at Oklahoma State University, Stillwater, OK.

[11] **Feng, Y.** (2019). Paving the Way to the Next-Generation Virtual Lung Model for Personalized Pulmonary Healthcare. 7th Beihang University Vision Forum for International Young Scholars, Beijing, China (Presented in Chinese)

[10] **Feng, Y.** (2019). The Next-Generation Virtual Human Model for Personalized Pulmonary Healthcare. Northeast University, Shenyang, Liaoning, China (Presented in Chinese)

[9] **Feng, Y.** (2019). Paving the way to the Next-Generation Virtual Lung Model for Personalized Pulmonary Healthcare. Kansas State University, Manhattan, KS, USA.

[8] **Feng, Y.** (2018), The next-generation virtual lung model with applications towards smoking related topics. Philip Morris International, Neuchatel, Switzerland

[7] **Feng, Y.** (2018). Paving the way to the Next-Generation Virtual Lung Model for Personalized Pulmonary Healthcare. Design of Medical Devices Conference China 2018, Beijing, China.

[6] **Feng, Y.** (2018). The CBBL Virtual Human System with Multiple Applications on Pulmonary Healthcare. Southeast University, Nanjing, Jiangsu, China (Presented in Chinese).

[5] **Feng, Y.** (2018). The CBBL Pulmonary Digital Twin and CFD-PBPK/TK Model. Zhejiang University, Hangzhou, Zhejiang, China (Presented in Chinese)

[4] **Feng, Y.** (2018). Applications of multiphase flow models on pulmonary healthcare research. Zhejiang Sci-Tech University, Hangzhou, Zhejiang, China (Presented in Chinese)

[3] **Feng, Y.** (2018). The CBBL Virtual Human System with Multiple Applications on Pulmonary Healthcare. DUT Star Ocean International Forum for Young Scholars, Dalian, Liaoning, China (Presented in Chinese)

[2] **Feng, Y.** (2016). Advanced Computational Fluid-Particle Dynamics (CF-PD) Models for Unconventional Inhaled Aerosols in Human Upper Airways (Plenary Lecture). Computational and Imagine methods for Lung Drug Delivery Workshop, COST Action MP1404, Prague, Czech Republic.

[1] **Feng, Y.** (2016). Advanced Computational Fluid-Particle Dynamics (CF-PD) Models for Inhalable Aerosols in Human Respiratory Systems. Shenyang Pharmaceutical University, China.

Contributed Oral Presentations

[71] McCall, D., Swope, J., Yangue, E., O'Connor E., **Feng, Y.,** Liu, C. (2026). Toward Pulmonary Function Test to Chest Computed Tomography Image Reconstruction by Diffusion Model-based Cross-Modal Generation, IEEE International Conference on Bioinformatics and Biomedicine (BIBM) 2026, Dallas, TX, USA

[70] Kara, C., **Feng, Y.** (2026). Optimizing Medicinal Particle Morphology to Enhance Small Airway Delivery in Early-Stage COPD via Inhalation Therapy, SIAM TXLA 2026, Dallas, TX, USA.

[69] Ballester, E.S., Thibault, J., **Feng, Y.**, Liu, C. (2026). Data-Efficient Reduced-Order Model Adaptation for Fluid-Particle Dynamics Model with Uncertainty Awareness in Advancing Personalized Inhaler Design. IEEE International Conference on Bioinformatics and Biomedicine (BIBM) 2026, Dallas, TX, USA

[68] Swope, J., **Feng, Y.**, Liu, C. (2026). Adaptive Hyperparameter-Space Reduction for Hyperbolic Surrogate Modeling Optimization to Advance Personalized Inhaler Design. IEEE International Conference on Bioinformatics and Biomedicine (BIBM) 2026, Dallas, TX, USA

[67] Yi, H., **Feng, Y.** (2026). Enabling Uniform Small-Airway Target Drug Delivery via a Computational Fluid-Particle Dynamics-Informed Machine Learning Smart Inhaler Prototype, BMES 2026, Orlando, FL, USA

[66] Yi, H., **Feng, Y.** (2026). Influence of Carrier Gas Composition and Dynamic Airway Motion on Aerosol Transport and Deposition in Human Respiratory Tract. AAAR 2026, Pasadena, CA, USA

[65] Yi, H., **Feng, Y.** (2026). A CFD-Based Reduced Order Modeling Framework for Rapid and Reliable Digital Twin Development to Evaluate Indoor Air Quality and Thermal Comfort in a Classroom. AAAR 2026, Pasadena, CA, USA

[64] Soto Ballester, E., **Feng, Y.**, Liu, C. (2026). Data-Efficient Adaptive Reduced Order Modeling for Particle Fluid Dynamics Model in Accelerating Personalized Inhaler Design. International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC-CIE2026), Houston, TX, USA

