

Day 3: 5/20/2026 (Wed)

Session 4

11:00 - 12:30

4-1 Sponserd Session by ERC (Engineering Research Center) at Chung-Ang University, Korea

Location: SGM 101 / Session chair: Jin Woo Moon

Paper Number	Author	Title
47*	Seungwon Seo, Choongwan Koo, Dajeong Choi, Yujin Choi and Seongkyun Ahn	Toward Carbon-Neutral Construction: Clustering-Based Analysis of Site Electricity and Abnormal Use
101*	Hae Won Lee, Ji Young Yun and Jin Woo Moon	Development and Applicability Evaluation of an Image-Based BMI Estimation Model for Occupant-Centric Thermal Environment Control
161*	Sarath Raj, Jung Da-Eun, Jeong Ji Hwan, Kanghee Lee and Geun Young Yun	Machine-Learning Based Downscaling of GK-2A Land Surface Temperature: A study of Seoul, South Korea
194*	Jun Kyu Kim, Jin Chul Park and Se Hyeon Lim	Analysis of the Lifecycle Carbon Reduction Effects of Public Daycare Centers through Green Remodeling
244*	Sim-Cheon Yuk, Han-Seung Lee, Seo-Yeon Jo and In-Beom Jo	Evaluation of Resistance to Chloride Attack of Concrete Repair Method Using a Combined Application of Silicone-Based Water Repellent
570*	Chan Hyeok Kang, Bo Kyung Jung, Tae Kyu Oh, Young Cheol Kwon, and Chang Ho Choi	Automated IFC Generation and Machine Learning-Based λ -Correction for Embodied Carbon Estimation of Buildings

4-2 Indoor Air Quality

Location: SGM 123 / Session chair: Gerrid Brockmann

Paper Number	Author	Title
132*	[Sponsor team: ERC] Hye In Kim, Kang Woo Bae, Ji Yeon Hyun and Jin Woo Moon	Evaluating the Scalability of a PM2.5 Indoor Concentration Prediction Model using Transfer Learning
260	Renate Jaanus, Kristin Taru, Alo Mikola and Jarek Kurnitski	Experimental Evaluation of CO ₂ Tracer Gas Dosing Methods for Reliable Ventilation Effectiveness Measurements with a Point Source
323	Haedeun Park, Hyeonwoo Jeong, Jiyeong Byeon, Nayun Kim and Seong Jin Chang	Development of wood welding technology for jointing and pollutant emission evaluation
415	Neelima Geetha Archana Madasu, Sanand Maddipati and Elham Fini	The Role of Bio-Based Wall Insulation in Enhancing Indoor Air Quality and Human Performance
521	Yunus Emre Cetin, Zihao Wang, Gerrid Brockmann and Martin Kriegel	Ventilation Effectiveness in a Test Room: Experiments and CFD Validation
528	Zhongqing Yang and Hikaru Kobayashi	Occupant-Distribution-Based CO ₂ Measurement to Optimize Demand-Controlled Ventilation in Office Spaces

4-3 Energy Efficiency, Conservation, Renewable Energy, and Embodied Carbon

Location: SGM 124 / Session chair: Qiuhua Duan

Paper Number	Author	Title
97	Ruixiaoxiao Zhang and Minhyun Lee	Energy Management Strategies in Smart City Microgrids Considering Power Output Uncertainties and Seasonal Variation
130	Akihiro Imaizumi, Hideki Tanaka, Hideharu Komoda and Takeshi Watanabe	Cooperative control method for Distributed Energy Resources using air conditioning heat source systems in multiple buildings
148	Mao Serikawa, Seiichi Kashihara, Junta Nakano, Takashi Akimoto, Toshiharu Ikaga and Shuzo Murakami	Economic and environmental benefits of using batteries and heat pump water heaters to effectively utilize daytime electricity
222	Junlang Zhu, Hao Tang, Xiangzhe Xi, Yang Geng and Borong Lin	Planning High-PV Penetration Park: Enhancing Local PV Utilization and Economic Efficiency through Multi-Energy Storage
251	Youssef Benmoussa, Joud Al Dakheel, Nassim Sebaibi and Mohamed El Mankibi	Enhancing Building Energy Flexibility Through Demand Response-Enabled Heating and Ventilation for Flexible IEQ Management
564	Qiuhua Duan and Christy Ponnann	Closed-Loop Digital Twins for Building-Integrated Photovoltaics: A Focused Review

