



The 5TH INTERNATIONAL
CONFERENCE ON
BUILDING ENERGY
AND ENVIRONMENT

25th – 29th July 2022
Montréal



GINA CODY
SCHOOL OF ENGINEERING
AND COMPUTER SCIENCE

CHAIR'S WELCOME

Dear colleagues, friends, sponsors and exhibitors,

On behalf of the Organizing Committee and Colleagues from the Centre for Zero Energy Building Studies (CZEBS) at Concordia University, it is my great pleasure and honor to extend to you a warmest invitation to attend the 5th International Conference on Building Energy and Environment (COBEE 2022) in the historical and multicultural city of Montréal, Canada.



Starting in 2008, the International Conference on Building Energy and Environment has become the flagship platform for the science and engineering findings, innovations, and unique networking opportunities in the field of Building Energy and Environment worldwide.

With more than 560 abstract submissions and over 400 accepted papers from 171 universities, 40 countries, and 6 continents, COBEE2022 is one of the largest conferences in COBEE history. It is also one of the largest Canadian conferences on Building Energy and Environment, with more than a quarter of the papers coming from within Canada.

The Conference program will be ground-breaking with its diversified topics covering the current critical and emergent issues on energy, climate change, health & renewables in smart buildings, communities & cities.

We are proud to bring together seven keynote lectures from world-renowned invited speakers and 80 sessions with unique in-person and interactive remote experiences and several exhibitors from our industrial sponsors

It is only through an exchange of the widest variety of research that we can offer the best program and benefits to our communities and industries.

We look forward to welcoming you to an inspiring educational, and enjoyable program.

With best regards,



Prof. Liangzhu (Leon) Wang, Ph.D.
General Chair of COBEE 2022
Concordia University Research Chair
Department of Building, Civil and Environmental Engineering (BCEE)
Gina Cody School of Engineering and Computer Science

KEYNOTE PRESENTATIONS



Matthaios Santamouris

July 26th

University of New South Wales, Australia

"Urban Overheating and Its impact. Recent Progress on Mitigation Technologies!"



Colleen Mercer-Clarke

July 27th

International Federation of Landscape Architects, Canada

"The Nature of Progress: How working to integrate society with environment will transform our society and our future."



Andrew Persily

July 27th

U.S. national Institute of Standards and Technology, USA

"CO2 Monitoring to Manage Ventilation and Indoor Air Quality: Something Old, Something New!"



Yuguo Li

July 28th

Hong Kong University, China

"Dilution for avoiding SARS-CoV-2 transmission"



Tianzhen Hong

July 28th

Lawrence Berkeley National Laboratory, USA

"Decarbonization of buildings: Strategies integrating energy sufficiency, efficiency, flexibility, and resiliency."



Michael Lacasse

July 29th

National Research Council Canada, Canada

"Nature-based solutions for buildings and communities"



Ian Beausoleil-Morrison

July 29th

Carleton University, Canada

"Meeting cold-climate housing energy needs with solar: opportunities and challenges."

SOCIAL EVENTS

Check-in and info table

Time: 08:00—17:00, *Everyday.*

Location: John Molson (MB) Building

Reception

Time: 18:00, *Monday July 25.*

Location: Concordia Webster Library
(LB)

Opening Ceremony

Time: 08:30—10:00, *Tuesday July 26.*

Location: Hall (H) Building

Banquet (Invitation Only)

Time: 18:00, *Wednesday July 27.*

Location: Hotel InterContinental
Montreal

Closing Ceremony

Time: 14:30, *Friday July 28.*

Location: John Molson (MB) Building

Scan here for more information:



JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE (JSPS) WORKSHOP ON SCIENTIFIC AND TECHNICAL PUBLISHING

This session is based on Dr. Chen's and Stathopoulos' experience as editors of international journals such as Elsevier, the journal of *Wind Engineering and Industrial Aerodynamics*, and *Building and Environment*. In this session the entire publication process, from submission to the final disposition of a paper, will be demystified. Peer review processes with its difficulties will be analyzed. Useful bibliographic parameters, including the impact factor, will be presented and discussed. Helpful hints regarding the publication process will also be provided. This session will be beneficial to post-graduate students, researchers, and junior Assistant Professors who often struggle with their journal publications and make regretful, but totally avoidable, mistakes.