[63] Swope, J., Liu. C., **Feng, Y.** (2026) Scientific Machine Learning-Based Surrogate Modeling of Aerosol Deposition for Advancing Personalized Inhaler Design, IMECE2026, Vancouver, BC, Canada

[62] Zhang, Z., Liu, C., **Feng, Y.** (2026). Computational Fluid Particle Dynamics-Informed Machine Learning for Personalized Inhaler Design and Manufacturing. 2026 International Manufacturing Science and Engineering Conference (MSEC2026), State College, PA, USA

[61] Zhang, Z., Yi, H., Ahmadreza Haghnegahdar, Liu, C., **Feng, Y.** (2026). Uncertainty Quantification and Surrogate Modeling of Emitted Dose in Spiriva®HandiHaler® Based Dry Powder Inhalers: A CFD-DEM and Machine Learning Study. 2026 AIChE Annual Meeting, Minneapolis, MN, USA

[60] Nino, A., **Feng, Y.**, Yi, H. (2026). Improving Distillation Column Efficiency By Vapor Distribution Optimization Using a Computational Fluid Dynamics (CFD)-Based Digital Twin System. 2026 AIChE Annual Meeting, Minneapolis, MN, USA

[59] **Feng, Y.**, Yi, H., Westcott, C. (2026). Modernizing Unit Operations Laboratories Using Computational Fluid Dynamics-Based Digital Twins. 2026 AIChE Annual Meeting, Minneapolis, MN, USA

[58] Kara, C., **Feng, Y.** (2026). Particle Engineering for Deeper Lung Delivery in Early-Stage COPD. 2026 OSU Undergraduate Research Symposium, Stillwater, OK, USA

[57] Yi., H., Zhang, Z., Liu, C., **Feng, Y.** (2026). CFPD-Informed Machine Learning Prototype for a User-Centered Smart Inhaler Enabling Optimal Drug Delivery to Small Airways. 2026 Fluids Engineering Division Summer Meeting, Bellevue, WA, USA

[56] Yi., H., **Feng, Y.**, Yang, Z., Chen, P., Bramlage, L., Ludwig, B. (2026). Fluid-Structure Interaction Modeling of Hemodynamic Risk in Cerebral Aneurysms within Patient-Specific Whole-Brain Arterial Networks. 2026 Fluids Engineering Division Summer Meeting, Bellevue, WA, USA

[55] Yi, H., Patil, A., **Feng, Y.**, Oskolkova, A., Liu, C. (2026). Assessment of Children Exposure to Airborne Virus-Laden Aerosols in a Virtual Classroom Using Computational Fluid Particle Dynamics. 2026 Fluids Engineering Division Summer Meeting, Bellevue, WA, USA

[54] Ballester, E. S., **Feng, Y.**, Liu, C. (2026). Toward Rapid Assessment for Personalized Inhaler Design via Machine Learning-based Reduced Order Modeling (ROM). 2026 Design of Medical Devices Conference, Minneapolis, MN, USA

[53] Zhang, Z., **Feng, Y.**, Liu, C. (2025). Loop-wise Structural Footwear Design and Optimization Using FEA-informed Machine Learning and Additive Manufacturing for Adaptive Pressure Distribution with Improved Comfort. North American Manufacturing Research Conference (NAMRC) 54, University Park, PA, USA

[52] Zhang, Z., **Feng, Y.**, Liu, C. (2025). A Machine Learning-based Reduced Order Model for Predicting Aerosol Dynamics in Dry Powder Inhalers. 2025 INFORMS Annual Meeting, Atlanta, GA.

[51] Yi, H., **Feng, Y.*** (2025). Impact of Gas Carrier on Inhaled Medicinal Aerosolized Particles Transport and Deposition in Human Respiratory System: A CFPD Study. SIAM Central States Section Annual Meeting 2025, Fayetteville, AR, USA.

[50] Zhang, Z., **Feng, Y.***, Liu, C. (2025). Machine Learning and Finite Element Analysis Teaming for Inverse Design of Metamaterial with Adaptive Pressure Response in Footwear Design. International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE2025), Anaheim, CA, USA

[49] Patil, A., Garcia-Contreras, L., **Feng, Y.*** (2025). Development of a CFPD-Based Virtual Next Generation Impactor (vNGI) to Predict the Aerodynamic Particle Size Distribution (APSD) of Respiratory Drug Delivery Products. International Society for Aerosols in Medicine (ISAM) Congress 2025, Washington DC, USA

[48] Kara, C., Yi, H., Haghnegahdar, A., **Feng, Y.** (2025). Comparative Computational Fluid Dynamics Analysis of Pulmonary Airway Flow and Surgical Outcomes for A Patient with Tracheal Stenosis. 2025 Design of Medical Devices Conference, Minneapolis, MN, USA

[47] Sperry, T., **Feng, Y.,** Liu, C. (2025). Development of a VOF-to-DPM Model to Predict the Atomization Process in a Soft Mist Inhaler (SMI). 2025 Design of Medical Devices Conference, Minneapolis, MN, USA