4-4 Building Technology and Performance

Location: GFS 116 / Session chair: Meng-Chieh Jeffrey Lee

Paper Number	Author	Title
242*	[Sponsor Team: ERC] Jiwoo Jang and Hanseung Lee	An Experimental Study on a Paper-Based Sensor for Chloride Ion Measurement in Fresh Concrete
37	Indra Permana, Alya Penta Agharid, Fu Jen Wang, Zulvi Alfiqri Hidayatulloh and Chu-Cheng Wei	Enhancing Biotechnology Cleanroom Performance through Field Recovery Testing and CFD-based Airflow Optimization
113	Kättriin Onemar, Raimo Simson and Jarek Kurnitski	Dynamic Modeling and Experimental Validation of Floor Cooling Systems for Overheating Assessment and Condensation Risk Considerations in Residential Buildings
155	Minzhi Ye, Masashi Momota, Aoto Kumagai, Hajime Ogata and Hyo Ogawa	Post-construction evaluation of building envelope thermal performance using neural networks
457	Nasim Ildiri and Mark Hernandez	Effects of HVAC Duct Cleaning on Indoor Air Quality Parameters: A Multi Season Demonstration of Exposure Assessment in Occupied Public School Classrooms
646	Beom Yeol Yun, In-Hwan Lee, Sang-Joon Lee, Chul-Ki Kim, Hyung Woo Lee and Tae-Ik Hwang	Field Application of EMC-Based Temperature–Humidity Monitoring for Durability Risk Assessment in Timber Buildings

4-5 Health, Wellbeing, and Human Behaviors in the Built Environment

Location: GFS 101 / Session chair: Enrico Fabrizio

Paper Number	Author	Title
78	Kensuke Watanabe, U Yanagi, Yoshiki Shiraishi and Koichiro Asano	Mycobiome of air purifier filters in allergic bronchopulmonary mycosis patients' homes
105	Iasmin Lourenço Niza, Mateus Pedrosa Braga and Evandro Eduardo Broday	Assessment of Indoor Environmental Quality (IEQ) in university classrooms by periods of the day through discriminant analysis
139	Toby Cheung and Eikichi Ono	Occupant Environmental Satisfaction in a Semi-Outdoor Workspace versus Air-Conditioned Offices in Singapore
146	He Wu, Hisato Osawa and Taro Mori	Investigation of Legionella Transmission Using CFD Simulation Coupled with GIS
187	Amanda Quarshie and Cristina Poleacovschi	Residential Cooking and Kitchen Ventilation Behaviors in Alaska Native Households: Foundations for Indoor Air Quality Assessment
239	Houda Er-Retby, Myriam Bahrar, Mohamed Oualid Mghazli, Mostafa Benzaazoua and Mohamed El Mankibi	Experimental Assessment of Indoor Air Quality and Thermal Comfort Performance Using Fuzzy Logic Control for Natural and Mechanical Ventilation Systems

4-6 Smart Cities and Green Infrastructure

Location: GFS 207 / Session chair: Xu Han

Paper Number	Author	Title
150	Ryoma Okuda, Hideki Tanaka, Hiroaki Tanaka and Fuminori Nishiyama	Optimal control method for HVAC heat source system based on operational data utilizing machine learning
163	Doyun Lee, Young Jik Youn and Wonseok Oh	Microclimate heterogeneity and operational strategies in indoor vertical farm
177	Jeonghoon Choi, Muhammad Ihza Febriyan Pagri and Dongjun Suh	Sensor-Only Occupant-Centric Ventilation Control with LLM-Augmented Decision Support for Human–Building Interactions
364	Chanuk Lee and June Young Park	Deep reinforcement learning for citizen-centric building retrofit decision making under behavioral uncertainty of a series game scenario
431	Hongzhi Liu, Takumi Tanabe, Bozhou Dang and Katsunori Nagano	Implementation of an Optimized Control Strategy for Energy Storage Systems in HEMS (Home Energy Management System) in Cold Climate
551	Nan Wang and Giorgia Chinazzo	An Immersive VR-Based Workflow for Evaluating Automated Shading Control and Visual Aging Effects within Smart Cities

