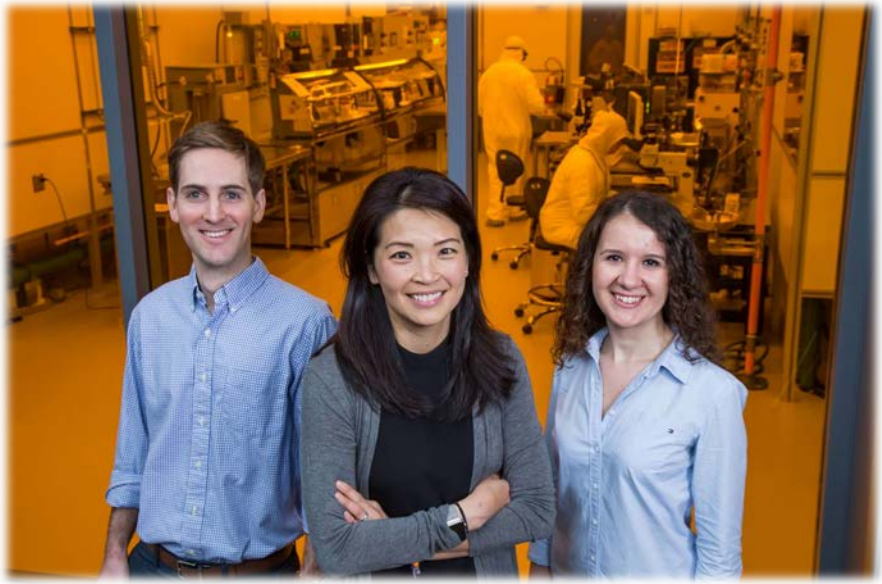
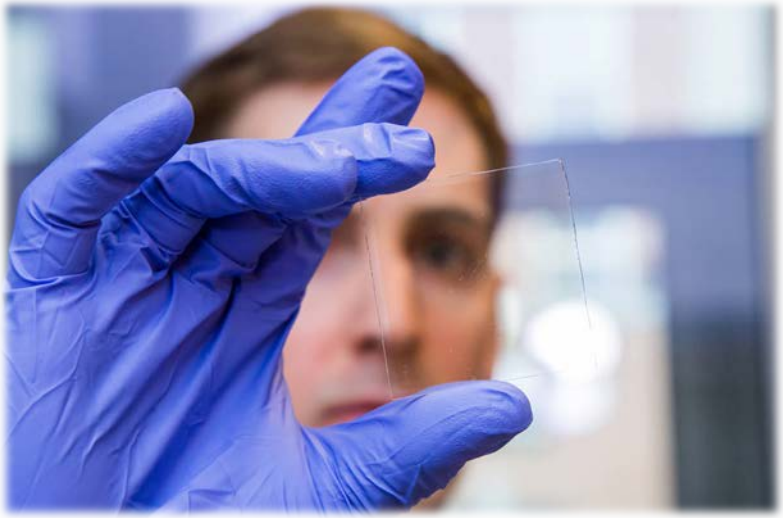
Andluca Technologies



The Princeton team that developed the solar-powered smart window published in *Nature Energy* and featured in *The Wall Street Journal.*



