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생년월일: 1992.12.21

국적: 대한민국



EDUCATION

Sep. 2019~ Feb. 2023	공학박사 (Ph.D.) 연세대학교 (Yonsei University) 건축공학과 (Department of Architectural Engineering) 지도교수 (Advisor): 김수민 (Sumin Kim) 박사학위논문 (Dissertation): <i>Dynamic simulation based energy performance diagnosis method for green remodeling considering building materials characteristic</i>	Seoul, Korea
Mar. 2012~ Aug. 2018	공학사 (B.S. in Architecture) 숭실대학교 (Soongsil University) 건축학부 건축공학전공 (Department of Architecture) 지도교수 (Advisor): 김수민 (Sumin Kim) 학사학위논문 (Thesis): <i>Development of High Energy Storage Hwangtoh-SBL-SSPCM Board and Evaluation of Thermal Performance for Building Energy Reduction</i>	Seoul, Korea

RESEARCH INTERESTS

- 화재안전 (Fire safety)
- 건축재료 (Building material)
- 공조설비시스템 (HVAC system)
- 건물에너지 및 지속가능성 (Building energy and sustainability)
- AI 기반 최적화

SKILLS AND TECHNIQUES

- 건물에너지시뮬레이션 (EnergyPlus, DesignBuilder, ECO2, THERM, HEAT)
- 동적화재시뮬레이션 (Fire dynamic simulation: PyroSim/Pathfinder)
- 모델링 (Geometrical modeling: AutoCAD, SketchUp, Rhino)
- 분석기법 (Analysis techniques)
 - DSC, TGA, FT-IR, XRD, SEM, TEM, HCHO/VOCs (20L small chamber)
 - HFM(Thermal conductivity), Flame retardant/Gas toxicity test

AWARDS

1. 연세대학교 우수학술논문상, 우수상 (2021, 2022, 2023)
2. 대한설비공학회 동계학술발표대회 우수논문상 (2021)
3. 한국생태환경건축학회, 대학원생 공동연구 발표, 은상 (2021)
4. 한국생태환경건축학회, 하계학술발표대회 우수논문상 (2021)
5. 8회 HVAC 경진대회 대상 (2020)
6. 연세대학교 우수학술논문상, 장려상 (2020)
7. 국제공동연구장학생, 연세대학교 (2019, 2020, 2021)
8. 대한설비공학회 최상홍 인재상 학술상 (2019)
9. 대한설비공학회 7회 HVAC 경진대회 장려상 (2019)
10. 대한건축학회 춘계학술발표대회 우수졸업논문상 (2019)
11. 한국건축친환경설비학회 추계학술발표대회 우수포스터발표상 (2017)
12. 대한설비공학회 5회 HVAC 경진대회 동상 (2017)

PUBLICATIONS

INTERNATIONAL JOURNAL PAPERS (SCI)