4-7 Sustainable Building Materials and Circular Economy

Location: GFS 118 / Yumna Kurdi

Paper Number	Author	Title
210	Todd Walsh, Yumna Kurdi, Tharique De Silva and Bruce Haglund	Overcoming Construction Barriers to Mass Timber Adoption in the Inland Northwest: A Case Study of the ICCU Arena
299	Dongchan Jin, Young Uk Kim and Sumin Kim	Development and performance evaluation of recycled insulation materials from waste firefighting suits for fire-resistant building pipes
302	Won Duk Suh, Jihee Nam and Sumin Kim	Aging of indoor finishing materials under long-term temperature exposure: Focus on surface degradation and chemical oxidation
326	Jae Hyuck Jung, Young Uk Kim and Sumin Kim	Thermal performance of lightweight concrete with a novel aggregate from cement-coated recycled polyurethane foam impregnated with phase change material
421	Najah Majouri, Mohamed El Mankibi and Jalila Sghaier	Sustainable Fired Clay Composites with Root Palm and Diss Fibers for Energy-Efficient and Healthy Indoor Environments
536	Tannaz Afshar Bakeshloo, Azadeh Sawyer and Joshua Lee	Life Cycle Assessment of Building Deconstruction: Insights from Ten Projects

Session 5
1:30 - 3:00

5-1 Poster Session

Location: VHE Courtyard

Paper Number	Author	Title
19	Jong-Il Bang and Minki Sung	Disinfection Effectiveness of UR-UVGI for Airborne Bacteria Based on Equivalent Air Change Rate in a Multi-bed Patient Room
27	Jaekyoung Kim, Donghyun Koo, Taeyoon Kim, Dasom Hur and Seungkwon Jung	Development and Application of a Spatiotemporal Validation Method for CFD-based Analysis of Urban Heat Island and Thermal Comfort
46	Chun Han Li	Evaluation of Membrane-Based Dehumidification Systems: Pressure Permeance of Dry Air in Commercial and Composite Membranes
52	Jaekyoung Kim, Donghyun Koo, Taeyoon Kim, Samuel Park and Soonchul Kwon	Development of a predictive Model for Urban Cooling Blue Infrastructure using Integrated CFD and U-Net CNN
56	Katalin Fülep, Claudia Kopic and Martin Kriegel	Balancing Infection Risk and Energy Consumption in Hospitals: A Data-Driven Ventilation Strategy
57	Ali Moazzeni Khorasgani , Ghazal Asadi Eskandar	Sustainable Mycéliums Composites for Building Construction
58	Milad Jafari and Ehsan Mousavi	Data-driven approach for studying MRI units' energy consumption
77	Chih-Hao Chen	New Ionic Liquid for Liquid Desiccant Air Conditioning system
142	Jinkyun Cho, Jongwoon Song, Wonseok Oh, Sangwoo Byun, Jihyuk Ahn and Haram Kim	Engineering resilient ventilation systems for rapid-deployment medical isolation units
151	Jyun-De Liang and Cheng-Kai Hung	Design and Study of a Vapor Compression Cycle Household Dehumidifier Using Ionic Liquid Solution
200	Yi Chun Chu, Jia Kun Chen, Yan Cheng Chiang and Tzu I Tseng	Impact of Inlet Flaps on Ammonia Distribution in a Water-Pad Layer House: A Case Study in Yunlin, Taiwan
234	Shunsuke Fujitsubo, Yasuyuki Shiraishi, Yoshiaki Ushifusa and Masayuki Watanabe	Optimization of Annual Operation of a PV-HPWH-BT Cooperative System in an All-Electric House to Achieve Maximum Electricity Self-Sufficiency
253	Seun Lee, Kyu-Nam Rhee, Chul Kim and Eun Song Shin	Evaluation of empirical HVAC system sizing methods to identify energy performance impacts on code-compliant simulations
307	Dong Yoon Park	Individual thermal comfort prediction using ensemble transfer learning and physiological signals under different physical characteristics
312	Sung Won Cho, Ji Hyun Yoo, Seung Rim Lee, Yi Zhou Wang and Jun Seok Park	Determining the Minimum Monitoring Period for Predicting Occupant behaviors related to manual control of Windows in Residential Buildings
339	Ye-Bin Shin, Deuk-Won Kim, Wangje Lee, Jae-Won Jeong and Min-Hwi Kim	Comparative Analysis of PCM- and Water-Based Thermal Energy Storage Units in a Photovoltaic and Thermal System for Residential Applications