Dr. Ted Stathopoulos is currently a Professor at the Department of Building, Civil and Environmental Engineering at Concordia University. He received his Civil Engineering Diploma from the National Technical University of Athens and both his M.E.Sc. and Ph.D. from the University of Western Ontario. His research on wind effects on buildings and their codification has influenced the development of codes and standards worldwide. With an extensive publication record of more than 500

articles in refereed journals and conference proceedings, he is a member of the ASCE 7 Committee on Minimum Wind Loads, a registered professional engineer in Québec, Ontario, and Greece, a Fellow of the Canadian Academy of Engineering, a Fellow of the Institution of Civil Engineers, and a Fellow of the American Society of Civil Engineers and Structural Engineering Institute. He is also the Editor of the Journal of Wind Engineering and Industrial Aerodynamics.



Prof. Qingyan "Yan" Chen is Director of PolyU Academy for Interdisciplinary Research (PAIR), Chair Professor of Building Thermal Science of the Hong Kong Polytechnic University, China. He earned his B.Eng. from Tsinghua University and M.Eng. and Ph.D. from the Delft University of Technology. He worked as Assistant and Associate Professor at MIT, and James G. Dwyer Professor of Mechanical Engineering at Purdue University, USA. Prof. Chen's current research topics include

indoor environment, aircraft cabin environment, and energy-efficient, healthy, and sustainable building design and analysis. He has published three books, six papers in book chapters, and over 470 journal and conference papers and has been invited to deliver more than 180 lectures internationally. Prof. Chen is a fellow of the ASHRAE, the International Society of Indoor Air Quality (ISIAQ), and the International Association of Advanced Materials (IAAM). He is also the Editor-in-Chief of *Building and Environment*.

JSPS WORKSHOP SCHEDULE

Time	Presentation Title	Presenters
Tuesday (7/26/2022)		
10:30-12:00	Workshop on Scientific and Technical Publishing - JSPS	Chair: Ted Stathopoulos
10:30-10:50	Wind Engineering & Industrial Aerodynamics	Ted Stathopoulos, Editor-in-Chief; Concordia University
10:50-11:10	Building and Environment	Qingyan Chen, Editor-in-Chief; The Hong Kong Polytechnic University
11:10-12:00	Q&A	
13:00-14:30	Invited Session: Workshop on Urban Environment and Energy - JSPS	Chair: John Zhai
13:00-13:25	Advances in Urban Environment Simulations	Yoshihide Tominaga, Niigata Institute of Technology
13:25-13:50	Modeling Building Stock in Cities	Tianzhen Hong, Lawrence Berkeley National Laboratory
13:50-14:15	Multiscale Modeling of Urban Environment Performance	Liangzhu (Leon) Wang, Concordia University
14:15-14:30	Q&A	
15:00-16:30	JSPS Info Session (with refreshments)	Chair: Yumi Sakai
15:00-15:20	Intro to JSPS and funding mechanisms	Arisu Wada
15:20-15:35	Experience in Japan	John Zhai
15:35-15:45	Collaboration in Japan: Niigata Institute of Technology	Yoshihide Tominaga
15:45-15:55	Collaboration in Japan: Tokyo Polytechnic University	Yingli Xuan