[46] Zhang, Z., **Feng, Y.**, Liu, C. (2024). Generative Model-Empowered Metamaterial Shoe Sole Customization Based on Plantar Pressure and Finite Element Analysis. 2024 INFORMS Annual Meeting, Seattle, WA

[45] **Feng, Y.** (2024). Enhancing Inhaler Development: Leveraging Machine Learning and Deep Learning with Multiscale CFPD-PBPK Models for Accelerated Innovation. Fiscal Year 2024 Generic Drug Science and Research Initiatives Public Workshop, Silver Spring, MD, USA

[44] O'Connor, E., Yangue, E., **Feng, Y.**, Wu, H., and Liu, C. (2024). Towards Personalized Inhalation Therapy by Correlating Chest CT Imaging and Pulmonary Function Test Features Using Machine Learning. 2024 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), Orlando, FL, USA

[43] Rane, A., Zomorodiyan, M., **Feng, Y.**, Jiang, Z., Deep, A. (2024) Sensor-Driven Early Gas Leakage Detection and Localization in Storage Facilities. AIChE Annual Meeting 2024, San Diego, CA, USA

[42] Nino, A., **Feng, Y.** (2024). Identify Optimal Turbulence Models to Predict Transitional Pulmonary Airflow Regimes. 8th International Conference on Computational and Mathematical Biomedical Engineering (CMBE24), Arlington, VA, USA

[41] Islam, M.R., Liu, R., **Feng, Y.** (2024). Optimization of Inhaled Aerosol Delivery to Achieve Uniform Particle Distribution in Small Airways Across Lobes: A CFPD Study. 8th International Conference on Computational and Mathematical Biomedical Engineering (CMBE24), Arlington, VA, USA

[40] Chen, H., Harui, A., **Feng, Y.**, Roth, M.D., Zhu, Y. (2023). Evaluating Particle Collection Efficiency in Exhaled Breath Condensate Using an Artificial Lung System, AAAR 2023, Portland, OR, USA.

[39] Sperry, T., **Feng, Y.**, Song, C., Shi, Z., Li, Q. (2023). CFPD-PK Modeling of Inhaled Medical Cannabis: The Role of Puffing Waveform and Holding Time in Delivered Doses, AAAR 2023, Portland, OR, USA.

[38] Hayati, H., **Feng, Y.** (2022). Computational Prediction of Transport, Deposition, and Resultant Immune Response of Nasal Spray Vaccine Droplets to Potentially Prevent COVID-19. 5th Annual Meeting of the SIAM Texas-Louisiana Section, Houston, TX., USA

[37] Sperry, T., **Feng, Y.** (2022). Predict Transport and Deposition of Multicomponent E-cigarette Aerosols in a Subject-specific Airway Model with Different Nicotine Forms. 5th Annual Meeting of the SIAM Texas-Louisiana Section, Houston, TX., USA

[36] **Feng, Y.** (2022). Building the Next-Generation Physiologically Realistic Human Respiratory Digital Twin System for Pulmonary Healthcare. 5th Annual Meeting of the SIAM Texas-Louisiana Section, Houston, TX., USA

[35] Vannarath, S., Kim, P., Ford, M., Santhanakrishnan, A., **Feng, Y.**, Cai, C. (2022). Aerosol Dispersion of Submicrometer Particles in an Aircraft Cabin. AIHce EXP 2022, Nashville, TN, USA.

[34] Kolewe, E., Padhye, S., Woodward, I., Briddel, J., **Feng, Y.**, Fromen, C. (2022). CFPD Illuminates Developmental Anatomical Feature Influence on Aerosol Deposition Patterns in 6-year-old Upper Airway CT-Scan Models. AIChE Annual Meeting 2022, Pheonix, AZ, USA.

[33] Sperry, T., Zhao, J., **Feng, Y.,** Song, C., Shi, Z. (2022). Predict Transport and Deposition of Multicomponent E-cigarette Aerosols in a Subject-specific Airway Model with Different Nicotine Forms: An in silico Study. AAAR 2022, Raleigh, NC, USA.

[32] Chen, H., Harui, A., **Feng, Y.**, Roth, M., Zhu, Y. (2022). An Artificial Lung Model for Characterizing Deposition of E-cigarette Aerosols in Human Tracheobronchial Airways. AAAR 2022, Raleigh, NC, USA.