384	Krzysztof Grygierek and Joanna Ferdyn-Grygierek	Impact of ventilation stacks on airflow in naturally ventilated buildings: simulation vs. measurements
385	Krzysztof Grygierek, Joanna Ferdyn-Grygierek, Stanisław Kocik and Aleksandra Lipczynska	Assessment of solar radiation distribution in indoor spaces for local thermal comfort evaluation
399	Kotoha Shin, Yasuyuki Shiraishi, Yoshiaki Ushifusa and Masayuki Watanabe	Optimization of Distributed Energy System Operation in All-Electric Districts with Electricity Sharing
429	Jeongil Kim, Takashi Kurabuchi, Sihwan Lee and Hayato Kiyosuke	Experimental Evaluation of Particle-Based Tracers for Indoor Ventilation Performance Assessment
494	Yi-Pin Lin, Tzu-Ling Huang, Chi-Ming Lai and Rong-Horng Chen	Ventilation and thermal performance of monitor roofs equipped with internally mounted PV-powered fans
509	Soroush Samareh Abolhassani, Alimohammad Sedaghat, Mojtaba Parsaee, David J.Sailor and Sami G. Al-Ghamdi	Building and Census-Tract-Scale Validation of a Coupled Urban Energy–Microclimate Digital Twin (CityDigitalTwin): Mobile Traverse Observations and Utility-Billing Benchmarking
511	Namchul Seong, Daeung Kim and Kyungmo Kang	Energy Saving of HVAC System Using Integrated Machine Learning Algorithm (IMLA)
550	Zhuoying Lin, Yi Fang, Marcus Young, Qin Xia, Caleb Kwon, Catherine Banach, Haoran Zhao, Tim Tyner, Stephanie Holm, Anabelle Garza, Arlette Garcia-Ramirez, Briseida Vasquez, Debra Manzo Garcia, Jesus Rivera, Amy Dryden, John Balmes, Brett Singer and Suzanne Paulson	Measured indoor particulate matter, black carbon, and oxidative potential before and after replacing gas with induction electric cooking in homes with a child with asthma
561	Anders Bjork, Ella Tucker and Charlie Thornton	Bridging New Air Cleaner Measurement Standards and Indoor Air Quality Simulation: An In-Progress Method in CONTAM
569	Hye-Gi Kim, Hye-Ry Shin, Han-Gyeong Chu, Doo-Sung Kim and Deuk-Woo Kim	Stepwise Address Matching Methodology for National-Scale Building Energy Database Integration
628	Saemi Shin and Joung Ryeul Sohn	Measurement of Fine Particulate Matter Concentrations and Time-Series Outlier Analysis at a Korean Screen golf course
629	Joung Ryeul Sohn and Saemi Shin	Comparative Analysis of Health Risks Associated with the Operation of Ventilation Systems in a School Kitchen
640	Jieun Han, Jeong Hoon Lee, Yoonhee Lee, Minjung Kim, Dongryul Park and Hyungho Park	Real-time Personalized Comfort Control Algorithm utilizing User Location and Machine Learning-based PMV Prediction
647	Kuo-Hsiung Lin, Tzu-Jui Huang, Jun-Hao Jhu and Hung-Lung Chiang	Assessment of Volatile Organic Compound Emissions from Liquid Cleaners and Personal Care Products

Session 6
3:30 - 5:00

6-1 Indoor Air Quality

Location: SGM 123 / Session chair: Ayça Tokuç

Paper Number	Author	Title
127	Kiriti Sahoo, E V S Kiran Kumar Donthu and Siva Rama Krishna Evani	Role of portable-mechanical air ionisers on indoor air quality in Indian office buildings
159	Elham Hasani Alavy and Clifford B. Fedler	Safety Evaluation of Air Cleaner Technologies in the Building Sector
354	Yonca Yaman, Ayça Tokuç, Seda Nur Apdik, İrem Deniz, Azize Ayol, Gizem Tuna Tuygun, Tunahan Akış and Mehmet Akif Ezan	Beyond Filters: Evaluating Biotechnological Indoor Air Purification with Microalgae Systems
408	Semi Park, Rafi Uddin and Insung Kang	A state-of-the-air review and laboratory experiments of do-it-yourself (DIY) air cleaners
424	Wenfeng Huang, Tong Lin and Jianshun Zhang	Modeling and Simulation of Indoor Aerosol Particle Behavior under Bipolar Ionization-Based Air Cleaning
649	Kuan-Lun Pan, Pei-Yun Shih, Zhen-Shuen Choo and Jo-Chen Hsu	Removal of isopropyl alcohol (IPA) in a semiconductor facility using ozone catalytic oxidation

