

Education

- PhD, Building Engineering, Concordia University, Canada 2009
- Joint Bachelor's & Master's degree, Architecture, Yazd University, Iran 2002

Courses

- EAE 5633 - Advanced Mechanical & Environmental Systems
- EAE 5113 - Advanced Lighting/Daylighting Systems
- EAE 5016 – Architectural Engineering Integrated Design Studio 4

Research Interest Areas

- Building mechanical & electrical systems for performance optimization & energy efficiency
- Smart building envelope materials and systems for energy conservation and durability
- Latent and thermochemical thermal storage systems for building applications
- Experimental techniques to measure building mechanical and electrical performance
- Numerical modeling of building environmental performance such as thermal, energy, hygrothermal, acoustics, lighting and fire performance;

Related Professional Experience

- Worcester Polytechnic Institute – WPI (Worcester, MA, USA) 2016 – 2017
Assistant Professor
- Worcester Polytechnic Institute – WPI (Worcester, MA, USA) 2015 – 2016
Adjunct Professor
- FRAUNHOFER USA (Boston, MA, USA) 2011 – 2016
R&D Staff- Building Science Engineer
- STANTEC Consulting INC (Toronto, ON, Canada) 2010 – 2011
Sustainable Building Analyst
- MORRISON HERSHFIELD (Vancouver, BC, Canada) 2008 – 2010
Building Science Consultant

Publications

1. **Fallahi A.**, Guldentops G., Tao M., Granados-Focil S., Van Dessel S. “Review on solid-solid phase change materials for thermal energy storage: Molecular structure and thermal properties”, Journal of Applied Thermal Engineering, Volume 127, 2017;

2. Kosny J., Fontanini A.D., Shukla N., **Fallahi A.**, Kehrer M., Watts A., Ganapathysubramanian B., Atchley J., Trifu R. "Thermal performance analysis of residential attic containing high performance, aerogel-based radiant barrier", Accepted by Journal of Building & Environment, 2017;
3. **Fallahi A.**, Kosny J., Shukla N., Fontanini A.D., Watts A., Carbary L., Serino R., "First US commercial building with walls retrofitted using Vacuum Insulation Panels (VIPs): results of field performance study of VIP-Based exterior wall insulation system," ASHRAE Transactions, St. Louis, MO, 2016;
4. Fontanini A.D., Kosny J., **Fallahi A.**, Shukla N., Ganapathysubramanian B., "Development and verification of the Fraunhofer Attic Thermal Model (FATM)," Journal of Building Performance Simulation, 2016;
5. Honeker C., **Fallahi A.**, Singh R., Watts A., Shukla N. "Residential Solar Systems as an Appliance – Plug and Play PV", TechConnect Conference 2016, DC;
6. **Fallahi A.**, Yarbrough D., Kosny J. "Field Performance of Radiant Barriers and IRCC Systems for Attic Retrofits", BEST4 Conference, Kansas City MO, April 2015;
7. **Fallahi A.**, Edgar J., Kosny J., Watts A., Jeng L. "Field test data from retrofit of a small residential house using EIFS technology", BEST4 Conference, Kansas City MO, April 2015;
8. Kosny J., **Fallahi A.**, Kossecka E. "Use of Thermal Inertia for Reduction of HVAC Energy Consumption in Cooling Dominated Climates", BEST4 Conference, Kansas City MO, April 2015;
9. Kosny J., **Fallahi A.**, Shukla N., Kossecka E., Abhari R. "Thermal load mitigation and passive cooling in attics containing PCM-enhanced insulations", Journal of Solar Energy 2014;
10. Kosny J., Misiopcecki C., **Fallahi A.**, Shukla N., Dupont W., Carbary L. "Thermal Design of Window-Wall Interface in Wall Energy Retrofits Using High Performance Vacuum Insulation", ASHRAE Transactions 2014;
11. Kosny J., Asiz A., Smith I., Shrestha S., **Fallahi A.** "High R-Value Wood Framed and Composite Wood Wall Technologies Using Advanced Insulation Techniques", Journal of Energy & Buildings, April 2014;
12. **Fallahi A.**, Durschlag H., Elliott D., Hartsough J., Shukla N., Kosny J. "Internal Roof and Attic Thermal Radiation Control Retrofit Strategies for Cooling-dominated Climates", DOE Building America Report, Prepared the US Department of Energy Building Technology Program, May 2013;