Time	Presentation Title	Presenters
15:55-16:30	Networking session with Q&A	
Wednesday (7/27/2022)		
15:00-16:30	Invited Session: Wind Engineering, Aerodynamics and Urban Physics	Chairs: Ted Stathopoulos and Bert Blocken
	An experimental and numerical study of football stadium ventilation to reduce aerosol concentrations and COVID-19 transmission	Bert Blocken, Eindhoven University of Technology and KU Leuven
	CFD analysis of airborne sea salt adhesion related to corrosion damage in a large sports stadium	Yoshihide Tominaga, Niigata Institute of Technology
	How climate changes require to design buildings differently	Umberto Berardi, Toronto Metropolitan University
	Dispersion of air pollution in urban environment due to wind-structure interaction	Kenny Kwok, The University of Sydney
	Characterization of wind in seaports and waterways through field measurements and CFD simulations	Alessio Ricci, KU Leuven

Scan here for more information:





TECHNICAL TOUR: FUTURE BUILDING LABORATORY + SOLAR SIMULATOR-ENVIRONMENTAL CHAMBER (SSEC) FACILITY

Do not miss out the technical tour of our **Future Buildings Laboratory (FBL)**, our unique and world-renowned research facilities of the Centre for Zero Energy Building Studies at Concordia University.

Buildings of the future need to be intelligent, self-sustained, and meet the needs of occupants at the minimum cost to the environment while being resilient and adaptive to climate change.

FBL is a unique testing facility offering world-class multidisciplinary research and an educational platform supporting research in advancing knowledge, best practices, and innovation in sustainable buildings and infrastructure.

This \$1.27M CFI facility supports cutting-edge research in three innovative areas:

- 1) Energy positive building envelopes and integration with HVAC systems
- 2) Intelligent building operation
- 3) Optimization of residential nano-grid with renewable sources and electric vehicles.



SOLAR SIMULATOR-ENVIRONMENTAL CHAMBER (SSEC) FACILITY

An internationally unique facility, the SSEC enables accurate and repeatable testing of solar systems and advanced building envelopes under standard test conditions with full simulated sun and indoor plus outdoor conditions. It was built with a \$4.6-million grant through the Knowledge Infrastructure Program (KIP) jointly funded by the Government of Canada and Québec's Ministère du développement économique, de l'innovation et de l'exportation (MDEIE).

This facility consists of two major systems: A large scale solar simulator and a two-storey high environmental chamber with a mobile solar simulator lamp field.

Scan here for more information:



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Liangzhu (Leon) Wang	Concordia University	Canada
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John Zhai	University of Colorado Boulder	USA
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Conference Secretariat

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Dahai Qi	University of Sherbrooke	Canada
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Chanjuan Sun	University of Shanghai for Science and Technology	China
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Dengjia Wang	Xi'an University of Architecture and Technology	China
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	Katholieke Universiteit Leuven	Belgium
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Zhiwei Lian	Shanghai Jiao Tong University	China
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Junjie Liu	Tianjin University	China
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Jianlei Niu	The Hong Kong Polytechnic University	China
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Andrew Persily	National Institute of Standards and Technology	USA
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Mat Santamouris	University of New South Wales	Australia
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Jiyuan Tu	RMIT University	Australia
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Da Yan	Tsinghua University	China
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Yanping Yuan	Southwest Jiaotong University	China
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Ian Beausoleil-Morrison	Carleton University	Canada
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Ursula Eicker	Concordia University	Canada
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Fariboz Haghghat	Concordia University	Canada
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Ted Stathopoulos	Concordia University	Canada
Radu Zmeureanu	Concordia University	Canada

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Jie Ji	University of Science and Technology of China	China
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Zaiyi Liao	Ryerson University	Canada
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Rahul Bale	RIKEN	Japan
Yin Baoquan	Tianjin University	China

COBEE2022 PROGRAM OVERVIEW

Time	Mon., July 25	Tue., July 26
8:30 – 10:00	Registration	Opening Ceremony + Plenary Session
10:00 – 10:30		Coffee Break
10:30 – 12:00		Parallel Sessions
12:00 – 13:00		Lunch
13:00 – 14:30		Parallel Sessions
14:30 – 15:00		Coffee Break
15:00 – 16:30		Parallel Sessions
17:00 – 18:00		CZEBS / Solar Simulator Lab Tour
Starting 18:00	Reception	