6-2 Energy Efficiency, Conservation, Renewable Energy, and Embodied Carbon

Location: SGM 124 / Session Chair: Qiuhua Duan

Paper Number	Author	Title
97	Ruixiaoxiao Zhang and Minhyun Lee	Energy Management Strategies in Smart City Microgrids Considering Power Output Uncertainties and Seasonal Variation
130	Akihiro Imaizumi, Hideki Tanaka, Hideharu Komoda and Takeshi Watanabe	Cooperative control method for Distributed Energy Resources using air conditioning heat source systems in multiple buildings
148	Mao Serikawa, Seiichi Kashihara, Junta Nakano, Takashi Akimoto, Toshiharu Ikaga and Shuzo Murakami	Economic and environmental benefits of using batteries and heat pump water heaters to effectively utilize daytime electricity
251	Youssef Benmoussa, Joud Al Dakheel, Nassim Sebaibi and Mohamed El Mankibi	Enhancing Building Energy Flexibility Through Demand Response-Enabled Heating and Ventilation for Flexible IEQ Management
562	Yizhou Yang and Qiuhua Duan	Predictive Control of Kinetic BIPV Fins for Comfort-Efficient Building Operation
578	Wooyoung Jung	Chain-of-Thought Prompting for Human-Centered Home Energy Management

6-3 Building Technology and Performance

Location: SGM 101 / Session chair: Zheng Tan

Paper Number	Author	Title
145	Shu Han Liu, Meng-Chieh Jeffrey Lee, Yi-Chun Kuo and Tien-Chun Cheng	Impact of CO2 concentration on Elderly residential by EEG& ECG
182	Shisheng Chen and Ruohan Xu	Enhancing Pedestrian Thermal Comfort through Scalable and Energy-Efficient Ventilation Systems under Extreme Heat
258	Jialiang Guo, Ngoc Dung Ngo Hoang and Hilde Breesch	Outdoor Microclimate Variations and Indoor Thermal Stress: Summer Field Measurements in an Elderly Care Facility
499	Mohammad Saleh Nikoopayan Tak and Yanxiao Feng	The Naturalness Effect: Open-Database Analysis of Ventilated and Mechanically Cooled Spaces
502	Tsz Him Ian Chiu, Yijin Zhao and Julian Wang	Thermal Sensitivity and Biomarkers as Predictors of Individual Heat-Stress Vulnerability in Indoor Environments
525	Guancong Ren and Zheng Tan	Evaluating Walking Thermal Comfort in Urban Spaces Using Machine Learning: The Role of Physiological and Microclimate Factors

6-4 Health, Wellbeing, and Human Behaviors in the Built Environment

Location: GFS 116 / Session chair: June Young Park

Paper Number	Author	Title
164	Shaymaa Al Marzouqi, Dongwoo Jason Yeom, Kamil Kaloush and Elham Fini	Daylight Timing, Natural Scent, and Outdoor View on Cognitive Performance in Office Settings
173	Mehmet Furkan Özbey, Dolaana Khovalyg, Neşe Alkan and Cihan Turhan	Effect of Mood States on Thermal Sensation: Cultural and Gender Differences in Türkiye and Switzerland
248	Taketo Suzuki and Tatsuya Hayashi	The relationship between worker's work style and wellness in activity-based working (ABW) offices
360	Negar Salahi and June Young Park	Investigating personal thermal comfort for wheelchair users using a non-intrusive wheelchair-based sensing
439	Xin Guo, Emanuel Boutros, Bing Guo, Sameeraa Soltanian-Zadeh and Jianshun Zhang	Personal Environmental Control Systems: How Occupants Interact under Different Temperature in Office Environments
538	Shevva Beiglary and Julian Wang	Machine Learning-Based Prediction of Circadian Lighting Exposure: A Practical Framework for Nursing Homes

