

# Carrier Modulation via Tunnel Oxide Passivating at Buried Perovskite Interface for Stable Carbon-Based Solar Cells

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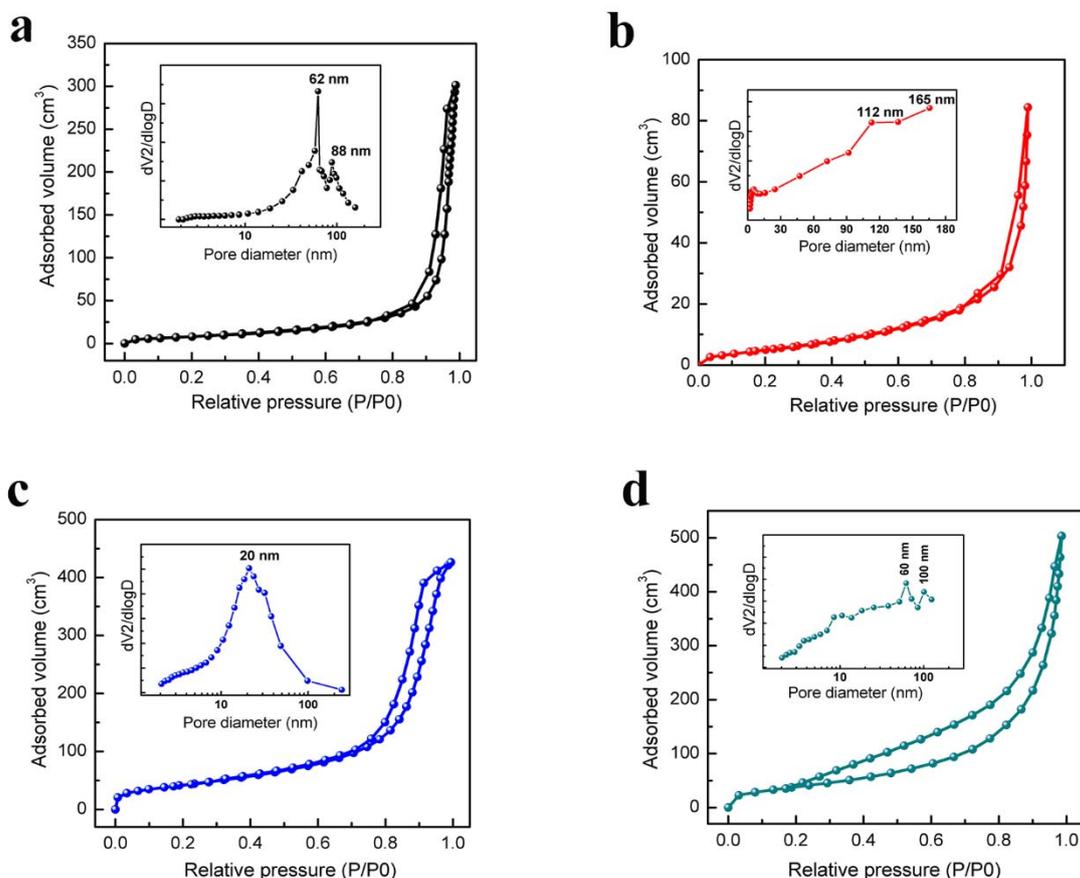


Figure S1. The N<sub>2</sub> adsorption-desorption isotherms and corresponding pore size

distribution curves (inset) of (a) TiO<sub>2</sub>, (b) ZrO<sub>2</sub>, (c) Al<sub>2</sub>O<sub>3</sub>, and (d) SiO<sub>2</sub>.