[31]Haghnegahdar A., Bharadwaj, R., **Feng, Y**. (2022). A CFD-DEM model for predicting the influence of nasal hair on the air-particle dynamics in nasal cavity. World Congress on Particle Technology (WCPT) 2022, Madrid, Spain

[30] Li, B.[*], **Feng, Y[+].** (2022). In Silico Study to Enhance Delivery Efficiency of Nanoscale Nasal Spray Aerosols to the Olfactory Region Using External Magnetic Fields, Society for Computational Fluid Dynamics of the Nose & Airway (SCONA) 2022 (Virtual Meeting)

[29] Ford Versypt, A. N., Carpenter, S. L., Adkins II, T. L., Sperry, T. A. [*], **Feng, Y.** (2021). Kidney and Lung Activities for Biomedical Engineering Major at Grandparent University. BMES 2021, Orlando, FL, USA

[28] Ford Versypt, A. N., Carpenter, S. L., Adkins II, T. L., Sperry, T. A.[*], **Feng, Y.** (2021). Kidney and Lung Demonstrations to Introduce Engineering Concepts to Middle School Students and Their Grandparents. ASEE 2021 Annual Conference (Virtual Meeting)

[27] Zhao, J.[*], **Feng, Y.**[+], Haghnegahdar, A., Bharadwaj, R. (2021). Predict the Effect of Disease-Specific Airway Deformation Kinematics on Dry Powder Transport and Deposition in Whole Lung. AIChE Annual Meeting 2021, Boston, MA, USA

[26] Cai, C., **Feng, Y.** [†,+] (2021). Aid Pulmonary Disease Diagnosis and Treatment with CFD Modeling and Deep Learning: a New Perspective and Pilot Study. AAAR 2021 (Virtual Meeting)

[25] Bartlett, B.[*], **Feng, Y.,** Fromen, C. A., Ford Versypt, A. N. (2021), Computer Modeling of Aerosol Particle Transport through Lung Mucosa. AIChE Annual Meeting 2021.

[24] Zhao, J.[*], **Feng, Y.**[+] (2021). Prediction of disease-specific airway deformation kinematics using a new elastic truncated whole-lung model. ANSYS Simulation World 2021 (Virtual Meeting)

[23] Grady A., Rosencrans, T., Wu, H., **Feng, Y.** (2021). Computed Tomography Use in The Early Detection of Chronic Obstructive Pulmonary Disease. ATS 2021 International Conference, San Diego, CA.

[22] Zhao, J.*, **Feng, Y.**[+], Haghnegahdar, A.*, Saurabh, S., Rahul, B. (2020). Numerical Investigation of Particle Shape and Actuation Flow Rate Effects on Lactose Carrier Delivery Efficiency through a Dry Powder Inhaler (DPI) Using CFD-DEM. AIChE 2020 Annual Meeting, San Francisco, CA, USA

[21] Kolewe, E. L., **Feng, Y.**, Fromen, C. A. (2020). Lobe-Specific Aerosol Targeting in a 3D Printed Lung Model. AIChE 2020 Annual Meeting, San Francisco, CA, USA

[20] **Feng, Y.** (2020). Paving the way to the Next-Generation Virtual Lung Model for Personalized Pulmonary Healthcare. ANSYS Simulation World (Online Event)

[19] Hayati, H.*, **Feng, Y.**[+] (2020). A Precise Scale-up Method to Predict Particle Delivered Dose in A Human Respiratory System Using Rat Deposition Data: An In Silico Study. 2020 Design of Medical Devices Conference, Minneapolis, MN, USA

[18] Sessom, A. *, **Feng, Y.** [+] (2020). A Noninvasive Method for Early Diagnosis of Lower Airways Obstructions. AIChE Mid-America Regional Student Conference, Lincoln, Nebraska, USA

[17] Gaddam, M., **Feng, Y.**, Santhanakrishnan, A., Effect of Varying Inhalation Durations in Normal Breathing and HFOV Conditions. 72nd Annual Meeting of the APS Division of Fluid Dynamics, Seattle, WA, USA

[16] Zhao, J.*, **Feng, Y.**[+], Fromen, C., Hayati, H. (2019), The Impact of Glottis Abduction and Adduction on Particle Transport and Deposition in a Human Upper Airway Model. Third Aerosol Dosimetry Conference, Irvine, CA, USA

[15] Zhao, J.*, **Feng, Y.**[+], Bezerra, M., Wang, J., Sperry, T. (2019). Lung Dosimetry Assessments of Welding Fume and Gas Exposure using a Virtual Human Model with a Subject-Specific Respiratory System. AAAR 2019, Portland, OR, USA

[14] Sperry, T.*, **Feng, Y.**[+] (2019). Glottis Opening Effects on Inhaled Particle Deposition in Human Airways. AAAR 2019, Portland, OR, USA

[13] Kolewe, E. L., Fromen, C. A., **Feng, Y.** (2019). Realizing Lobe-Specific Targeting of Aerosols in a 3D Printed Lung Model. BMES 2019 Annual Meeting, Philadelphia, PA, USA

[12] **Feng, Y.**[+]**,** Zhao, J*. (2019). Prediction of Lung Deformation and Induced Transient Airflow Patterns using Fluid-Structure Interaction (FSI) Modeling Techniques. American Thoracic Society (ATS) 2019 International Conference. Dallas, TX, USA.