52. Yongjun Choi, **Sungwoong Yang**, Sumin Kim, The smoke control system to improve the possibility of evacuation from fire disasters in high-rise buildings,
Thermal Science and Engineering Progress, 59, 103269. (2025-03)
51. Jeonghyun Cheon, **Sungwoong Yang**, Sumin Kim, Su-Gwang Jeong, Optimizing thermal and strength characteristics of loess-based ceramic aggregates for sustainable buildings,
Construction and Building Materials, 463, 140041. (2025-02)
50. Yongjun Choi, Jihee Nam, **Sungwoong Yang**, Sumin Kim, Integration of phase-change materials in heat recovery ventilator systems for enhanced thermal performance: Based on in-situ experiments,
Building and Environment, 269, 112452. (2025-02)
49. Jihee Nam, **Sungwoong Yang**, Yongjun Choi, Sumin Kim, Hybrid membranes for enhanced hygrothermal performance in enthalpy recovery ventilation systems,
Applied Thermal Engineering, 258C, 124759. (2025-01)
48. Jihee Nam, Ji Yong Choi, Young Uk Kim, **Sungwoong Yang**, Sumin Kim, Advancing energy recovery ventilators with phase change materials for cooling load reduction and heat exchange efficiency improvement,
Applied Thermal Engineering, 258B, 124586. (2025-01)
47. Ji Hun Park, **Sungwoong Yang**, Sumin Kim, Evaluation of photovoltaic installation potential in industrial complexes around metropolitan areas: regulatory obstacles and geographical considerations,
Energy for Sustainable Development, 83, 101564. (2024-12)
46. Young Uk Kim, **Sungwoong Yang**, Sumin Kim, Thermal characteristics of cementitious building materials with carbon and PCM for improved heat storage performance,
Construction and Building Materials, 449, 138550. (2024-10)
45. Jihee Nam, Keesun Park, **Sungwoong Yang**, Sumin Kim, Advancing building fire safety through heat resistant and flame retardant hybrid silicone sealant,
Journal of Building Engineering, 91, 109528. (2024-08)
44. Young Uk Kim, **Sungwoong Yang**, Seunghwan Wi, Sumin Kim, Evaluation of heterogeneous core sandwich panels for energy efficiency and fire safety in warehouse buildings,
Applied Thermal Engineering, 249, 123455. (2024-07)
43. Hyeonseong Yuk, Ji Yong Choi, **Sungwoong Yang**, Sumin Kim, Balancing preservation and utilization: window retrofit strategy for energy efficiency in historic modern building,
Building and Environment, 259, 111648. (2024-07)
42. Ji Yong Choi, Jihee Nam, Hyeonseong Yuk, **Sungwoong Yang**, Sumin Kim, Enhancing the hygrothermal performance of corn cob residue-based ecofriendly building materials through biochar and microencapsulated phase change material incorporation,
Journal of Building Engineering, 89, 109189. (2024-07)
41. **Sungwoong Yang**, Beom Yeol Yun, Young Uk Kim, Taehoon Hong, Sumin Kim, Experimental-based energy performance evaluation of low-cost retrofit strategy for aging low-rise residential building for carbon neutrality

Case Studies in Thermal Engineering, 40, 102535. (2022-12)

40. Seunghwan Wi, **Sungwoong Yang**, Beom Yeol Yun, Yujin Kang, Sumin Kim, Fire retardant performance, toxicity and combustion characteristics, and numerical evaluation of core materials for sandwich panels
Environmental Pollution, 312, 120067. (2022-11)
39. Yujin Kang, Ho Hyeon Jo, **Sungwoong Yang**, Seunghwan Wi, Sumin Kim, Numerical evaluation of indoor hygrothermal behavior with heat and moisture transfer in walls by analytical conditions
Applied Thermal Engineering, 217, 119150. (2022-11)
38. Dimberu G. Atinafu, **Sungwoong Yang**, Beom Yeol Yun, Yujin Kang, Sumin Kim, Use of biochar co-mediated chitosan mesopores to encapsulate alkane and improve thermal properties
Environmental Research, 212, D, 113539. (2022-09)
37. Ho Hyeon Jo, Yujin Kang, **Sungwoong Yang**, Young Uk Kim, Beom Yeol Yun, Jae D. Chang, Sumin Kim, Application and evaluation of phase change materials for improving photovoltaic power generation efficiency and roof overheating reduction
Renewable Energy, 195, 1412-1425. (2022-08)
36. Young Uk Kim, **Sungwoong Yang**, Beom Yeol Yun, Sumin Kim, Evaluation of energy consumption in apartment buildings with biochar and phase change material aggregate-applied artificial stone finishing materials
International Journal of Energy Research, 46(9), 12772-12786. (2022-07)
35. Seunghwan Wi, **Sungwoong Yang**, Young Uk Kim, Yujin Kang, Sumin Kim, Toxicity characteristics and fire retardant performance of commercially manufactured organic insulation materials for building applications
Construction and Building Materials, 341, 127898. (2022-07)
34. Dimberu G. Atinafu, Beom Yeol Yun, **Sungwoong Yang**, Sumin Kim, Encapsulation of dodecane in gasification biochar for its prolonged thermal/shape stability, reliability, and ambient enthalpy storage
Chemical Engineering Journal, 437,1, 135407. (2022-06)
33. Ho Hyeon Jo, Jihee Nam, Jiyong Choi, **Sungwoong Yang**, Yujin Kang, Sumin Kim, Building retrofit technology strategy and effectiveness evaluation for reducing energy use by indoor air quality control
Building and Environment, 216, 108984. (2022-05)
32. Dimberu G. Atinafu, Beom Yeol Yun, **Sungwoong Yang**, Yujin Kang, Sumin Kim, Updated results on the integration of metal-organic framework with functional materials toward n-alkane for latent heat retention and reliability
Journal of Hazardous Materials, 423,B, 127147. (2022-02)
31. **Sungwoong Yang**, Hyeonseong Yuk, Beom Yeol Yun, Young Uk Kim, Seunghwan Wi, Sumin Kim, Passive PM2.5 control plan of educational buildings by using airtight improvement technologies in South Korea
Journal of Hazardous Materials, 423,A, 126990. (2022-02)
30. Jihee Nam, **Sungwoong Yang**, Beom Yeol Yun, Sumin Kim, Evaluation of thermal/morphological performance of SSPCM based nanoclay: Influence of the interlayer microstructure of hydrophilic and hydrophobic