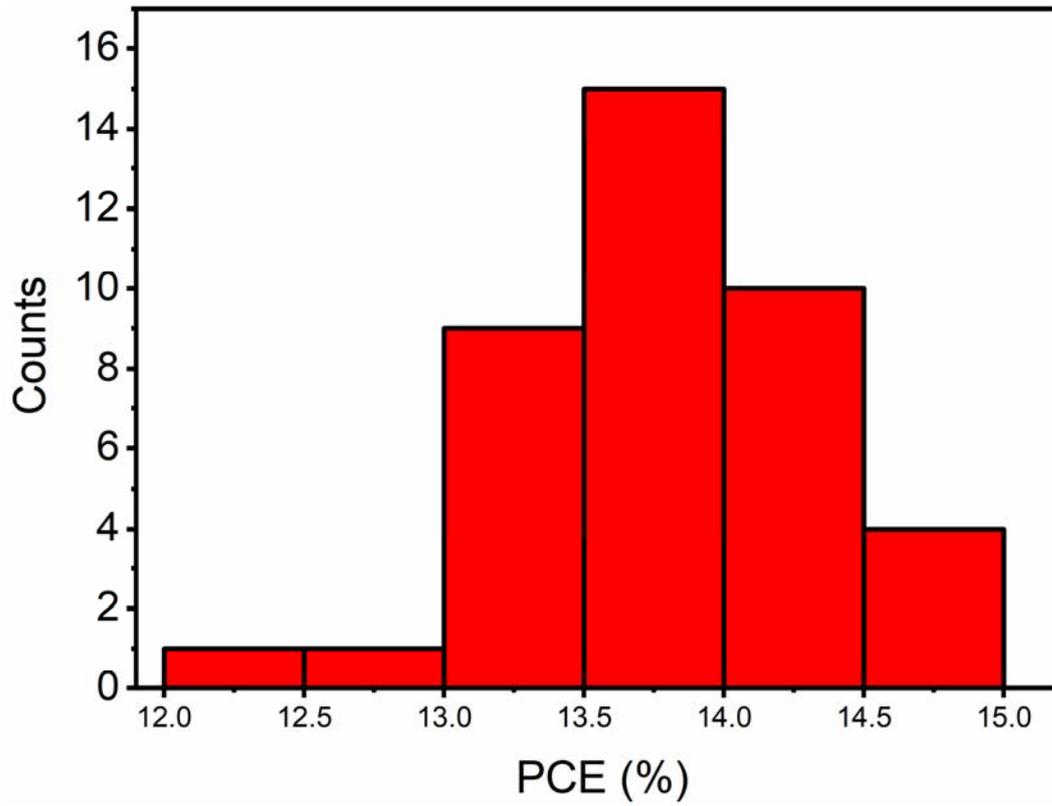


Figure S2. Histograms of solar cell efficiencies were collected from 40 cells with ZrO<sub>2</sub> TOP.

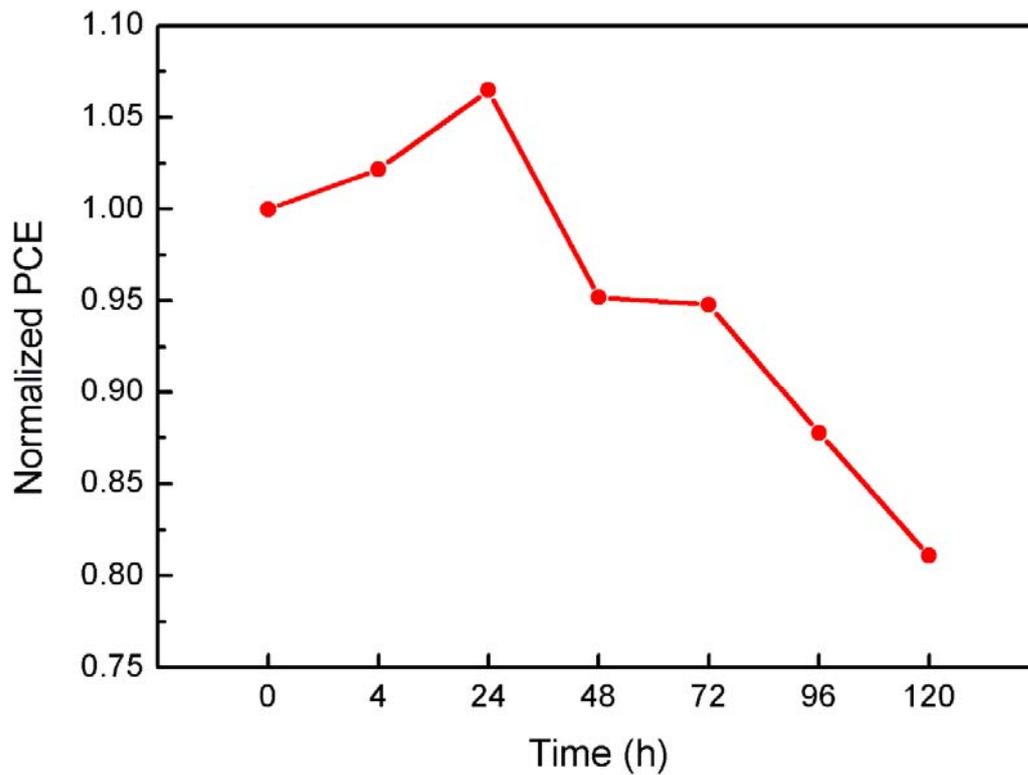


Figure S3. Environmental thermal stress (85 °C in a heating panel) with high humidity (40-60%) conditions.