Converting near-UV light into on-board power

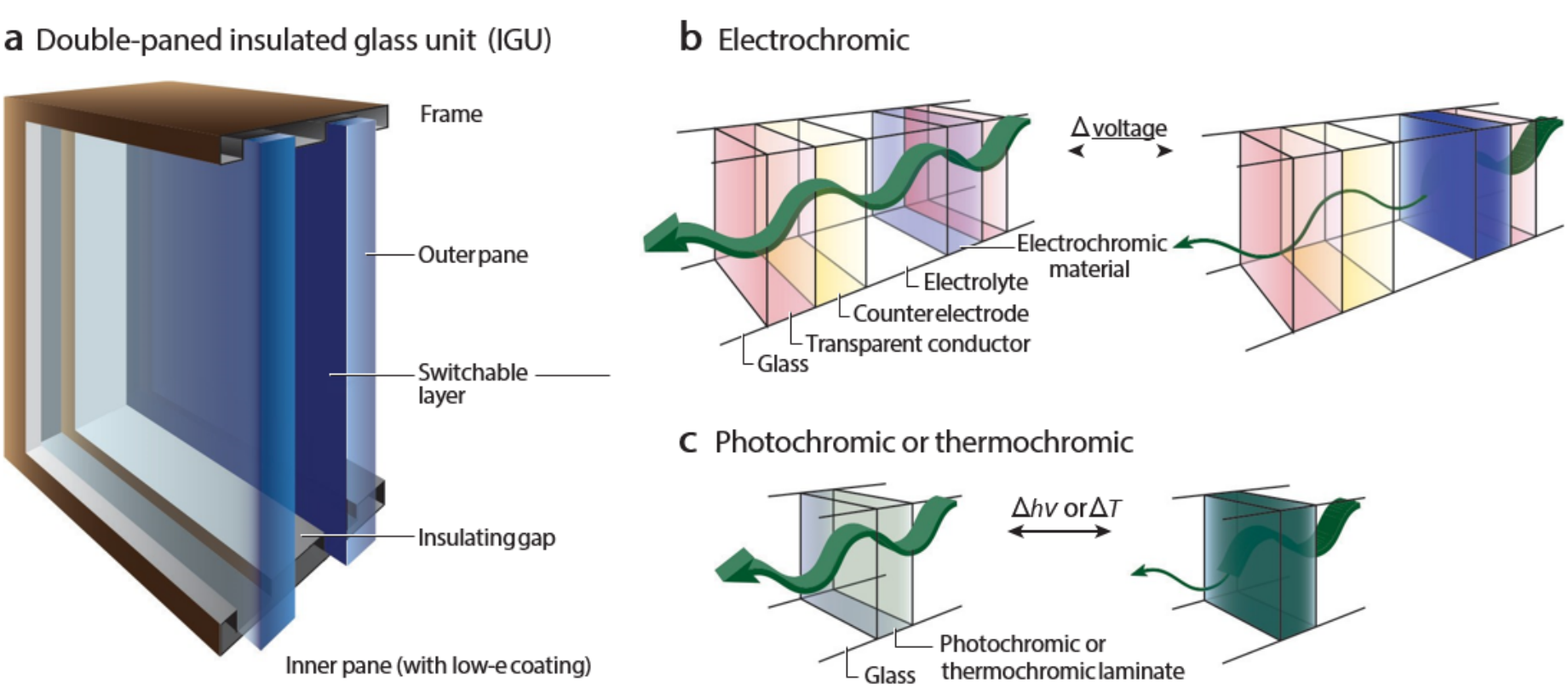
Enabling wireless dynamic windows

www.andluca.com

The Problem

- Every year in the US, the combined cost of energy consumption by residential and commercial buildings exceeds $260B.
- Over half the buildings that will be in use in 2050 are already built.
- Electrochromic (EC) windows are smart windows that intelligently manage incident sunlight, actively regulating light transmission to provide maximum comfort and energy savings.
- EC windows require power for operation; retrofitting existing buildings with these windows is thus complicated and labor intensive. Wiring also constrains window operation (sliding and opening windows and glass doors).

