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Education Background

07.2020 – Now **PhD. in Mechanical Engineering, The University of Hong Kong**
Supervisors: Prof. Jiyun Song, Prof. Yuguo Li
PhD Thesis field: Urban climate, building energy, and human health

09.2016 – 06.2019 **M.S. in Building and Civil Engineering, Chongqing University**
Supervisor: Prof. Yafeng Gao
M.S. Thesis title: Synergistic cooling effect of urban blue-green space in local thermal environment

Research experience (major involved projects)

06.2023 – Now **Synergistic cooling effects of water and trees for tackling overheating of megacities in Southern China (Excellent Young Scientists Fund of the National Natural Science Foundation of China)**

06.2020 – 12.2023 **Development of a PFM-inclusive human thermal stress prediction and warning system (General Research Fund No. 17208021)**

06.2020 – 07.2022 **Synergistic effects of urban heat island and urban moisture island in a high-rise compact city (ECS No. 27208220)**

01.2018 – 12.2019 **Improvement of outdoor environment of existing residential buildings (13th Five-year Plan China National Key R&D Program No. 2017YFC0702903)**

03.2017 – 06.2019 **Study on indoor thermal environment control mechanism of high reflective coating flat roofs of residential buildings for hot summer and warm winter zone (National Natural Science Foundation of China No. 51878088)**

09.2016 – 08.2017 **Study about cool roof mechanism of carbon reduction in Hot Summer and Cold Winter climate zone (Fundamental Research Funds for the Central Universities of China) and Adaptability of cool roofs in China (US-China Clean Energy Research Center Building Energy Efficiency Consortium)**

Publications (Urban climate & Building energy efficiency)

Journal Articles (Urban climate field)

- **Dachuan Shi**, Jiyun Song*, et al., “Cooling wisdom of ‘water towns’: How urban river networks can shape city climate?”, **Remote Sensing of Environment**, 300 (2024), 113925, https://doi.org/10.1016/j.rse.2023.113925. **(IF=13.5)**

- Peng Zeng, **Dachuan Shi** et al., “Gender disparities in summer outdoor heat risk across China: Findings from a national county-level assessment during 1991–2020”, **Science of The Total Environment**, 921 (2024), 171120, https://doi.org/10.1016/j.scitotenv.2024.171120. **(IF=9.8)**
- Peng Zeng, **Dachuan Shi**, et al., “Parks may not be effective enough to improve the thermal environment in Shanghai (China) as our modified H3SFCA method suggests”, **Building and Environment**, 253 (2024), 111291, https://doi.org/10.1016/j.buildenv.2024.111291. (**IF=7.4**)
- Qilong Zhong, Jiyun Song*, **Dachuan Shi**, Chung-Hin Dung. “Protective facemask-induced facial thermal stress and breathing burden during exercise in gyms”, **Building and Environment**, 244 (2023), 110840, https://doi.org/10.1016/j.buildenv.2023.110840. (**IF=7.4)**
- Peng Zeng, Fengyun Sun, **Dachuan Shi**, et al., “Integrating anthropogenic heat emissions and cooling accessibility to explore environmental justice in heat-related health risks in Shanghai, China”, **Landscape and Urban Planning**, 226 (2022), 104490, https://doi.org/10.1016/j.landurbplan.2022.104490. (**IF=9.1)**
- Ying Liu, Yafeng Gao*, **Dachuan Shi**, et al., "Modelling Residential Outdoor Thermal Sensation in Hot Summer Cities: A Case Study in Chongqing, China", **Buildings**, 12, (2022), 1564. https://doi.org/10.3390/buildings12101564. (**IF=3.8)**
- **Dachuan Shi**, Jiyun Song*, et al., “Dual challenges of heat wave and protective facemask-induced thermal stress in Hong Kong”, **Building and Environment**, 206 (2021), 108317, https://doi.org/10.1016/j.buildenv.2021.108317. (**IF=7.4**)
- Jiyun Song, Xinjie Huang, **Dachuan Shi**, et al., “Natural ventilation in London: Towards energy-efficient and healthy buildings”, **Building and Environment**, 195 (2021) 107722, https://doi.org/10.1016/j.buildenv.2021.107722. **(IF=7.4)**
- **Dachuan Shi**, Jiyun Song, et al., “Synergistic cooling effects (SCEs) of urban green-blue spaces on local thermal environment: A case study in Chongqing, China”, **Sustainable Cities and Society**, 55 (2020), 102065, https://doi.org/10.1016/j.scs.2020.102065. **(IF=11.7)**
- Yake Zhang, **Dachuan Shi***, et al., “Single image modeling (SIM) for predicting the temperature and air flows of outdoor air zones in regional planning”, **Sustainable Cities and Society**, 53 (2020), 101934, https://doi.org/10.1016/j.scs.2019.101934. **(IF=11.7)**