13. Fontanini A., Shukla N., Hartsough J., **Fallahi A.**, Griffiths D., Kosny J. "Retrofitting Urban Residential Buildings with Aerogel Insulated Ductwork Systems", Prepared for the US Department of Energy Building Technology Program, 2013;
14. Urban B., Elliott D., Shukla N., **Fallahi A.**, Kosny J. "Thermal Mass Effect of Solid Block Aerated Autoclaved Concrete", 2nd Central European Symposium on Building Physics, Vienna, Austria 2013;
15. Kosny J., **Fallahi A.**, Shukla N. "Experimental and Numerical Energy Performance Analysis of PCM-Enhanced Building Envelope Products and Systems", 2nd Central European Symposium on Building Physics, Vienna, Austria 2013;
16. Misiopcecki C., Kosny J., **Fallahi A.**, DuPont W. "Optimization of Window Installations during Deep Building Retrofits Using Vacuum Insulation", 2nd Central European Symposium on Building Physics, Vienna, Austria 2013;
17. Shukla N., **Fallahi A.**, Kosny J." VIP - Technology Review and Cost Study for Building Retrofits in Northern US Locations", Buildings XII Conference 2013;
18. Kosny J., **Fallahi A.**, Shukla N. "Cost Analysis of Simple Phase Change Material-Enhanced Building Envelopes in Southern U.S. Climates", DOE Building America Report, Prepared for the US Department of Energy Building Technology Program, January 2013;
19. Kosny J., **Fallahi A.**, Shukla N. "Cold Climate Building Enclosure Solutions", DOE Building America Report, Prepared for the US Department of Energy Building Technology Program, January 2013;
20. **Fallahi A.**, Shukla N. and Kosny J. "Numerical Thermal Performance Analysis of PCMs Integrated with Residential Attics", SimBuild2012 Conference, Madison WI, 2012;
21. Shukla N., **Fallahi A.**, Kosny J. "Performance Characterization of PCM Impregnated Gypsum Board for Building Applications", 1st International Conference on Solar Heating and Cooling for Buildings and Industry (SHC 2012);
22. **Fallahi A.**, Duarte N. "Insulation Permeance: The Effect on Retrofitted Heritage Masonry Walls", Construction Canada Magazine, 2011;
23. **Fallahi A.**, Haghghat, F., El-Sadi H. "Energy Performance Assessment of Double-skin Facade with Thermal Mass", Journal of Energy and Building, Volume 42, Issue 9, 2010;
24. El-Sadi H., **Fallahi A.**, Haghghat, F. "CFD Analysis of Turbulent Natural Ventilation in Double-Skin Façade: thermal mass and energy efficiency", Journal of Energy Engineering, Volume 136, Issue 3, 2010;

25. **Fallahi, A.** “Performance of Double Skin Facade after Integrating with Passive Thermal Mass Technique”, IEA-ECBCS Annex 44, Chapter 4: Advanced Integrated Facades (AIF), 2009;

Grants

- NSF Award - SAEM Program, “Adaptive Building Enclosure Systems Using Cellular Solid-Solid Phase Change Materials with Variable Transparency”, Co-PI, 2017

Related Projects Involvement

- U.S. Department of Energy (DoE) - Building America research program: Evaluation of radiation control strategies in vented attics
- U.S. Department of Energy (DoE) – Building America research program: Assessment of thermal performance of vacuum insulation panels (VIPs) and EIFS cladding as sustainable energy retrofit strategies
- U.S. Department of Energy (DoE) – Building America research program: Cold Climate building enclosure solutions

Activities And Service

- Membership: ASHRAE, US Green Building Council.
- Accreditation: LEED AG
- Journal Review: Journal of ASHRAE Transactions, Journal of Architectural Engineering, Journal of Energy and Buildings, SimAUD
- Presentations: ASHRAE, BEST4, Buildings XII, RIMA, SimBuild
- International Research Collaboration: IEA- Annex 44, IEA Annex 29-task 42