CURRICULUM VITAE

Zhuo CHEN

Postdoc at the School of Energy and Environment, City University of Hong Kong

E-mail: zhuochen@cityu.edu.hk Mobile: +852 5165 3659

Webpage: https://jmo-lab.net/zhuo-chen/ ORCID: 0000-0003-4849-8998

Google Scholar: https://scholar.google.com/citations?hl=zh-CN&user=vC-_uScAAAAJ

Research Topic: Indoor air quality, Heat and mass transfer, Air purification

1. Vita

Zhuo Chen (born March 1996) is a Postdoctoral Researcher in the School of Energy and Environment at City University of Hong Kong. He obtained a Ph.D. degree in the Department of Building Science, School of Architecture at Tsinghua University. His supervisor is Prof. Jinhan Mo. He received his B.Eng. degree (2018) in Energy and Power Engineering at Huazhong University of Science and Technology, China. Thus, he has a solid foundation in heat and mass transfer, environmental engineering, and exposure science. His research topics include the mass transfer of gas- and solid-phase Semi-Volatile Organic Compounds (SVOCs) in indoor environments, bioaerosol modeling, antibiotic-resistant bacteria/gene (ARB/ARG) removal, and exposure risk assessment. He has published 22 SCI-indexed papers (13 first/corresponding-authored) in the *Renewable and Sustainable Energy Reviews, Journal of Hazardous Materials, Building and Environment*, and *Construction and Building Materials*. Another 1 authored papers are under reviewed at SCI-indexed journals. He has given five oral presentations at international conferences.

He has participated in the RGC CRF Proposal (No. C5063-22GF) as a research member in Hong Kong, titled "***Transmission of antimicrobial resistance from hotspot sources to occupational populations and urban communities***." He was also the research assistant in the National Key

Research and Development Program of China (No. 2016YFC0207103), titled "***Research on a new type of indoor pollution of SVOCs and particulate matters***." He participated in the funding application, defense, and project conclusion throughout the process. He also has good training in experiments and mass transfer modeling. He is skillful at chemical quantitative detection and instrumental analysis. The instruments he used for research included GC-MS, Thermal Desorption analyzer, Scanning Electron Microscope, and Atomic Force Microscope. He developed a gas- and particle-phase TVOC detection method for the National Key Research and Development Program of China (No. 2018YFB0605000), titled "***Formation mechanism and emission characteristics of the organic compound during the coal combustion***." He also self-taught molecular dynamics simulations for the convenience of understanding the adsorption dynamics of organic molecules on different materials.

2. Academic and Educational experience

Institution	Degree/Position	Years	Field of study
School of Energy and Environment, City University of Hong Kong (U.S. News: #54)	Postdoc	Sept 2025 to present	Indoor VOC/microbial purification
Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University (U.S. News: #67)	Postdoc	Aug 2023-Aug 2025	ARB & ARG related; Bioaerosol modeling
Department of Building Science, Tsinghua University (U.S. News: #11)	Ph.D.	Sept 2018-Jul 2023	SVOC mass transfer in indoor environments
School of Energy and Power Engineering, Huazhong University of Science and Technology (U.S. News: #91)	B.Eng.	Sept 2014-Jul 2018	Thermal and power engineering

3. Awards

- Best Paper Award, the 16th Academic Conference on Building Physics, Chongqing, China, Oct 2025;
- Postdoc Matching Fund Scheme provided by The Hong Kong Polytechnic University, Jul 2023;
- Outstanding Graduation Thesis Award at School of Architecture, Tsinghua University, Jun 2023;
- Best Poster Award, the 9th Indoor Environment and Health Branch Conference, Nanjing, China, May 2019;
- Excellent Student Award (Top 5% of grade), Huazhong University of Science and Technology, Oct 2015;

- National Inspirational Scholarship, Huazhong University of Science and Technology, Sept 2015 and Sept 2016.