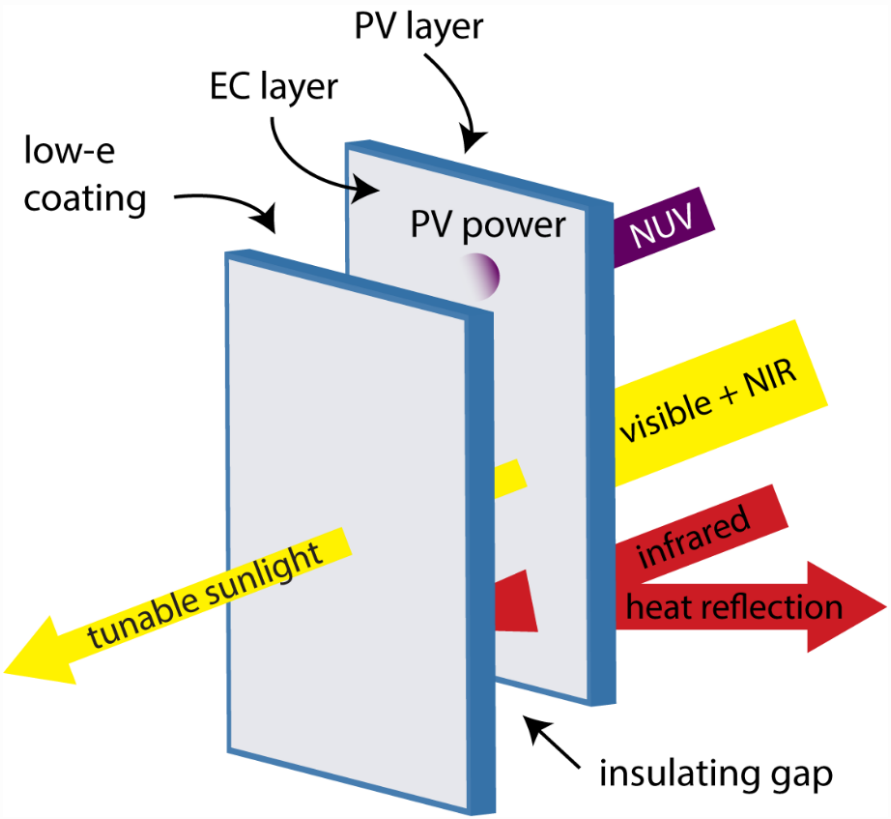
Switchable Windows



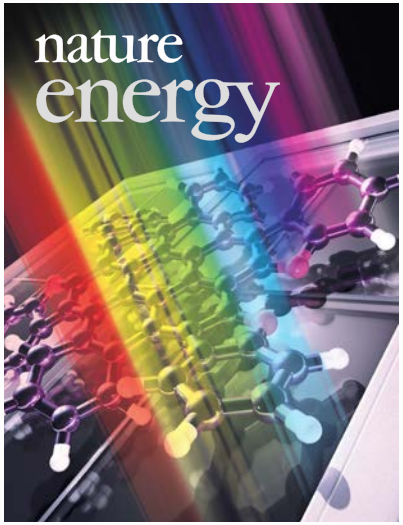
Electrochromic windows offer maximum energy savings and user control, but require external power for operation.

Wang, Y., Runnerstom, E. L. & Milliron, D. J. Switchable Materials for Smart Windows. *Annu. Rev. Chem. Biomol. Eng.* **7,** 283–304 (2016).

