Supporting Information

Wide-bandgap $CaSnO_3$ perovskite as an efficient and selective deep-UV absorber for self-powered and high-performance p-i-n photodetector

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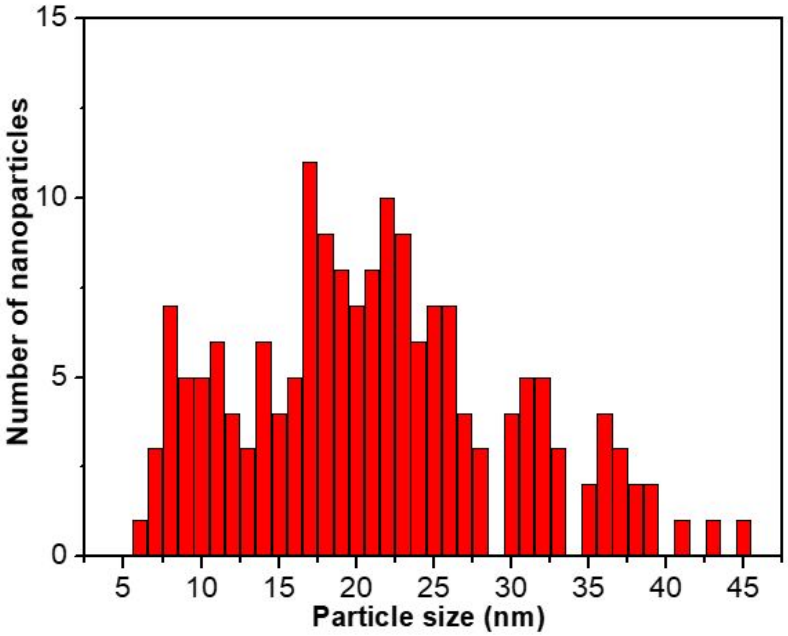

Figure S1. Particle-size distribution of $CaSnO_3$ NPs. Data was extracted from the TEM images using the ImageJ software (version 1.51, Bethesda, Maryland, USA).

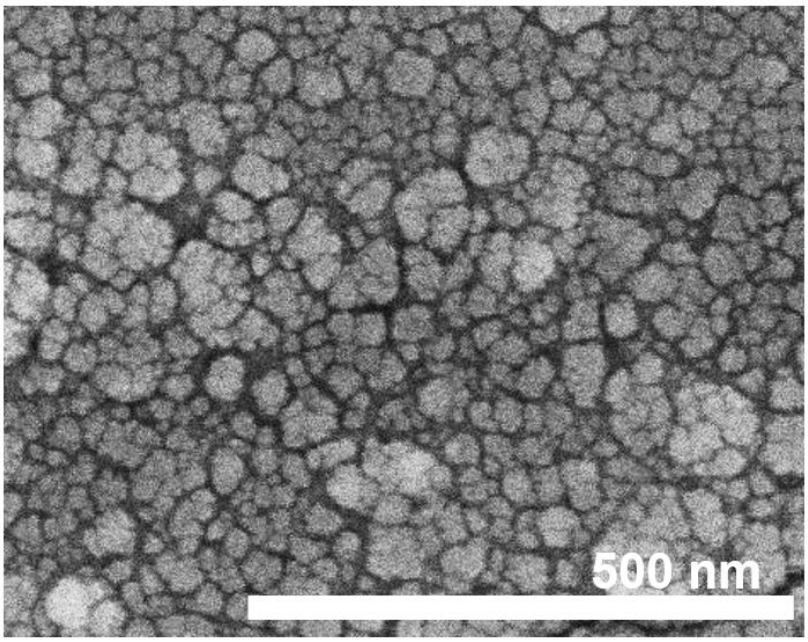

Figure S2. SEM of the one-time spin-coated $CaSnO_3$ layer.

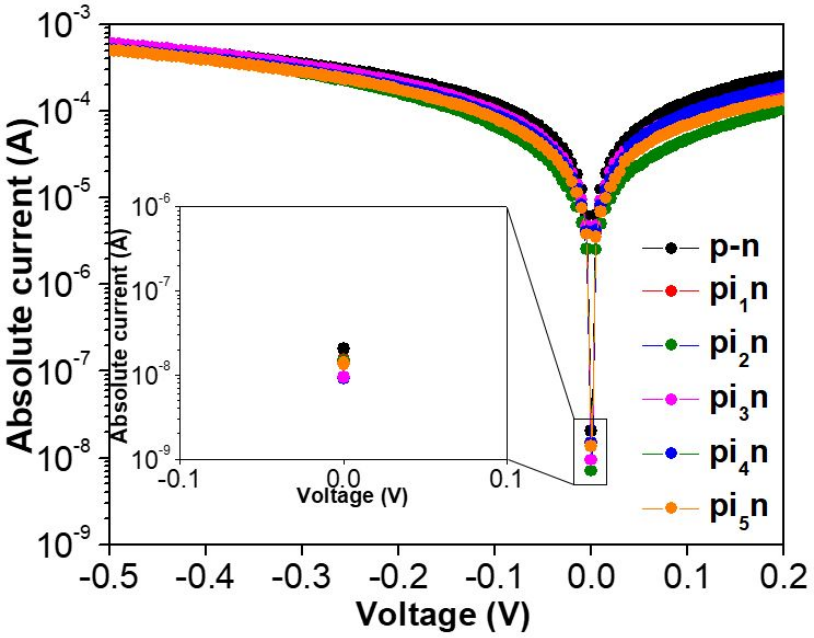

Figure S3. I–V curves of prepared p-n and p-i-n devices under dark conditions.