Solar Energy Materials and Solar Cells, 235, 111479. (2022-01)

29. Seong Jin Chang, Yujin Kang, Beom Yeol Yun, Sungwoong Yang, Sumin Kim, Assessment of effect of climate change on hygrothermal performance of cross-laminated timber building envelope with modular construction
Case Studies in Thermal Engineering, 28, 101703. (2021-12)
28. **Sungwoong Yang**, Hyun Mi Cho, Beom Yeol Yun, Taehoon Hong, Sumin Kim, Energy usage and cost analysis of passive thermal retrofits for low-rise residential buildings in Seoul
Renewable & Sustainable Energy Reviews, 151, 111617, (2021-11)
27. Dimberu G. Atinafu, Beom Yeol Yun, **Sungwoong Yang**, Hyeonseong Yuk, Seunghwan Wi, Sumin Kim, Structurally advanced hybrid support composite phase change materials: Architectural synergy
Energy Storage Materials, 42, 164-184, (2021-11)
26. Seunghwan Wi, **Sungwoong Yang**, Beom Yeol Yun, Sumin Kim, Exterior insulation finishing system using cementitious plaster/microencapsulated phase change material for improving the building thermal storage performance
Construction and Building Materials, 299, 123932, (2021-09)
25. Dimberu G. Atinafu, Beom Yeol Yun, Young Uk Kim, **Sungwoong Yang**, Seunghwan Wi, Sumin Kim, Thermoconductive n-alkane enables ultra-high shape/thermal stability, durability, and ambient thermal energy harvesting
Chemical Engineering Journal, 420, 130374, 2021-09
24. Seunghwan Wi, Yujin Kang, **Sungwoong Yang**, Young Uk Kim, Sumin Kim, Hazard evaluation of indoor environment based on long-term pollutant emission characteristics of building insulation materials: An empirical study
Environmental Pollution, 285, 117223, (2021-09)
23. Hyeonseong Yuk, **Sungwoong Yang**, Seunghwan Wi, Yujin Kang, Sumin Kim, Verification of particle matter generation due to deterioration of building materials as the cause of indoor fine dust
Journal of Hazardous Materials, 416, 125920, (2021-08)
22. Hyeonseong Yuk, **Sungwoong Yang**, Young Uk Kim, Beom Yeol Yun, Seunghwan Wi, Sumin Kim, Analysis of the influence of moisture and temperature control according to the combination of porous sediment and MPCM
Journal of Industrial and Engineering Chemistry, 97, 390-401, (2021-05)
21. Jiwon Yoo, Seong Jin Chang, **Sungwoong Yang**, Seunghwan Wi, Young Uk Kim, Sumin Kim, Performance of the hygrothermal behavior of the CLT wall using different types of insulation; XPS, PF board and glass wool
Case Studies in Thermal Engineering, 24, 100846, (2021-04)
20. Seunghwan Wi, Ji Hun Park, Young Uk Kim, **Sungwoong Yang**, Sumin Kim, Thermal, hygric, and environmental performance evaluation of thermal insulation materials for their sustainable utilization in buildings
Environmental Pollution, 272, 116033, (2021-03)
19. Young Uk Kim, Ji Hun Park, Beom Yeol Yun, **Sungwoong Yang**, Seunghwan Wi, Sumin Kim, Mechanical and thermal properties of artificial stone finishing materials mixed with PCM impregnated lightweight aggregate and carbon material
Construction and Building Materials, 272, 121882, (2021-02)
18. **Sungwoong Yang**, Seunghwan Wi, Hyun Mi Cho, Ji Hun Park, Beom Yeol Yun, Sumin Kim,

