Costa Kapsis
Project 12 Cell design for window and skylight applications
Supervisor: Dr. A.K. Athienitis
Institution: Concordia University, Building Engineering, PhD
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Building Integrated Photovoltaics: Towards a Greener Future

Buildings account for 40% of energy use in the developed world. If we expect to meet our environmental goals and ensure a better future for the next generations, we need to transform the way we design, build and operate buildings. Technologies that allow buildings to act as net energy generators can provide the basis for this transformation.

Building-Integrated Photovoltaic (BIPV) technologies can replace conventional building components such as façades or roofs. While simultaneously providing weather protection, thermal insulation, shading from the sun, BIPV technologies perform the additional function of generating energy.

The challenge is that designing integrated-into-the-envelope technologies is truly complex. For instance, the use of semi-transparent photovoltaics integrated into a commercial building façade will affect the occupants' thermal and visual comfort, the building energy performance (by altering solar heat gains), and the electrical performance of the photovoltaics themselves. If the design and integration of these technologies is not done properly, opportunities for cost-savings and reducing environmental impact will be missed.

The considerations presented above underline the significance of the Photovoltaic Innovation Network annual meeting and scientific conference. This gathering allows researchers and industry, from the PV cell level to the building integration level, to come together and exchange vital knowledge. It also gives us the opportunity to understand the challenges faced at each level, and how they can be overcome through collaboration. This collective effort will guide Canada to the frontline of photovoltaic R&D while enabling the widespread adoption of photovoltaic technologies for a greener future.