[11] **Feng, Y.** (2018). Paving the way to the Next-Generation Virtual Lung Model for Personalized Pulmonary Healthcare. Design of Medical Devices Conference China 2018, Beijing, China.

[10] **Feng, Y.** (2018). Create your Digital Twin for Noninvasive Personalized Pulmonary Healthcare Planning, Coalition for Advancing Digital Research & Education, Stillwater, OK, USA

[9] Haghnegahdar, A.*, **Feng, Y.**$^{+}$ (2018). Predicting the Within-Host Dynamics of Influenza A Virus Infection in Upper Airway Epithelial Cells using a Multiscale CFPD-HCD model. The Oklahoma Center for Respiratory and Infectious Diseases 5th Annual Retreat, Stillwater, OK, USA

[8] Chen, X., Kleinstreuer, C., **Feng, Y.**, Lu, T., Sun, B., Zhong, W. (2018). Numerical Study of Flow Rate Effect on Hygroscopic Aerosol Transport and Deposition in a Basic Mouth-throat Airway with Realistic Wall Conditions. 10th International Aerosol Conference (IAC), St. Louis, IL, USA

[7] **Feng, Y.**$^{+}$**,** Chen, X., Yang, M. (2018). An In Silico Validation of a Lobe-Specific Targeted Pulmonary Drug Delivery Method. Design of Medical Devices Conference, University of Minnesota, Minneapolis, MN, USA

[6] **Feng. Y.**$^{+}$**,** Haghnegahdar, A.*, Chen, X. (2017). A Computational Multiphase Flow Model to Predict the Transport and Deposition of Inhaled Flu Virus-Laden Droplets in Human Respiratory Tracts for Early Infection Diagnosis. AIChE 2017 Annual Meeting, Minneapolis, MN, USA

[5] **Feng, Y.** (2017). A New Patient-Specific Pulmonary Drug Targeted Delivery Method to Treat Lung Cancer using E-Cigarette Technology. AIChE 2017 Annual Meeting, Minneapolis, MN, USA

[4] **Feng, Y.**$^{+}$**,** Wang, J., Haghnegahdar, A.*, (2017). Numerical Investigation of Occupational-related Metal Aerosol Transmission and Deposition Patterns in a Virtual Human Respiratory System. AAAR 2017, Raleigh, NC, USA

[3] **Feng, Y.** (2017). Implementation of Project-Based Learning Method on Teaching Numerical Modeling of Multiphase Flow with Biomedical Applications. 2017 ASEE Chemical Engineering Summer School, Raleigh, NC, USA

[2] **Feng, Y.** (2017). Computational Modeling Work in Targeted Pulmonary Drug Delivery. FY 2017 Generic Drug Research Public Workshop, Silver Spring, MD, USA

[1] Haghnegahdar, A.*, **Feng, Y.**$^{+}$ (2017). The translocation of nicotine from human lung to systemic regions due to E-cigarette aerosol inhalation: a numerical study, 5th International Conference on Computational and Mathematical Biomedical Engineering (CMBE), Pittsburgh, PA, USA.

Contributed Poster Presentations

[30] Lopes, L. F., Yi, H., **Feng, Y.** (2026). CFPD-Informed Machine Learning for Localized Infection Risk Prediction in a Classroom Environment, SIAM TXLA 2026, Dallas, TX, USA.

[29] Swope, J., **Feng, Y.**, Liu, C. (2026). Hyperbolic Machine Learning for Aerosol Deposition Prediction: A Transferable Surrogate Modeling Framework. IMECE 2026, Vancouver, BC, Canada.

[28] Oskolkova, A., **Feng, Y.**, Liu, C. (2026). Surrogate-Assisted Inverse Design of Personalized JORRP Inhalation Therapy via CFPD-informed Machine Learning. Coalition for Advancing Digital Research & Education (CADRE) Conference 2026, Stillwater, OK, USA

[27] Yi, H., Zhang, Z., Liu, C., **Feng, Y.** (2026). Enabling Uniform Small-Airway Drug Delivery via a CFPD-Informed Machine Learning Smart Inhaler Prototype. Oklahoma Center for Respiratory and Infectious Diseases 13th Annual Research Symposium, Stillwater, OK, USA

[26] Oskolkova, A., **Feng, Y.**, Liu, C. (2026). Advancing Personalized JORRP Treatment Design via Teaming Computational Fluid Particle Dynamics and Machine Learning. Oklahoma Center for Respiratory and Infectious Diseases 13th Annual Research Symposium, Stillwater, OK, USA

[25] Westcott, C., **Feng, Y.** (2026). Development of Computational Fluid Dynamics-Based Digital Twin for the Reaction of Ethyl Acetate and Sodium Hydroxide in a Continuous Stir Tank Reactor. 2026 OSU Undergraduate Research Symposium, Stillwater, OK, USA

