

# First Long-Lived Perovskite Solar Cells Developed

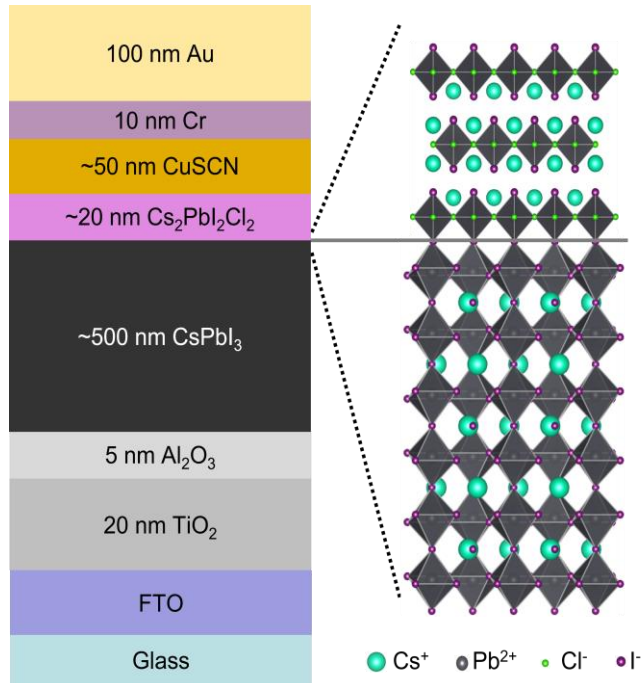


Illustration of the capped device structure employed in this work.

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This work was performed at the Center for Functional Nanomaterials and National Synchrotron Light Source II.

## Scientific Achievement

Scientists have developed the first perovskite solar cells that should maintain 80% of its efficiency for more than 5 years, opening the pathway to commercialization. It also has a comparable performance to silicon-based cells.

## Significance and Impact

Perovskites are well suited for solar cell applications; however, until now their lifetime did not meet the industrial threshold. Additionally, this work establishes a new method for testing the durability and lifetime of solar cells.

## Research Details

- Developed an accelerated aging test to understand the degradation routes of perovskite solar cells.
- Designed a 2D Cs<sub>2</sub>PbI<sub>2</sub>Cl<sub>2</sub> capping layer between the perovskite active layer and hole-transport layer that stabilizes the solar cell
- Used x-ray scattering tools at the CMS beamline at NSLS-II, operated in partnership with CFN, to confirm the properties of the capping layer.