

Shichao Liu, Assistant Professor

CONTACT INFORMATION	Civil and Environmental Engineering Worcester Polytechnic Institute (WPI) Worcester, MA 01609, USA	508-831-6329 www.scliu.com sliu8@wpi.edu
RESEARCH INTERESTS	Sustainable and smart buildings Computational Fluid Dynamics (CFD) modeling Building energy modeling Thermal comfort Indoor air pollution and control Human-environment interaction Built and urban environment	
PROFESSIONAL TRAINING	University of California, Berkeley, CA Postdoc, Center for the Built Environment (CBE), 2017 <ul style="list-style-type: none">• Advisors: <i>Stefano Schiavon</i>, <i>William W Nazaroff</i>, and <i>Costas J. Spanos</i> The University of Texas at Austin, Austin, TX Ph.D., Civil Engineering, 2014 <ul style="list-style-type: none">• Advisor: <i>Atila Novoselac</i>• Committee members: <i>Richard Corsi</i>, <i>Qingyan (Yan) Chen</i>, <i>Ying Xu</i>, <i>Ofori Ezeokoye</i>, and <i>James Bennett</i> Tianjin University, Tianjin, China M.S., Architectural Engineering, 2009 <ul style="list-style-type: none">• Advisor: <i>Junjie Liu</i> B.S., Building Environment and Energy Engineering, 2007	
RESEARCH EXPERIENCE	Postdoctoral Researcher Center for the Built Environment (CBE), University of California, Berkeley	Feb. 2015 to Dec. 2017
	Graduate Research Assistant Civil, Architectural and Environmental Engineering, The University of Texas at Austin	Jul. 2010 to Dec. 2014
	Research Assistant Building Service Engineering, The Hong Kong Polytechnic University	Sep. 2009 to May 2010

1. Jin, M., **Liu, S.**, Schiavon, S., Spanos C. (2017). Automated mobile sensing: Towards high-granularity agile indoor environmental quality monitoring. *Building and Environment*. doi:10.1016/j.buildenv.2017.11.003
2. Amai, H., **Liu, S.**, Novoselac, A. (2017). Experimental study on air change effectiveness: Improving air distribution with all-air heating systems. *Building and Environment* 125: 515-527. doi:10.1016/j.buildenv.2017.09.017
3. Gao, Y., Zhang, H., Arens, E., Present, E., Ning, B., Zhai, Y., Pantelic, J., Luo, M., Zhao, L., Raftery, P., **Liu, S.** (2017). Ceiling fan air speeds around desks and office partitions. *Building and Environment*. doi:10.1016/j.buildenv.2017.08.029
4. Cao, G., **Liu, S.**, Boor, B.E. and Novoselac, A. (2017). Dynamic interaction of a downward plane jet and a cough jet regarding particle transmission: an analytical and experimental study. *Journal of Occupational & Environmental Hygiene* 14(8) 618-631. doi: 10.1080/15459624.2017.1316383
5. **Liu, S.**, Schiavon, S., Kabanshi, A. and Nazaroff, W. (2017). Predicted percentage dissatisfied with ankle draft. *Indoor Air*. 00:1-11. doi:10.1111/ina.12364.
6. **Liu, S.**, Clark, J., and Novoselac, A. (2017). Air diffusion performance index (ADPI) of overhead-air-distribution at low cooling loads. *Energy and Buildings* 134:271-284 doi: 10.1016/j.enbuild.2016.10.055
7. **Liu, S.**, and Novoselac, A. (2016). The Effect of Deflectors on Air Diffusion Performance Index (ADPI) of Adjustable Diffusers: Cooling Condition (RP-1546). *Science and Technology for the Built Environment* 22(1): 67-74. doi: 10.1080/23744731.2015.1078700
8. Cao, G., **Liu, S.**, Boor, B.E. and Novoselac, A. (2015). Characterizing the Dynamic Interactions and Exposure Implications of a Particle-Laden Cough Jet with Different Room Airflow Regimes Produced by Low and High Momentum Jets. *Aerosol and Air Quality Research* 15: 1955-1966. doi: 10.4209/aaqr.2015.03.0146
9. **Liu, S.**, and Novoselac, A. (2015). Air Diffusion Performance Index (ADPI) of diffusers for Heating. *Building and Environment* 87: 215-223. doi: 10.1016/j.buildenv.2015.01.021
10. **Liu, S.**, and Novoselac, A. (2014). Transport of airborne particles from an unobstructed cough jet. *Aerosol Science & Technology* 48(11): 1183-1194. doi: 10.1080/02786826.2014.968655
11. **Liu, S.**, and Novoselac, A. (2014). Lagrangian particle modeling in the indoor environment: A comparison of RANS and LES turbulence methods (RP-1512). *HVAC&R* 20(4):480-495. doi: 10.1080/10789669.2014.884380