[24] Kara, C., **Feng, Y.** (2026). Optimizing Medicinal Particle Morphology to Increase Small-Airway Delivery in Early-Stage COPD via Inhalation Therapy. 2026 OSU Undergraduate Research Symposium, Stillwater, OK, USA

[23] Umoru, P., **Feng, Y.** (2026). Fluid-Structure Modeling Analysis of Mucociliary Interactions on Ciliated Epithelial Airway Surfaces. 2026 Fluids Engineering Division Summer Meeting, Bellevue, WA, USA

[22] Zhang, Z., **Feng, Y.**, Liu, C. (2025). AI-Empowered User-Centered Smart Inhaler for Targeted and Evenly Distributed Small-Airway Drug Delivery. 2025 INTERACT Symposium, Stillwater, OK, USA.

[21] Wang, S., **Feng, Y.*** (2025). Influence Flow Channel Design and Actuation Flow Rate on Medicinal Particle Transport and Deposition in Dry Powder Inhalers: A Computational Fluid Particle Dynamics Study. 2025 INTERACT Symposium, Stillwater, OK, USA.

[20] Nino, A., **Feng, Y.** (2024). Identify Optimal Turbulence Models to Predict Transitional Pulmonary Airflow Regimes. 2024 OSU Undergraduate Research Symposium, Stillwater, OK, USA.

[19] Westcott, C., **Feng, Y.** (2024). Computational Fluid Dynamics Analysis of Temperature Effects on Methyl Acetate Hydrolysis in a Packed Bed Reactor. 2024 OSU Freshman Research Scholars Symposium, Stillwater, OK, USA.

[18] Bartlett, B., **Feng, Y.**, Fromen, C.A., Ford Versypt, A. N. (2019). Computer Modeling of Aerosol Diffusion through Lung Mucosa. AIChE Annual Meeting 2019, Orlando, FL, USA.

[17] Zhao, J.*, **Feng, Y.**$^{+}$ (2019). Understanding the Glottis Motion Effect on Aerosol Transport and Deposition in a Subject-Specific Human Upper Airway Configuration. AAAR 2019, Portland, OR, USA

[16] Kolewe, E. L., Fromen, C. A., **Feng, Y.** (2019). Realizing Lobe-Specific Targeting of Aerosols in a 3D Printed Lung Model. BMES 2019 Annual Meeting, Philadelphia, PA, USA

[15] Kolewe, E. L., **Feng, Y.**, Briddell, J., Fromen, C. A. (2019). Realizing Localized Aerosol Targeting: Right and Left Lung Deposition. 22nd International Society for Aerosols in Medicine (ISAM) Congress, Montreux, Switzerland.

[14] Hayati, H.*, **Feng, Y.**$^{+}$ (2019). Deposition Comparisons of IAV-Laden Particles in Rat and Human Respiratory Systems: An *In Silico* Study. Oklahoma Center for Respiratory and Infectious Diseases 6th Annual Research Symposium, Stillwater, OK, USA.

[13] Sperry, T.*, **Feng, Y.**$^{+}$ (2019). Glottis Opening Effects on Inhaled Particle Deposition in Human Airways. AIChE Mid-America Regional Student Conference, Rolla, Missouri, USA.

[12] Zhao, J.*, Liu, L., Fromen, C., **Feng, Y.**$^{+}$ (2019). Predicting Transport and Deposition of Inhaled Microparticles in an Elastic Lung Model. BMES/FDA Frontiers in Medical Devices Conferences, College Park, Maryland, USA.

[11] Haghnegahdar, A.*, **Feng, Y.**$^{+}$ (2019). Predicting the Influenza Virus Laden Droplets Transport, Deposition, and Associated Immune System Responses in Lung by a Multiscale CFPD-HCD Model. BMES/FDA Frontiers in Medical Devices Conferences, College Park, Maryland, USA

[10] Kozak, M.*, Fahlenkamp, H., **Feng, Y.**$^{+}$ (2018). Multiphase modeling of monocyte migration in a flow bioreactor system: an *in-silico* study. BMES Annual Meeting 2018, Atlanta, GA, USA

[9] Zhao, J., **Feng, Y.**$^{+}$, Mao, S., Lin, P. (2018). Transport Dynamics of Inhaled Chemotherapeutic Particles in a Human Respiratory System Using an LES Model. BMES Annual Meeting 2018, Atlanta, GA, USA

[8] Haghnegahdar, A., **Feng, Y.**$^{+}$ (2018). Deposition and Replication of Low-Strain Influenza A Virus in the Epithelium of a Human Upper Airway. BMES Annual Meeting 2018, Atlanta, GA, USA