Wed., July 27

Thu., July 28

Fri., July 29

Plenary Session

Plenary Session

Plenary Session

Coffee Break

Coffee Break

Coffee Break

Parallel Sessions

Parallel Sessions

Parallel Sessions

Lunch

Lunch

Lunch

Parallel Sessions

Parallel Sessions

Parallel Sessions

Coffee Break

Coffee Break

Closing

Parallel Sessions

Parallel Sessions

Banquet
(Invitation Only) /
Awards ceremony /
New Conference
Announcement

Future Buildings
Lab Tour

COBEE2022 Committee Members (In Alphabetical Order)

Bruno Perazzo Pedroso Bar-bosa	Fiocruz	Brazil
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Umberto Berardi	Ryerson University	Canada
Anahita Bigtashi	Concordia University	Canada
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Nima Bonyadi	Concordia University	Canada
Emmanuel Bozonnet	Université de La Rochelle	France
Connor Brackley	Concordia University	Canada
Hilde Breesch	KU Leuven	Belgium
Sebastien Brideau	Natural Resources Canada	Canada
William O'Brien	Carleton University	Canada
Shi-Jie Cao	Southeast University	China
Ting Cao	Shanghai Jiao Tong University School of Design	China
Christopher CaraDonna	National Renewable Energy Laboratory	USA
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Lan Chen	The Hong Kong Polytechnic University	China
Qiquan Chen	Tongji University	China
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Andreas Wagner	Karlsruhe Institute of Technology	Germany
Lin Wang	National Research Council Canada	Canada

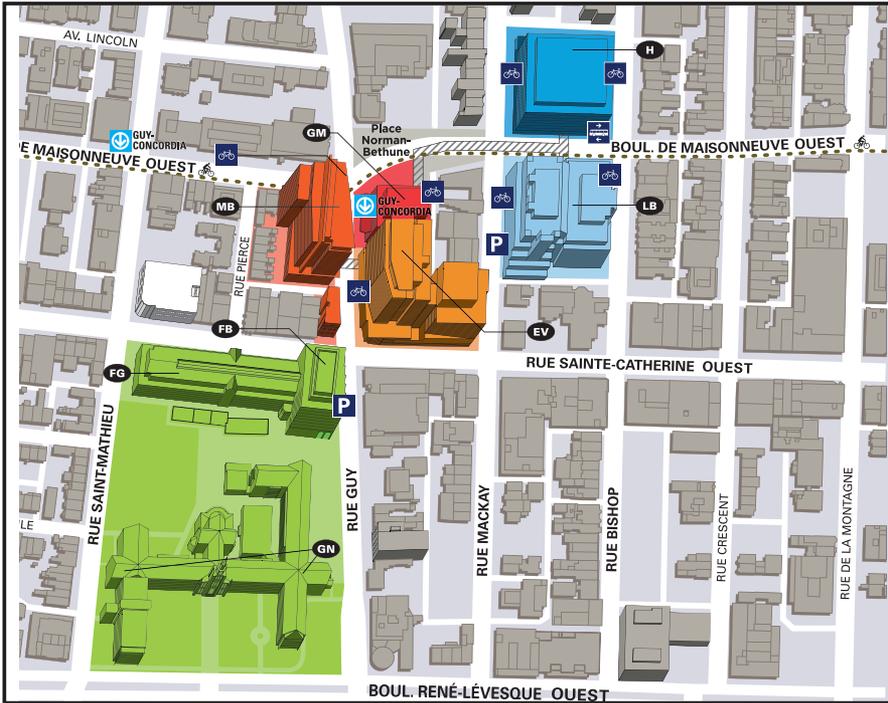
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Weimin Wang	UNC Charlotte	USA
Rufei Wang	Atelier Ten	USA
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Fang Wang	Harbin Institute of Technology	China
Lincheng Wang	Beijing University of Technology	China
Kensuke Watanabe	Kogakuin University	Japan
Chang Xi	Southeast University	China
Lili Xia	Eindhoven University of Technology	Netherlands
Xinbo Xu	Shanghai Jiao Tong University	China
Shujie Yan	Concordia University	Canada
Senwen Yang	Concordia University	Canada
Hui Yang	Beijing University of Civil Engineering and Architecture	China
Wenping Yang	National Research Council Canada	Canada
Xiaochen Yang	Tianjin University	China
Siliang Yang	Leeds Beckett University	UK
Larry Yang	University of Toronto	Canada
Minzhi Ye	Hokkaido University	Japan
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Hiroshi Yoshino	Tohoku University	Japan
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Xin Zhang	Université de Sherbrooke	Canada
Chen Zhang	Aalborg University	Denmark
Nan Zhang	City University of Hong Kong	China
Tintian Zhang	Southeast University	China
Jian Zhang	Pacific Northwest National Laboratory	USA
Schicong Zhang	China Academy Building Research	China
Lexuan Zhong	University of Alberta	Canada
Liang (Grace) Zhou	National Research Council Canada	Canada
Jinyue Zhou	Beijing University of Technology	China
Michele Zinzi	ENEA	Italy
Jiwei Zou	Concordia University	Canada
Wangda Zuo	University of Colorado Boulder	USA

