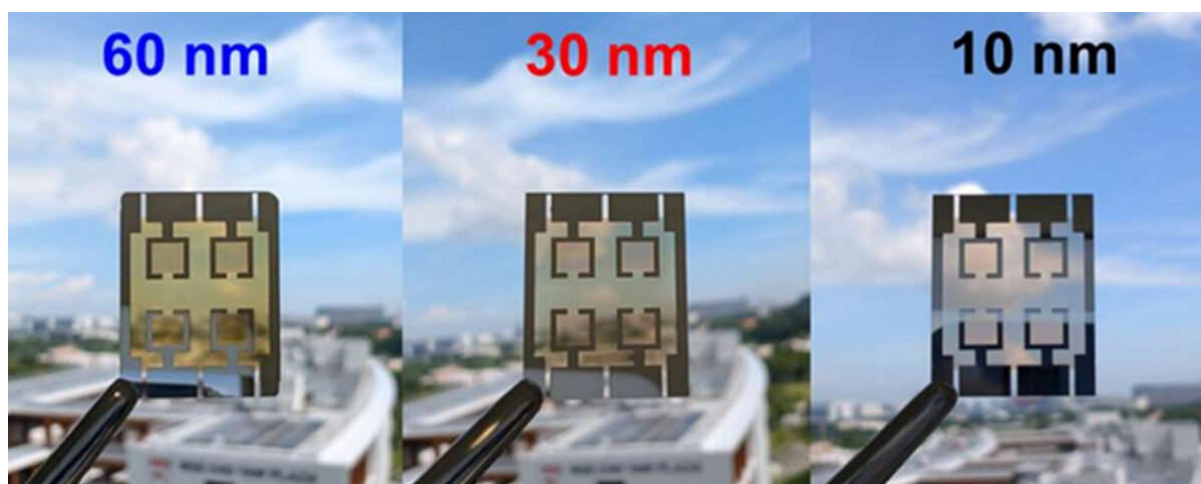


Pushing perovskite solar cells to the ultimate thickness limit

Researchers in Singapore have developed fully vacuum-processed ultrathin perovskite solar cells with absorber layers as thin as 10 nm, achieving high transparency and stable efficiencies up to 12%. These cells balance optical transparency and electrical performance, offering scalable, design-flexible photovoltaics suitable for seamless integration into buildings.

MARCH 30, 2026 [EMILIANO BELLINI](#)



Fully vacuum-processed semi-transparent perovskite solar cells with different absorber thicknesses, enabling high average visible transmissivity and tuneable color features, both beneficial for architectural photovoltaics

Image: Nanyang Technological University (NTU)

Researchers from [Nanyang Technological University](#) (NTU) in Singapore have developed ultrathin perovskite solar cells with absorber layers as thin as just tens of nanometers.

The research work tackles a key challenge in the development of transparent photovoltaics: balancing optical transparency with electrical performance without sacrificing scalability or manufacturability while maintaining minimal instrument safety.

“We push perovskite solar cells to the ultimate thickness limit, demonstrating fully vacuum-processed devices with absorbers down to around 10 nm compared to the conventional 500–700 nm range, making them both efficient and aesthetically beautiful and see-through,” NTU researcher Annalisa Bruno told **pV magazine**. “This represents a step toward scalable, design-flexible photovoltaic systems suitable for seamless integration into buildings.”

Read more here: <https://www.pv-magazine.com/2026/03/30/pushing-perovskite-solar-cells-to-the-ultimate-thickness-limit/>