[7] Haghnegahdar, A.*, Zhao, J.*, Kozak, M.*, Williamson, P., **Feng, Y.**$^{+}$ (2018) Analysis of Xenon Mass Transfer from Human Upper Airway to Systemic Region using a Hybrid CFD-PBPK Model. 10th International Aerosol Conference (IAC), St. Louis, IL, USA

[6] **Feng, Y.**$^{+}$**,** Chen, X., Zhao, J.* (2018). Effects of Airway Surface Roughness on Local Particle Depositions in Subject-Specific Tracheobronchial Trees. 10th International Aerosol Conference (IAC), St. Louis, IL, USA

[5] Kozak, M.*, Falenkamp, H., **Feng, Y.**$^{+}$(2017). Non-Newtonian fluid flow patterns in a customized parallel plate flow chamber: an i*n-silico* study using a Computational Fluid Dynamics model. 2017 ASEE Midwest Section Conference, Stillwater, OK, USA

[4] Haghnegahdar, A.*, **Feng, Y.**$^{+}$ (2017). Development of a multiscale CFPD-PBTK model for lung deposition and whole-body translocation of inhaled nicotine and acrolein in e-cigarette aerosols. 2017 ASEE Midwest Section Conference, Stillwater, OK, USA

[3] **Feng. Y.** $^{+}$**,** Wang. J., Chen, X. (2017). Noninvasive Diagnostics for the Early Detection of Lower Respiratory Diseases: an *In-Silico* Study. AIChE 2017 Annual Meeting, Minneapolis, MN, USA

[2] **Feng, Y.**$^{+}$**,** Chen, X., Xu, Z., Haghnegahdar, A.* (2017). Intersubject Variability in Pulmonary Drug Delivery Efficiency to Target Lung Tumors at Different Lobes: An *In-Silico* Study. BMES 2017 Annual Meeting, Phoenix, AZ, USA

[1] **Feng, Y.**$^{+}$, Haghnegahdar, A.* (2017). A New Pulmonary Drug Targeted Delivery Method for Lung Diseases Treatment: An *In-Silico* Study**.** The Oklahoma Center for Respiratory and Infectious Diseases 4th Annual Retreat, Stillwater, OK, USA

Patents

[1] USApp20260162831 DIGITAL TWIN SYSTEM FOR PULMONARY HEALTHCARE". https://patents.google.com/patent/US20260162831

PROFESSIONAL AFFILIATION AND ORGANIZATION MEMBERSHIPS

- **Vice Chair (2026-2028):** ASME Fluid Engineering Division Fluid Mechanics Technical Committee
- **Academic Co-chair (2023-Present):** Pharma Strategy Task Force in Avicenna Alliance
- **Development Committee (2022-Present):** American Association for Aerosol Research (AAAR)
- **Vice Chair (2025-Present):** Graduate Faculty Subject Matter Group III – Physical Sciences and Technology at Oklahoma State University
- **Scientific Review Committee (2026-Present)**: Stillwater Junior High School, Stillwater, OK, USA
- **Secretary (2024-2025):** Graduate Faculty Subject Matter Group III – Physical Sciences and Technology at Oklahoma State University
- **Chair (2021-2022):** Health Related Aerosol Working Group in American Association for Aerosol Research (AAAR)
- **Vice Chair (2020-2021):** Health Related Aerosol Working Group in American Association for Aerosol Research (AAAR)
- **Panel Reviewer:** NSF, DoD CDMRP PRMRP 2020, NIH, NASA, Czech NSF, Poland National

Science Centre, Southwest Center for Occupational and Environmental Health (SWCOEH), etc.

- **Conference Organizer and Convener:** Society for Computational Fluid Dynamics of the Nose and Airway (SCONA) Annual Conference 2022
- **Conference Planning Committee:** 2025 CADRE Conference
- **Conference Organizing Committee:** 2026 ASME Fluids Engineering Division Summer Meeting
- **Conference Session Organizer:** The 12th International Aerosol Conference (IAC 2026) D-2: Respiratory Aerosols: Dynamics, Health Implications, and Innovations, ASME FEDSM 2026
- **Conference Organizing Committee:** 2023 OCRID Research Symposium
- **Editorial Advisory Board:** Journal of Aerosol Science
- **Associate Editor:** Frontier in Drug Delivery
- **Editorial Board:** MDPI Fluids
- **Topical Advisory Panel Member:** MDPI Atmosphere
- **Editorial Advisory Board (2017-2025):** Heliyon
- **Lead Guest Editor:** MDPI Bioengineering Special Issue: "Advanced In Silico, In Vitro, and In Vivo Methods for Pulmonary Healthcare and Occupational Exposure Risk Assessment"
- **Lead Guest Editor:** MDPI Atmosphere Special Issue: "Transport and Dispersion of Aerosols: Experimental and Numerical Studies"
- **Lead Guest Editor:** MDPI Atmosphere Special Issue: "Special Issue on Mitigation Strategies for Airborne Transmission of SARS-CoV-2-Laden Aerosols"
- **Lead Guest Editor:** Computational and Mathematical Methods in Medicine *Special Issue:* Multiscale Computational Models for Respiratory Aerosol Dynamics with Medical Applications
- **Guest Editor:** Journal of Nanotechnology, MDPI Special Issue "Transport and Dispersion of Aerosols: Experimental and Numerical Studies"
- **Conference Session Chairs:** AAAR Annual Conference, International Conference on Computational and Mathematical Biomedical Engineering (CMBE), ASME FEDSM 2026, etc.
- Member of Virtual Physiological Human (VPH) Institute
- Member of the American Society of Mechanical Engineers (ASME)
- Member of the American Institute of Chemical Engineers (AIChE)
- Member of the American Association for Aerosol Research (AAAR)
- Lift-time Member of Chinese-American Professors in Environmental Engineering and Science (CAPEES)

