DBMC 2026

The 17th International Conference on the Durability of Building Materials and Components

Concordia Lab Tours

Downtown Campus Laboratory Tour

Tuesday, July 21, 2026 | 18:30–19:30 p.m.

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 simulated sunlight and controlled indoor and outdoor conditions. This facility consists of two major systems: a large-scale solar simulator and a two-storey environmental chamber with a mobile solar simulator lamp field.

Atmospheric Boundary-Layer Wind Tunnel

This facility is used to study wind effects on buildings and their environment under simulated urban, suburban, and open-terrain conditions; Its rotating test platform allows different wind directions to be assessed, while the accompanying visualization tunnel uses smoke to demonstrate airflow patterns around building models.

Solar simulator - Environmental Chamber

Atmospheric Boundary-layer Wind Tunnel

Future Buildings Laboratory

Thursday, July 23, 18:00 – 20:00

Located on Concordia University's Loyola Campus, the Future Buildings Laboratory (FBL) is a unique, world-class living laboratory and testing facility that supports multidisciplinary research and education in sustainable buildings and infrastructure. This $1.27M CFI-supported facility enables cutting-edge research in three key areas:

- **Energy-positive building envelopes and integration with HVAC systems;**
- **Intelligent building operation; and**
- **Optimization of residential nano-grids with renewable sources and electric vehicles.**

Buildings of the future must be intelligent, self-sustaining, and responsive to occupant needs, low in environmental impact, and resilient to climate change. The FBL provides an ideal platform for advancing this vision through full-scale testing of advanced building technologies under real-world conditions.

Tour Overview

The DBMC 2026 tour of the FBL will showcase ongoing research projects that highlight practical applications of sustainable building technologies, energy systems, and performance optimization in cold climates. Participants will gain insights into innovative experiments, modelling approaches, and real-world implementations aimed at improving building durability, energy efficiency, decarbonization, and resilience.

Urban Wind Energy Assessment of Building-Integrated Wind Turbines (BIWTs): A Comprehensive Experimental Study

Presenter: Payam Gholamalipour
Authors: Payam Gholamalipour, Hua Ge, Ted Stathopoulos

Energy Optimization of a Solar House Using Model Predictive Control For an Integrated Air-Source Heat Pump Water Heater and Radiant Floor Heating System.

Presenter: Yearim Yang
Authors: Yearim Yang, Andreas Athienitis

Experimental Design and Analysis on HVAC system: the Heat Recovery Ventilator Preheated by BIPV Panels, and AHU with an Air Source Heat Pump in Cold Climate

Presenter: Jing Li
Authors: Jing Li, Radu Zmeureanu, and Hua Ge

Modular Colored BIPV/T Roof Systems for Cold-Climate Housing

Presenter: Anna-Maria Sigounis
Authors: Anna-Maria Sigounis, Andreas Athienitis

Vehicle Integrated Photovoltaic Energy Prediction Using Physics-Informed Machine Learning

Presenter: Hyacinthe Tchakounte
Authors: Hyacinthe Tchakounte, Akrem Aljehaimi, and Prof. Pragasen Pillay

Integration of Renewable Energy Sources and Emergency Power Supply at the Future Building Laboratory (FBL)

Presenter: Mahad Mohamud Awad
Authors: Mahad Mohamud Awad, Jay Prajapati, and Prof. Pragasen Pillay

Ventilation Strategy in BIPV Systems: Performance, Durability, and Temperature Distribution

Presenter: Zahra Zareie
Authors: Zahra Zareie, Max Junginger, Kai Ye, Daniel Baril, and Hua Ge

Experimental Procedure for Obtaining the Steady-State and Dynamic Responses of an Open-Cathode PEM Fuel Cell

Presenter: Aurean B. Guimaraes
Authors: Jie Dang, Aurean B. Guimaraes Jr. , Luiz A. C. Lopes, and Yanick Paquet