6-5 Thermal Comfort

Location: GFS 101 / Session chair: Ali Ghahramani

Paper Number	Author	Title
33	Anwar Ibrahim, Ahmad Freewan and Majd Momani	Exploring Factors Influencing Occupant Behavior and Thermal Perception in Apartment Buildings: Irbid/Jordan as a case study
44	Wataru Umishio, Naoki Kagi, Isao Yamada, Lisa Yumae and Tomohiro Konda	Thermal Comfort and Productivity under Air Conditioning Control Based on Metabolic Rate Estimation from Thermal Images
348	Taeyeon Kim, Seheon Kim, Yingdao Nan and Jae-Weon Jeong	Data-Driven Estimation of Occupant Thermal Preferences from Air Conditioner Control Behavior in Residential Units
447	Kai Chen and Ali Ghahramani	Demonstrating Challenges in Predicting Occupant Temperature Setpoints: A Comparative Evaluation of Traditional and Transformer-Based Machine Learning Models
464	Ryota Iihara and Kazuyo Tsuzuki	Effects of Palms Cooling on the Human Body During Sleep in Hot Environments
469	Yijin Zhao and Julian Wang	How heat stress impairs cognition: A review of cognitive performance in indoor passive hyperthermal environments

6-6 Energy Efficiency, Conservation, Renewable Energy, and Embodied Carbon

Location: GFS 118 / Session chair: Jinkyun Cho

Paper Number	Author	Title
88	Keisuke Kurobe and Hideki Tanaka	Simulation Analysis of District Heat Source Water Supply System Configuration for Urban Areas in Warm Climates
108	Soowon Chae, Yeonju Kang, Hyunmoon Cho, Kwonye Kim and Yujin Nam	Study on Reinforcement Learning-Based Control for PVT-Heat Pump Integrated Thermal Storage
143	Jinkyun Cho, Joo Hyun Moon, Sangwoo Byun and Jikyum Kim	Sustainable cooling solutions for high-density data centers: A numerical analysis of liquid cooling optimization
166	Chi Ling Liu and Yaw-Shyan Tsay	Development of an Integrated Decision-Support Platform for WBLCA in Early-Design Stage
267	Mohamed Dardir and Ali Khorasgani	Integrated Phase Change Materials and Solar Energy Generation for High-Performance Buildings in Extreme Weather
547	Wanyu Rengie Chan, Bijay Sharma, Brandon Bilzman, William Delp and Brett Singer	Methane Emission Measurements and Occupant Survey of Gas Appliances in California Homes

6-7 Climate Change Adaptation, Resilience, and Environmental Policy

Location: GFS 207

Paper Number	Author	Title
63	Yasuyuki Ishida, Shuhei Fujita, Wang Zheng, Miguel Yamamoto, Yusuke Hiraga and Ryotaro Tahara	Development of LCZ Mapping Method Combining GIS with Machine Learning
104	Subin Lin, Jason Leong, Boo Cheong Khoo and Hee Joo Poh	Aerodynamic Response and Ventilation Enhancement in Urban Street Canyons through Building Porosity: A Comparative Numerical and Experimental Study
263	Mana Nemat Aghdam and Manish Dixit	Empirical Fragility-Based Adjustment of Embodied Carbon Using Machine-Learning-Derived Post-Hurricane Fragility Data
291	Kanxuan He and Hongshan Guo	Data-driven cross-national climate zone classification for building codes: a future-compatible framework
325	Douaa Al-Assaad, Ilaria Pigliautile, Yanghao Cui, Ongun Kazanci, Jun Shinoda, Bjarne Olesen, Joyce Kim, Joo-Ho Choi, Wooyung Jung and Mariya Bivolarova	A classification scheme for exploring the role of wearable personalized environmental control systems (PECS) in a changing climate

6-8 Online Session

Location: GFS 107

Paper Number	Author	Title
227	Naja Aqilah, Sheikh Ahmad Zaki, Noor Alam and Fitri Yakub	Environmental, Physiological, and Subjective Assessments of Thermal Comfort in a School Classroom
480	Sadia Israt Anam and Fan Zhang	Heart Rate Variability as a Marker of Cognitive Workload: Influence of Temperature and Task Complexity in Office Settings
527	Kátia Fugazza, Pedro Braga and Sylvia Meimaridou Rola	Architectural Retrofit and HVAC Modernization in Existing Hospitals: A Case Study of the Municipal Hospital Carlos Tortelly
651	Shuyi Chen, Yihu Zhang, Jun Xiao, Ziliang Wei, Hao Zhou, Yang Geng and Borong Lin	Seasonal and spatial differences of building occupancy profiles: Evidence from mobile data