TECHNICAL REVIEW ACTIVITIES

(30+ Journals and 4 Conferences)

- Cardiovascular Engineering and Technology
- Physics of Fluids
- Physical Review Fluids
- PNAS
- The Lancet Regional Health Western Pacific,
- Journal of Aerosol Science
- Journal of Applied Physics
- Journal of Biomechanics
- Powder Technology

- Aerosol Science and Technology
- ASME Journal of Biomechanical Engineering
- European Journal of Pharmaceutical Sciences
- ASME Journal of Fluids Engineering
- Communication Medicine
- Building and Environment
- Aerosol and Air Quality Research
- Journal of Breath Research
- Biomechanics and Modeling in Mechanobiology
- Respiratory Physiology & Neurobiology
- Atmospheric Environment
- Energy Conversion and Management
- Energy
- Applied Thermal Engineering
- Fluids
- Particuology
- Journal of Mechanics Engineering and Automation
- Entropy
- European Journal of Mechanics
- Journal of Physics D: Applied Physics
- International Journal of Thermal Sciences
- International Journal of Physical Science
- Journal of Thermophysics and Heat Transfer
- Journal of Mechanical Engineering Science
- Journal of Nanoengineering and Nanosystems
- Abstract and Applied Analysis
- Applied Mathematical Modelling
- Nanoscale and Microscale Thermophysical Engineering
- Journal of Mechanical Engineering Research
- ASME FEDSM 2026
- ASME IMECE 2013
- BMES 2017
- AAAR 2017 to 2022

EDUCATIONAL ACTIVITIES

2026	Land-Grant Week: Chemical Engineering Digital Twins
2022	Outreach for General Public: Seminar "Lungevity" to East Oklahoma Rotary Club
2019-2026	Development of "Lungevity" Session for OSU Grandparent University (GPU)
2024, 2026	OSU CEAT Discovery Day (CHE Session)
2021-2026	Design Project Workshops for the CEAT Summer Bridge Program
2021	Co-host of "Biomedical Engineers" Session for the Oklahoma Technology Student Association conference

HONORS and AWARDS

2026 ASME FEDSM 2026 Best Paper Award
2025 OSU CEAT Dean's Professorship

2025 ConocoPhillips Faculty Fellow in Chemical Engineering Education at OSU
2025 OSU President's Fellows Faculty Research Award
2025 Excellence in Research Mentoring Award at OSU
2024 NSF EPSCoR Research Fellow
2024 Distinguished Early Career Faculty Award at Oklahoma State University
2024 NSF Division of Civil, Mechanical and Manufacturing Innovation (CMMI) Panel Fellow
2024 Fall 2024 Builders + Backers Idea Accelerator Cohort
2024 3rd Place and Special Award in Rural Health Innovation Challenge 2024 - Cardiovascular & Community with the project titled "Digital Twin of Human Respiratory System: An In Silico Platform for Noninvasive Assessment of Vaping Products"
2023 Ansys Curriculum Award "Computational Fluid-Particle Dynamics: Basic Theory and Select Applications" https://www.ansys.com/blog/students-explore-biomedical-research-with-ansys-cfd
2022 Journal of Aerosol Science Excellence in Research Award (JASER)
2022 AAAR 2022 Video Competition 2nd Place – "E-cig Aerosol Dynamics in the Lung" https://youtu.be/i63Q_jo3qwo
2021 Top 10 App Idea: "Pulmonary Obstruction Detector (POD)", OSU App Competition
2020 Pillar World Award, Innovation of the Year | Tackling COVID-19 with Innovative Ways
2019 "The Digital Elastic Whole-Lung Model", Winner of ANSYS Hall of Fame Competition 2019
2017 Best Presentation of Session "Computational Methods in Biological and Biomedical Systems II" AIChE Annual Meeting, Minneapolis, MN, USA
2017 Top 10 App Idea: "Personalized Pulmonary Surgery Planner", OSU App Competition
2016 ASME Early Career Technical Conference (ECTC) Presentation Award