12. **Liu, S.**, Mak, C.M. and Niu, J. (2011). Numerical evaluation of louver configuration and ventilation strategies for the windcatcher system. *Building and Environment* 46(8): 1600-1616. doi: 10.1016/j.buildenv.2011.01.025

CONFERENCE
PROCEEDINGS

1. Jin, M., **Liu, S.**, Schiavon, S., Spanos, C. (2017) Indoor Environmental Quality Monitoring by Autonomous Mobile Sensing. *BuildSys'17*, Delft, The Netherlands.
2. Kabanshi, A., **Liu, S.**, and Schiavon, S. (2016). Potential adaptive behavior to counteract thermal discomfort in spaces with displacement ventilation or underfloor air distribution systems. *The 14th international conference of Indoor Air Quality and Climate*, Belgium.
3. **Liu, S.**, Cao, G., Boor, B.E., and Novoselac, A. (2014). A protected occupied zone ventilation system to prevent the transmission of coughed particles. *The 13th international conference of Indoor Air Quality and Climate*, Hong Kong, China.

TEACHING

Guest instructor

ARCH 298: Research Skills, Graduate level

ARCH 241P: Research methods in Building Sciences, Graduate level

University of California, Berkeley

CE 397: Modeling of Air and Pollutant Flows in Buildings, Undergraduate & Graduate levels

The University of Texas at Austin

Adjunct instructor

ETC 213: Indoor Air Quality, Undergraduate level

Laney College, Oakland

INVITED TALKS

1. A smart living challenge: occupant-building interaction. University of Missouri Science & Technology, Rolla, MO May 2017
2. Designing for sustainable and healthy buildings. Worcester Polytechnic Institute (WPI), Worcester, MA Mar. 2017
3. A pathway to built environment and sustainability. Ohio State University, Columbus, OH Feb. 2017
4. Ankle draft model, ASHRAE Standard 55 Committee, ASHRAE Annual Conference, St. Louis, MO Jun. 2016
5. Expansion and updating of the air diffusion performance index method (ADPI), ASHRAE TC 5.3, St. Louis, MO Jun. 2016
6. Ankle draft risk as a comfort metric for DV and UFAD diffuser testing, ASHRAE Standard 70 Committee, ASHRAE Annual Conference, St. Louis, MO Jun. 2016

7. Comfort with Displacement Ventilation and Underfloor Air Distribution. Industry Advisory Board Conference, Center for the Built Environment, Berkeley, CA Apr. 2016
8. New guideline for diffuser/outlet selection method cooling and heating operations, University of California, Berkeley, CA Feb. 2015
9. Protected occupied zone ventilation (POV), Krueger-HVAC, Dallas, TX (presented with *Dr. Guangyu Cao*) May 2014

PROFESSIONAL SERVICE	<p>Voting member <i>American Society of Heating, Refrigerating & Air Conditioning Engineers (ASHRAE)</i></p> <ul style="list-style-type: none"> • ASHRAE Standard 70: Method of Testing the Performance of Air Outlets and Air Inlets • ASHRAE Standard 113: Method of Testing for Room Air Diffusion <p>Scientific committee</p> <ul style="list-style-type: none"> • The 14th International Conference on Indoor Air Quality and Climate, Ghent, Belgium, 2016 • The 7th International Building Physics Conference-Healthy, Intelligent, and Resilient Buildings and Urban Environments, Syracuse, NY, 2018
AWARDS	<p>Professional Development Award <i>(University of California, Berkeley)</i> 2017</p> <p>Postdoctoral fellowship <i>(Singapore-Berkeley Building Efficiency and Sustainability in the Tropics)</i> 2015</p> <p>Chapter Scholarship <i>(Golden Gate ASHRAE Chapter)</i> 2015</p> <p>Graduate Student Grant-In-Aid <i>(ASHRAE)</i> 2011</p> <p>Sangde Fellowship <i>(Tianjin University)</i> 2008</p> <p>Xingke Fellowship <i>(Tianjin University)</i> 2007</p> <p>Travel Grant</p> <ul style="list-style-type: none"> • Golden Gate Travel Grant <i>(Golden Gate ASHRAE Chapter)</i> 2016 • Kolodzey Travel Grants <i>(The University of Texas at Austin)</i> 2014
PATENT	<p>Control program for scanning-detect of HPEA filter leakages (2010SR008056) 2010</p>
MEDIA COVERAGE	<p><i>In Cold Offices, It's All About Your Feet</i>, The Atlantic 2016</p>