Journal Articles (Building energy efficiency field)

- Chenghao Wang*, Jiyun Song, **Dachuan Shi**, et al., “Impacts of climate change, population growth, and power sector decarbonization on urban building energy use”, **Nature Communications**, (2023) 14:6434, https://doi.org/10.1038/s41467-023-41458-5. (**IF=16.6**)
- Ying Liu, Yafeng Gao*, Chaoqun Zhuang, **Dachuan Shi**, et al., “Optimization of top-floor rooms coupling cool roofs, natural ventilation and solar shading for residential buildings in hot-summer and warm-winter zones”, **Journal of Building Engineering**, 66 (2023), 105933, https://doi.org/10.1016/j.jobe.2023.105933. (**IF=6.4)**
- **Dachuan Shi**, Yafeng Gao, et al., “Climate adaptive optimization of green roofs and natural night ventilation for lifespan energy performance improvement in office buildings”, **Building and**

Environment, 223 (2022), 109505, https://doi.org/10.1016/j.buildenv.2022.109505. (**IF=7.4**)

- **Dachuan Shi**, Yuejiao Guo, Xinxin Gu. et al., "Evaluation of the ventilation system in an LNG cargo tank construction platform (CTCP) by the AHP-entropy weight method". **Building Simulation**. 15 (2022), 1277–1294. https://doi.org/10.1007/s12273-021-0845-0. (**IF=5.5**)
- Tianhe Long, Dimeng Zheng, Yongcai Li, Shuli Liu, Jun Lu, **Dachuan Shi**, et al., "Experimental study on liquid desiccant regeneration performance of solar still and natural convective regenerators with/without mixed convection effect generated by solar chimney", **Energy**, 239A (2021), 121919, https://doi.org/10.1016/j.energy.2021.121919. **(IF=9.0)**
- Zhaosong Fang, Zhimin Zheng, Xiwen Feng, **Dachuan Shi**, et al., "Investigation of outdoor thermal comfort prediction models in South China: A case study in Guangzhou", **Building and Environment**, 188 (2021) 107424, https://doi.org/10.1016/j.buildenv.2020.107424. **(IF=7.4)**
- Jinxin Huang, Shangyan Wu, Ting Yuan, **Dachuan Shi**, et al., "Analysis of equivalent metabolic rate (EMT) used for predicted mean vote: A case study in Chongqing, China", **Case Studies in Thermal Engineering**, 27 (2021) 101230, https://doi.org/10.1016/j.csite.2021.101230. **(IF=6.8)**
- Guozeng Feng, Xinxin Gu, **Dachuan Shi***, et al., "Shape optimization for the improved performance of a novel bi-directional flow rate measuring device: Olive-shaped flowmeter (OSF)", **Measurement**, 188 (2021), 110614, https://doi.org/10.1016/j.measurement.2021.110614. (**IF=5.6**)
- Changqing Lin, Yafeng Gao, Jinxin Huang*, **Dachuan Shi**, et al., "A novel numerical model for investigating macro factors influencing building energy consumption intensity", **Sustainable Production and Consumption**, 76 (2020), 101832, https://doi.org/10.1016/j.spc.2020.07.014. **(IF=12.1)**
- Rui Guo, Yafeng Gao, Chaoqun Zhuang, Per Heiselberg, Ronnen Levinson, Xia Zhao, **Dachuan Shi**, "Optimization of cool roof and night ventilation in office buildings: A case study in Xiamen, China", **Renewable Energy**, 147 (2020), 2279-2294, https://doi.org/10.1016/j.renene.2019.10.03. **(IF=8.7)**
- Jinxin Huang, **Dachuan Shi**, Zhaosong Fang, et al., "Impact of short-term thermal experience on thermal sensation: A case study of Chongqing, China", **Building and Environment**, 179 (2020) 16921, https://doi.org/10.1016/j.buildenv.2020.106921. **(IF=7.4)**
- Guozeng Feng, Shuya Lei, Yuejiao Guo, **Dachuan Shi***, et al., "Optimisation of air-distributor channel structural parameters based on Taguchi orthogonal design", **Case Studies in Thermal Engineering**, 21 (2020) 100685, https://doi.org/10.1016/j.csite.2020.100685. **(IF=6.8)**
- Guozeng Feng, Yuejiao Guo, **Dachuan Shi***, et al., "Experimental and numerical study of the flow characteristics of a novel olive-shaped flowmeter (OSF)", **Flow Measurement and Instrumentation**, 76 (2020), 101832, https://doi.org/10.1016/j.flowmeasinst.2020.101832. **(IF=2.2)**
- **Dachuan Shi**, Yafeng Gao, et al "Life cycle assessment of white roof and sedum-tray garden roof for office buildings in China", **Sustainable Cities and Society,** 46 (2019) 101390, https://doi.org/10.1016/j.scs.2018.12.018. **(IF=11.7)**