Developing energy-efficient temporary houses for sustainable urban regeneration: manufacturing homes with loess, pearlite, and vermiculite
Sustainable Cities and Society, 61, 102287, (2020-10)

17. Hyun Mi Cho, Beom Yeol Yun, **Sungwoong Yang**, Seunghwan Wi, Seong Jin Chang, Sumin Kim, Optimal energy retrofit plan for conservation and sustainable use of historic campus building: Case of cultural property building
Applied Energy, 275, 115313, (2020-10)
16. Jongki Lee, Seunghwan Wi, **Sungwoong Yang**, Sumin Kim, Experimental study and assessment of high-tech thermal energy storing radiant floor heating system with latent heat storage materials
International Journal of Thermal Sciences, 155, 106410, (2020-09)
15. Hyun Mi Cho, **Sungwoong Yang**, Seunghwan Wi, Seong Jin Chang, Sumin Kim, Hygrothermal and energy retrofit planning of masonry façade historic building used as museum and office: a cultural properties case study
Energy, 201, 117607, (2020-06)
14. **Sungwoong Yang**, Seunghwan Wi, Ji Hun Park, Hyun Mi Cho, Sumin Kim, Framework for developing a building material property database using web crawling to improve the applicability of energy simulation tools
Renewable & Sustainable Energy Reviews, 121, 109665, (2020-04)
13. Beom Yeol Yun, Ji Hun Park, **Sungwoong Yang**, Seunghwan Wi, Sumin Kim, Integrated analysis of the energy and economic efficiency of PCM as an indoor decoration element: Application to an apartment building
Solar Energy, 196, 437-447, (2020-01)
12. Seunghwan Wi, **Sungwoong Yang**, Ji Hun Park, Seong Jin Chang, Sumin Kim, Climatic cycling assessment of red clay/perlite and vermiculite composite PCM for improving thermal inertia in buildings
Building and Environment, 167, 106464, (2020-01)
11. Jisoo Jeon, Ji Hun Park, Seunghwan Wi, **Sungwoong Yang**, Yong Sik Ok, Sumin Kim, Characterization of biocomposite using coconut oil impregnated biochar as latent heat storage insulation
Chemosphere, 236, 124269, (2019-12)
10. Hwayoung Lee, **Sungwoong Yang**, Seunghwan Wi, Sumin Kim, Thermal transfer behavior of biochar-natural inorganic clay composite for building envelope insulation
Construction and Building Materials, 223, 668-678, (2019-10)
09. Seunghwan Wi, **Sungwoong Yang**, Umberto Berardi, Sumin Kim, Assessment of recycled ceramic-based inorganic insulation for improving energy efficiency and flame retardancy of buildings
Environment International, 130, 104900, (2019-09)
08. Beom Yeol Yun, **Sungwoong Yang**, Hyun Mi Cho, Seunghwan Wi, Sumin Kim, Thermal storage effect analysis of floor heating systems using latent heat storage sheets
International Journal of Precision Engineering and Manufacturing-Green Technology, 6(4), 799-807, (2019-08)
07. **Sungwoong Yang**, Seunghwan Wi, Ji Hun Park, Hyun Mi Cho, Sumin Kim, Novel proposal to overcome insulation limitations due to nonlinear structures using 3D printing: hybrid heat-storage system

