

Mechanical and Aerospace Engineering Seminar

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Will present a talk titled:

Managing IAQ at Multiple Scales - from Urban to Personal Microenvironments

Abstract: Indoor air quality (IAQ) is vital to human health, wellbeing and performance as people typically spend over 80% of their time indoors. The indoor pollutants people expose to originate from both indoors and outdoors. In order to devise an energy-efficient and cost-effective approach to improving indoor air quality, it is necessary to consider strategies available to improve the air quality across multiple scales – from the outdoor environment around buildings to inside buildings, to rooms, and to the microenvironment around the occupants that directly affect the human exposure and intake of the pollutants. In this talk, we present a 3-dimensional view of the IAQ problem: the scales (of environments), the species (of pollutants) and strategies (of IAQ control). The objectives are to assess the potential and limits of the various source control, ventilation and air purification strategies across the different scale, and to develop an integrated approach can be developed for managing IAQ in an energy-efficient and cost-effective manner. Existing data from previous research on the effectiveness of various IAQ strategies at the different environmental scales will be discussed including a layered approach to reduce the risk of airborne transmission of the COVID 19 virus. The talk will end with an outlook to the future work and challenges.

Date: April 15, 2022

Location: CAMP 176

Time: 11:00 am

ZOOM Link for virtual attendance

<https://clarkson.zoom.us/j/94333678632?pwd=b25DRlY3STRkak9iNGFmMUY1UjNPZz09>

Meeting ID: 943 3367 8632

Passcode: 743721

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Bio: Dr. Jianshun “Jensen” Zhang is Professor and Director of Building Energy and Environmental Systems Laboratory, Department of Mechanical and Aerospace Engineering at Syracuse University (SU), New York, USA, and a Visiting Professor of the School of Architecture and Urban Planning at Nanjing University, China. He received his Ph.D. from University of Illinois at Urbana-Champaign and worked at National Research Council of Canada for 8 years before he joined SU. He is a co-leader of the SU-wide Research Cluster in Energy and Environment that promotes and coordinates multi-disciplinary research on the campus. Dr. Zhang is an expert in room air and contaminant distribution, material emissions, air purification, building enclosure performance, and combined heat, air, moisture and pollutant simulations (CHAMPS) for integrative design and intelligent controls of buildings. He has authored/co-authored over 200 technical papers, 3 American national standards and 3 book chapters. He is Associate Editor of Science and Technology for the Built Environment (STBE, formerly ASHRAE HVAC&R Research Journal) and The International Journal of Ventilation, and a Member of the Editorial Boards of Building Simulations—an international Journal, International Journal of High-Rise Buildings, and the International Journal of Architectural Frontier Research. He served as the US Expert to IEA Annex 20, 68, 79, and 86, and is co-founder of the CHAMPS Collaborative. He was conference Chairman for IAQVEC 2010—7th International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings and IBPC 2018—7th International Building Physics Conference. He served as President of the International Association of Building Physics from 2018 to 2021, and is a Vice President of IAQVEC Association. He also chaired ASHRAE TC 4.10 Indoor Environmental Modeling and the Environmental Health Committee. He is Fellow of ASHRAE and ISIAQ.