Transparent solar cells for wireless dynamic windows

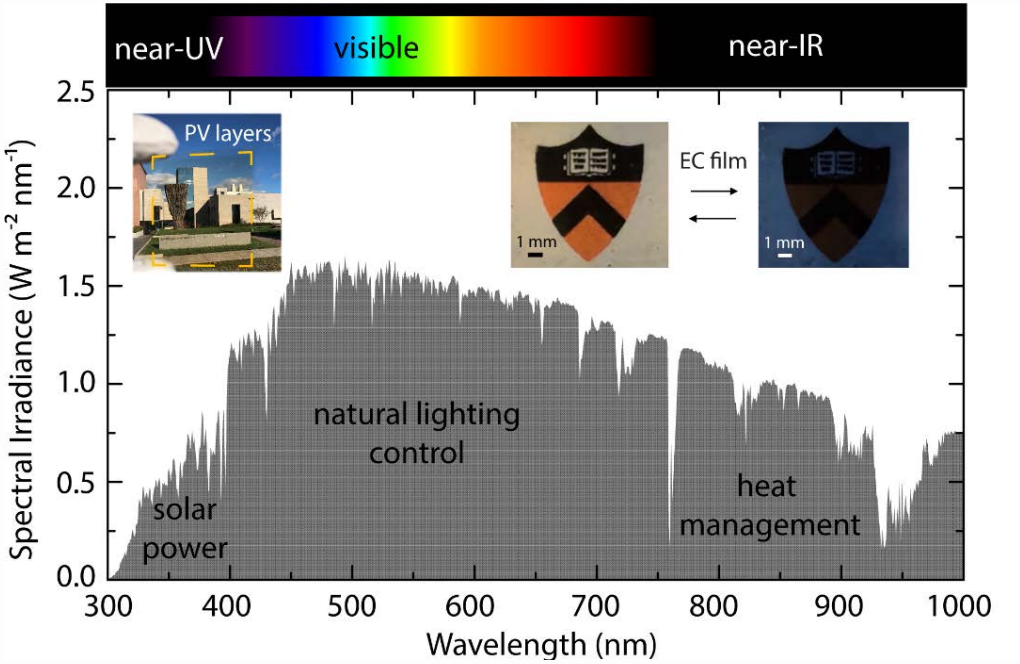


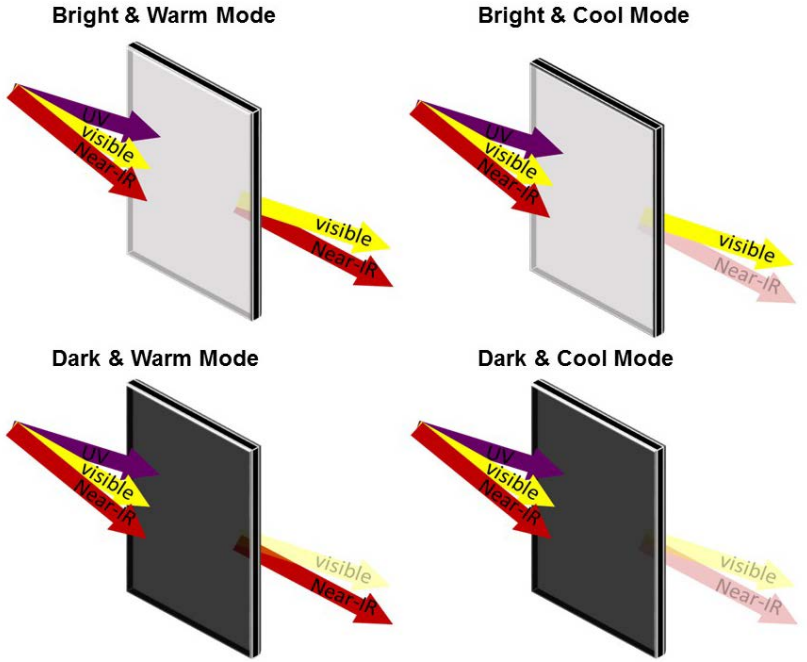
- Andluca Technologies has designed transparent solar cells that can provide on-board power for dynamic windows without altering window performance.
- Solar-powered dynamic windows can now be wirelessly powered and controlled.
- Video demo here



n.c. davy, m. sezen-edmonds, y.-l. loo et. al., *nature energy* 2, 17104, 2017; featured on cover of august issue.

Our Technology





Andluca Technologies has developed and patented a photovoltaic (PV) technology that enables selective harvesting of NUV light to produce scalable on-board power for wireless EC window operation. The NUV PV cells are fabricated using established deposition methods, and the active materials comprising NUV PV cells are synthesized using straightforward chemical routes that are amenable to scale up. Andluca Technologies' NUV PV technology is the only PV technology that can power EC windows over the same spatial footprint without external wiring and without competing for visible and near-IR light that the windows seek to regulate. This breakthrough will open new markets for smart window products that are currently constrained by external wiring. The company has demonstrated a 10 cm^2 NUV PV cell prototype which produces an order of magnitude more power than is needed to operate the EC window.

Davy, N. C., Sezen-Edmonds, M., Loo, Y.-L., et al. *Nature Energy.* (2017).

About us

The Company

Andluca Technologies was founded in 2017 at Princeton University by Prof. Lynn Loo and a senior graduate student in her group, Nicholas Davy, in response to a widespread demand for wireless smart windows.

Prof. Lynn Loo

The director of Andlinger Center for Energy and the Environment and the Theodora D. ’78 and William H. Walton III ’74 Professor in Engineering at Princeton University, Prof. Loo is an international leader in organic electronics. Under her guidance, her research group has made substantial contributions in this area. Key innovations include the invention of nanotransfer printing (nTP; a non-invasive additive printing approach with sub-nanometer edge resolution), for which she was named MIT’s TR 100; and the development of aqueous conducting polymer inks for use as electrodes and contacts in optoelectronics, active switching components in electrochromic windows, and redox couplers in glucose sensors, the latter of which has been licensed by Abbott Diabetes Care. Her group’s fundamental elucidation of processing-structure-property relationships of molecular semiconductors for transistor and solar cell applications over the past 15 years has led to her election as fellow of the American Physical Society, and numerous other prestigious recognitions, including Sloan and Beckman Fellowships, the Alan P. Colburn Award from AIChE and the Dillon Medal from APS. During her sabbatical leave, she was a fellow at NewWorld Capital Group, a private equity firm that invests in clean energy technologies. She remains on their strategic advisory council to date. She spent a year at Bell Laboratories after receiving her PhD from Princeton University.

Nicholas Davy

Nicholas is co-inventor of Andluca Technologies’ NUV PV technology. His expertise spanning molecular semiconductor synthesis and design, thin-film processing, device fabrication, integration and characterization is critical to the success of Andluca Technologies. Nicholas Davy led the eight-member team responsible for building the NUV PV-powered EC window demonstrated in *Nature Energy*; he led the creation of the critical intellectual property now available to Andluca Technologies as an exclusive license. He has presented his work at numerous conferences in the US and abroad, and published four peer-reviewed journal articles. He was selected as one of three finalists at the Princeton Entrepreneurs Network start-up competition to pitch Andluca Technologies’ NUV PV technology to alumni investors. By the end of 2017, Nicholas Davy will have completed degree requirements for a PhD in Chemical Engineering and Materials Science at Princeton University. He holds an MA in Chemical Engineering from Princeton and a BSE in Chemical Engineering from the University of Texas at Austin.