4. Skills

- Numerical analysis of heat and mass transfer using COMSOL, ANSYS Fluent, and ICEM CFD;
- Various passive and active air sampling instruments;
- Chemical analysis instruments: GC-MS. GC-BID, SEM, AFM;
- Programs: C/C++, MATLAB, Materials Studio (MD simulation), AutoCAD, Solidworks;
- Language: Mandarin (Native), English (Fluent)

5. Publications

Peer-reviewed SCI papers

(1) Li ZW, Xing SS, Zhang JL, **Chen Z***, Wang SW (2025), Quantification of energy flexibility and uncertainty in airport terminals unlocked by occupancy-based multi-zone indoor temperature set-point optimization. (accepted by ***Building Simulation***, IF: 5.9) https://doi.org/10.1007/s11273-025-1389-3

(2) Zou WW, Wu W, Mo JH*, **Chen Z*** (2025), Advances in hydrogel-based materials for improving building energy efficiency. ***Renewable and Sustainable Energy Reviews*** 226: 116303. (IF: 16.3) https://doi.org/10.1016/j.rser.2025.116303

(3) **Chen Z,** Xia FX, Wang Y, Zou WW, Mi JY, Li ZW, Yu T, Leng WJ, Mo JH* (2025), Effects of stringent industrial control during the 2022 Beijing Winter Olympics on bacterial variations in the atmosphere and built environments. ***Building and Environment*** 285: 113623. (IF: 7.6) https://doi.org/10.1016/j.buildenv.2025.113623

(4) Wang Y, Pang DQ, Mo JH, **Chen Z*** (2025), Nickel foam-based preconcentrator for sensitive detection of low-concentration volatile organic compounds. ***Building and Environment*** 280: 113070. (IF: 7.6) https://doi.org/10.1016/j.buildenv.2025.113070

(5) Mi JY, Zou WW, Wang Y, Gao YL, Mo JH*, **Chen Z*** (2025), Evaluation of the cooling mechanisms and performance of passive radiative cooling coatings in track-slab applications. ***Construction and Building Materials*** 473: 141057. (IF: 8.0) https://doi.org/10.1016/j.conbuildmat.2025.141057

(6) **Chen Z**, Chen QW, Wang Y, Zou WW, Mo JH* (2025) Tuning multi-scale pore structures in carbonaceous films via direct ink writing and sacrificial templates for efficient indoor formaldehyde removal. ***Journal of Hazardous Materials*** 487: 137203. (IF: 11.3) https://doi.org/10.1016/j.jhazmat.2025.137203

(7) **Chen Z**, Tian EZ, Jiang Y, Mo JH* (2025) Global perspectives on indoor phthalates and alternative plasticizers: Occurrence and key transport parameters. ***Journal of Hazardous Materials*** 482: 136506. (IF: 11.3) https://doi.org/10.1016/j.jhazmat.2024.136506

(8) **Chen Z**, Gao YL, Xia FX, Bi CY, Mo JH* (2024) Formation kinetics of SVOC organic films and their impact on child exposure in indoor environments. ***Science of The Total Environment*** 912: 168970. (IF: 8.0) https://doi.org/10.1016/j.scitotenv.2023.168970

(9) **Chen Z**, Xia FX, Fan YJ, Jiang Y, Xu Y, Mo JH* (2024) Partitioning mechanisms and film formations of DEHP on realistic indoor airborne particles and road dust. ***Building and Environment*** 252: 111273. (IF: 7.6) https://doi.org/10.1016/j.buildenv.2024.111273

(10) **Chen Z**, Chen QW, Xu Y, Mo JH* (2022) Partitioning characteristics of indoor VOCs on impermeable surfaces covered by film-phase DnBP and DEHP. ***Journal of Hazardous Materials Advances*** 8: 100191. (IF: 7.7) https://doi.org/10.1016/j.hazadv.2022.100191

(11) **Chen Z**, Wu QY, Xu Y, Mo JH* (2022) Partitioning of airborne PAEs on indoor impermeable surfaces: A microscopic view of the sorption process. ***Journal of Hazardous Materials*** 424: 127326. (IF: 11.3) https://doi.org/10.1016/j.jhazmat.2021.127326