- **Dachuan Shi**, Yafeng Gao, et al., "Effects of Natural Soiling and Weathering on Cool Roof Energy Savings for Dormitory Buildings in Chinese Cities with Hot Summers", **Solar Energy Materials & Solar Cells,** 200 (2019), 110016, https://doi.org/10.1016/j.solmat.2019.110016. **(IF=6.9)**
- Yafeng Gao, **Dachuan Shi**, Ronnen Levinson, et al., "Thermal performance and energy savings of white and sedum-tray garden roof: A case study in a Chongqing office building", **Energy and Buildings**, 156 (2017), 343-359, https://doi.org/10.1016/j.enbuild.2017.09.091. **(IF=6.7)**

Patents

- **The design and control method of cloth dryer in marine patrol ship** (No. CN106087357 B)
- **An experimental device for differential pressure flow meters** (No. ZL 2015 2 0177223. 5)
- **The design and control method of lighting based on tunnel piston wind** (No. CN201710323488.5)

International Patents

- **Clothes dryer for use on ships and control method therefor**, No. WO 2018/001132 A1.

International conference

- **103rd American Meteorological Society Annual Meeting** (Jan 2023). Oral presentation title: Fine-resolution mapping of street microclimate and pedestrian-level heat stress in city neighborhoods with blue spaces during heatwave periods: A case study in Shanghai, China
- **General Assembly 2024 of the European Geosciences Union** (Apr 2024). Poster presentation title: Investigating the synergistic cooling effect of urban blue and green spaces via an advanced urban canopy model

Honors and Awards

- **Postgraduate Scholarships of the University of Hong Kong** (2020–2025)
- **China National Postgraduate Scholarship** (2017–2018)
- **China National Postgraduate Scholarship** (2016–2017)
- **The First Prize** of 11th National University Students Social Practice and Science Contest on Energy Saving & Emissions Reduction (Sponsored by the MOE, PRC)
- **The First Prize** of 8th National University Students Social Practice and Science Contest on Energy Saving & Emissions Reduction (Sponsored by the Ministry of Education, PRC)
- **The Third Prize** of 9th China R & AC Industry Science & Technology Contest for University Students (Sponsored by the China Refrigeration and Air-conditioning Industry Association).
- **The Third Prize** of 1st 'Si Yang Cup' Diesel Engine Disassembly Competition of Jiangsu Province (Sponsored by the Jiangsu Institution of Naval Architects).