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Danlin Hou	Concordia University	Canada
Lili Ji	Concordia University	Canada
Bingyan Jia	Concordia University	Canada
Hamidreza Karimian	Concordia University	Canada
Jing Li	Concordia University	Canada
Sahar Sahyoun	Concordia University	Canada
Zahra Salehi	Concordia University	Canada
Chang Shu	National Research Council Canada	Canada
Haiyi Yu	North China University of Technology	China
Xin Zhang	Université de Sherbrooke	Canada



EV Pavillon intégré Génie, informatique et arts visuels / *Engineering, Computer Science and Visual Arts Integrated Complex*
1515, Sainte-Catherine O. ☏
Le Gym
Galerie FOFA / FOFA Gallery

FB Pavillon du Faubourg / *Faubourg Building*
1250, Guy ☏
1600, Sainte-Catherine O. ☏
Centre de l'éducation permanente / *Centre for Continuing Education*

FG Pavillon du Faubourg Sainte-Catherine / *Faubourg Sainte-Catherine Building*
1610, Sainte-Catherine O.
Salles de classe / *Classrooms*

GM Pavillon Guy-De Maisonneuve / *Guy-De Maisonneuve Building*
1550, De Maisonneuve O. ☏

GN Pavillon des Sœurs-Grises / *Grey Nuns Building*
1190, Guy ☏
Résidences étudiantes de Concordia / *Concordia student residence*
1185, St-Mathieu ☏
CPE Concordia / *Concordia Daycare*

H Pavillon Henry-F-Hall / *Henry F. Hall Building*
1455, De Maisonneuve O.
Théâtre D.-B.-Clarke / *D. B. Clarke Theatre*
Amphithéâtre des diplômés / *Alumni Auditorium*

LB Pavillon J.-W.-McConnell / *J.W. McConnell Building*
1400, De Maisonneuve O.
Centre de services aux étudiants Birks / *Birks Student Service Centre*
Galerie Leonard-et-Bina-Ellen / *Leonard and Bina Ellen Art Gallery*
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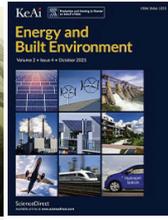
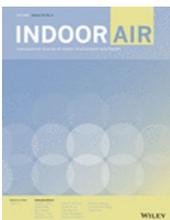
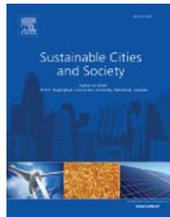
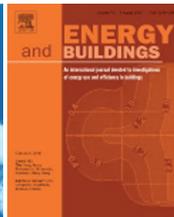


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