(12) **Chen Z**, Tian EZ, Mo JH* (2020) Removal of gaseous DiBP and DnBP by ionizer-assisted filtration with an external electrostatic field. ***Environmental Pollution*** 267: 115591. (IF: 7.3) https://doi.org/10.1016/j.envpol.2020.115591

(13) **Chen Z,** Afshari A, Mo JH* (2020) A method using porous media to deliver gas-phase phthalates rapidly and at a constant concentration: Effects of temperature and media. ***Environmental Pollution*** 262: 113823. (IF: 7.3) https://doi.org/10.1016/j.envpol.2019.113823

(14) Yang S, Gan LH, **Chen Z**, Wu YT, Huang QT, Wang P, Jiang Y* (2025), Achieving large-scale polyelectrolyte membrane production by optimized multi-nozzle electrospray-assisted layer-by-layer printing. ***Desalination*** 616: 119351. (IF: 9.8) https://doi.org/10.1016/j.desal.2025.119351

(15) Tian EZ, Chen QW, Gao YL, **Chen Z**, Wang Y, Mo JH* (2025), Advancing indoor air purification by mass transfer enhancement: Bridging the gap between high-performance materials and technologies. ***Engineering***. (IF: 11.6) https://doi.org/10.1016/j.eng.2025.07.003

(16) Li ZW, **Chen Z**, Zhang JL*, Mu S (2025) Causality-constrained neural network model predictive control for indoor temperature with occupancy-based set-points to facilitate energy-efficient airport terminals. ***Building and Environment*** 283: 113344. (IF: 7.6) https://doi.org/10.1016/j.buildenv.2025.113344

(17) Gao, YL, Wang, J, Tian, EZ, **Chen, Z**, Mo, JH* (2025). Electric-field activating on-surface tailored (OST) coarse polyester fibers for efficient airborne particle removal: Interfacial morphologies and electrical response. ***Separation and Purification Technology*** 353: 128291. (IF: 9.0) https://doi.org/10.1016/j.seppur.2024.128291

(18) Gan LH, Zhang J, Wu YT, **Chen Z**, Zhao ZY, Lin SH, Jiang Y* (2024) Tailoring polyelectrolyte multilayer nanofiltration membranes by aerosol-assisted printing: Insights into membrane formation mechanisms. ***Environmental Science & Technology*** 59(1), 913-923. (IF: 11.3) https://doi.org/10.1021/acs.est.4c08638

(19) Xia, FX, **Chen Z**, Mo JH, Tian EZ* (2024) Abundant new bacterial species brought by a super sandstorm 2021 in Beijing. ***Journal of Environmental Sciences*** 144: 35-44. (IF: 6.3) https://doi.org/10.1016/j.jes.2023.07.029

(20) Wang Y, **Chen Z**, Chen QW, Tian EZ, Han N*, Mo JH* (2024) Preconcentrating sensor systems toward indoor low-concentration VOC detection by goal-oriented, sequential, inverse design strategy. ***Building and Environment*** 254: 111372. (IF: 7.6) https://doi.org/10.1016/j.buildenv.2024.111372

(21) Xia, FX, **Chen Z**, Gao YL, Tian EZ*, Mo JH (2024) Simultaneous capture and inactivation of airborne bacteria by a dual-zone electrostatically actuated filter. ***ACS ES&T Engineering*** 4: 987-994. (IF: 6.7) https://doi.org/10.1021/acsestengg.3c00525

(22) Chen QW, **Chen Z**, Luo ZY, Mo JH* (2023) Direct ink writing net-like adsorption films with hierarchical porous structures for indoor VOCs removal: enhancing diffusion kinetics. ***Chemical Engineering Journal*** 471: 144560. (IF: 13.2) https://doi.org/10.1016/j.cej.2023.144560

Papers in preparation

(1) **Chen Z**, Liu XH, Li XD, Jiang Y*, A comprehensive mechanistic model for determining the microbial distribution and transport dynamics in bioaerosol and interior materials in indoor environments.