Energy and Buildings, 197, 177-187, (2019-08)

06. Seunghwan Wi, **Sungwoong Yang**, Jongki Lee, Seong Jin Chang, Sumin Kim, Dynamic heat transfer and thermal performance evaluation of PCM-doped hybrid hollow plaster panels for buildings
Journal of Hazardous Materials, 374, 428-436, (2019-07)
05. **Sungwoong Yang**, Seunghwan Wi, Jongki Lee, Hwayoung Lee, Sumin Kim, Biochar-red clay composites for energy efficiency as eco-friendly building materials: Thermal and mechanical performance
Journal of Hazardous Materials, 373, 844-855, (2019-07)
04. Beom Yeol Yun, **Sungwoong Yang**, Hyun Mi Cho, Seong Jin Chang, Sumin Kim, Design and analysis of phase change material based floor heating system for thermal energy storage
Environmental Research, 173, 480-488, (2019-06)
03. Jongki Lee, Seunghwan Wi, Beom Yeol Yun, **Sungwoong Yang**, Ji Hun Park, Sumin Kim, Development and evaluation of gypsum/shape-stabilization phase change materials using large-capacity vacuum impregnator for thermal energy storage
Applied Energy, 241, 278-290, (2019-05)
02. Jisoo Jeon, Ji Hun Park, Seunghwan Wi, **Sungwoong Yang**, Yong Sik Ok, Sumin Kim, Latent heat storage biocomposites of phase change material-biochar as feasible eco-friendly building materials
Environmental Research, 172, 637-648, (2019-05)
01. **Sungwoong Yang**, Seunghwan Wi, Jongki Lee, Jisoo Jeon, Sumin Kim, Thermal performance evaluation of Hwangtoh board developed with styrene butadiene latex/SSPCM
Construction and Building Materials, 200, 310-317, (2019-03)

DOMESTIC JOURNAL PAPERS

04. **양성웅**, 김영욱, 김수민
화재 확산 방지를 위한 Biochar-황토 복합 건축자재의 난연성능 평가
설비공학논문집, 35(5), 235-243. 2023-05
03. **양성웅**, 강유진, 김수민
3D 프린팅 건축물의 화재확산 방지 및 난연성능 향상을 위한 황토-다공성 경량골재 복합재
한국생활환경학회지, 30(1), 103-109, 2023-02
02. **Sungwoong Yang**, Seunghwan Wi, Sumin Kim
Development Methodology of Web Crawling Based on Physical Properties DB of Building Materials for the Efficiency of Building Energy Simulation
한국생활환경학회지, 25(4), 467-475. 2018-08
01. **Sungwoong Yang**, Ji Hoon Kim, Seunghwan Wi, Sumin Kim
An Experimental Study of the Indoor Thermal Environment of One-personhouseholds under Various Conditions of Daily Life
한국생활환경학회지, 23(4), 536-544. 2016-08

PATNETS (IN KOREA)

3. Sumin Kim, **Sungwoong Yang**, Jihee Nam
Total Heat Exchange Ventilation System using an air inflow and outflow direction conversion function equipped with a Phase Change Material Part and Control Method thereof No. 10-2022-0128388 (2022.10.07)
2. Sumin Kim, **Sungwoong Yang**
Total Heat Exchange Apparatus having Phase Change Material Element with mesh structure No. 10-2021-0153665 (2021.11.10)
1. Sumin Kim, Seunghwan Wi, **Sungwoong Yang**, Hyang-In Jang, Kyung-Soo Kim
“Data aggregation system and method of building material property”
Patent application, No.10-2018-0125268 (2018.10.19)