(2) **Chen Z**, Mo JH*, Revealing the actual distribution, behavioral characteristics, and pathogenicity of bacteria and fungi that primarily existed in indoor bioaerosols.

(3) **Chen Z**, Chen BZ, Wei L, Mo JH, Jiang Y, Research on rapid sterilization of iron-based grid electrodes and ARG catalytic purification technology based on electric field drive.

(4) Wu YC, Ye CS, **Chen Z**, Zhong DL*, Jiang Y*, Arsenic removal by a zerovalent iron-based magnetic flow-through water treatment system: Insight into the effect of NOM on the formation and transport of Fe corrosion products.

Patents

(1) **Chen Z**, Mo JH (2021) A kind of gas-phase Semi-Volatile Organic Compound generator, Chinese Patent No.: 202122695714.7

(2) **Chen Z**, Mo JH (2021) Generation and generator-assembly method of gas-phase Semi-Volatile Organic Compounds, Chinese Patent No.: 202111306158.8

(3) Mo JH, **Chen Z** (2025) System and pre-treatment method for establishing and sustaining a stable concentration of gaseous organic compounds, Chinese Patent No.: 202510397701.1

(4) Mo JH, **Chen Z**, Zou WW, Wang Y, Xie RJ, Xia FX (2025) Microfluidic technology-based trace formaldehyde detection chip, device and method, Chinese Patent No.: 202511612898.2

(5) Mo JH, Zou WW, **Chen Z**, Wang Y (2025) Composite thermosensitive hydrogels and their preparation and regeneration methods, Chinese Patent No.: 202511855199.0

(6) Xie RJ, Wang XX, Mo JH, Pang DQ, **Chen Z**, Duan JH (2025) A gas-liquid interface catalyst, its preparation method and application, Chinese Patent No.: 202511403092.2

Conference oral presentations

(1) **Chen Z**, Jiang Y, Mo JH*. "Research on Electric-Field-Assisted Rapid Disinfection with Iron-Based Mesh Electrodes and the Catalytic Purification of ARGs.", *The 16th Academic Conference on Building Physics*, Chongqing, China, Oct 24-26, 2025. (**Best Paper Award**)

(2) **Chen Z,** Mo JH*. "Removal of Semi-Volatile Organic Compounds and particulate matter combined pollution by electrostatic enhanced filtration", *The 9th Indoor Environment and Health Branch Conference*, Nanjing, China, May 10-12, 2019. (**Best Poster Award**)

(3) **Chen Z**, Mo JH*. "A porous media-based method to generate stable and constant gaseous concentrations of Semi-Volatile Organic Compounds", *the 11th International Symposium on Heating, Ventilation and Air Conditioning*, Harbin, China, July 12-15, 2019.

(4) **Chen Z**, Mo JH*. "Removal of DiBP and DnBP by electrostatically assisted air (EAA) filtration: Effect of filter materials and charging", *the Healthy Buildings 2019 Asia*, Changsha, China, October 22-25, 2019.

(5) **Chen Z**, Enze Tian, Mo JH*. "Interfacial adsorption of gaseous PAEs on micro polyurethane fiber with activated carbon coating: Enhancement by electrostatic discharging", *The 16th Conference of the International Society of Indoor Air Quality & Climate (Indoor Air 2020)*, Seoul, Korea, July 20-24, 2020. (Virtual Conference)

(6) **Chen Z,** Mo JH*. "Research of the combined adsorption of PAE and VOC on indoor impermeable surfaces", *The 10th Indoor Environment and Health Branch Conference*, Wuhan, China, December 3-5, 2021.

(7) **Chen Z,** Mo JH, Jiang Y*. "The compositions and mass transfer fate of bioaerosols in indoor environments", *Global Chinese Environmental Protection Conference 2024 (GCEPC 2024)*, Hong Kong, May 24-27, 2024.