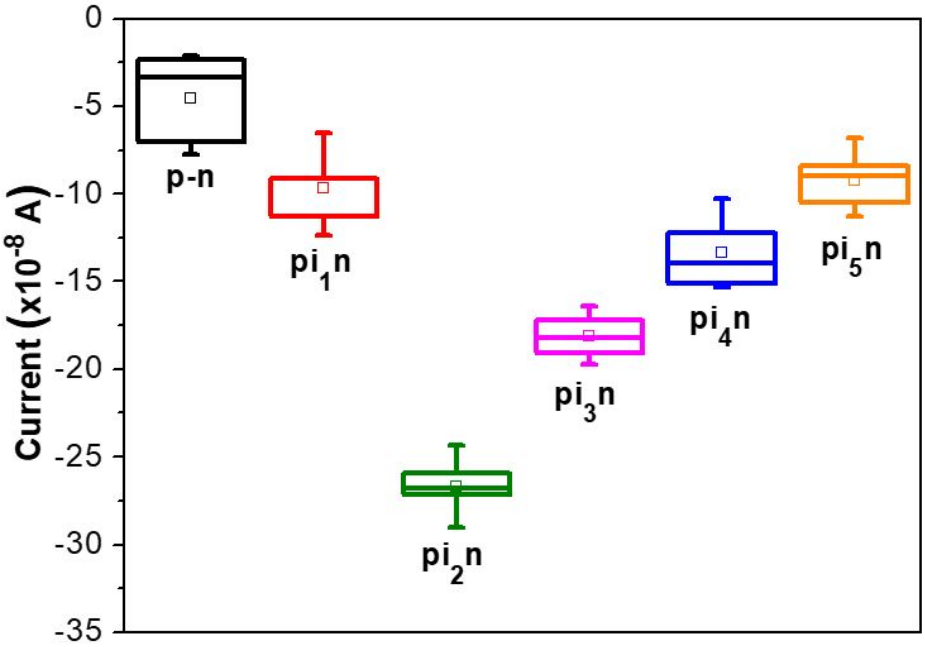

Figure S4. Statistics of photocurrent values for p-n, pi_1n, pi_2n, pi_3n, pi_4n, and pi_5n devices (each batch has five devices).

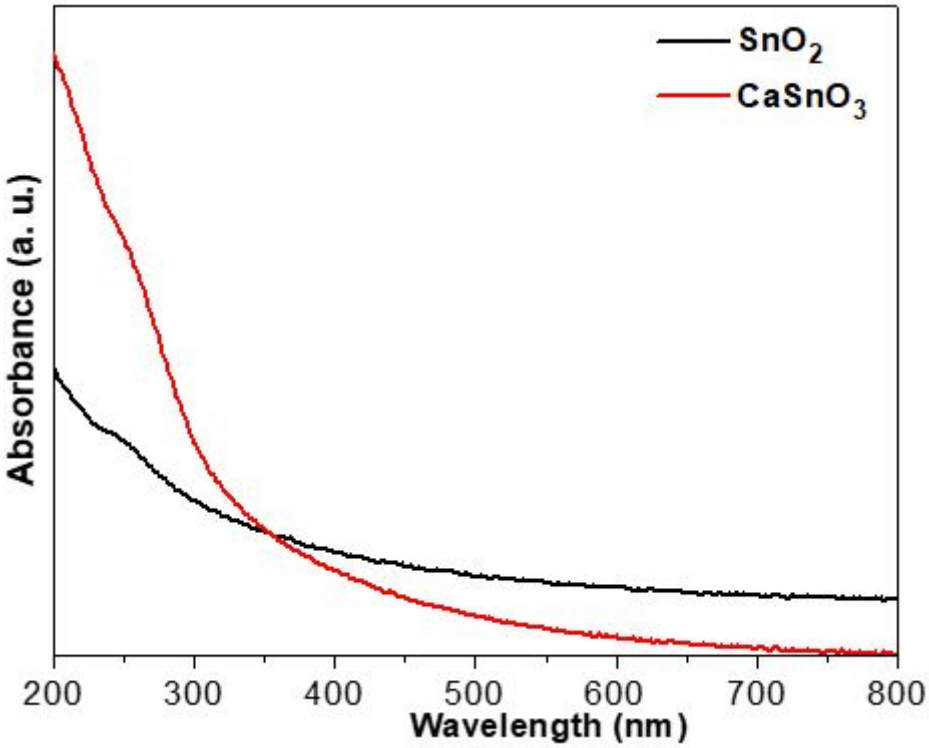

Figure S5. UV-Vis spectra of the two-time spin-coated SnO_2 and $CaSnO_3$ films.

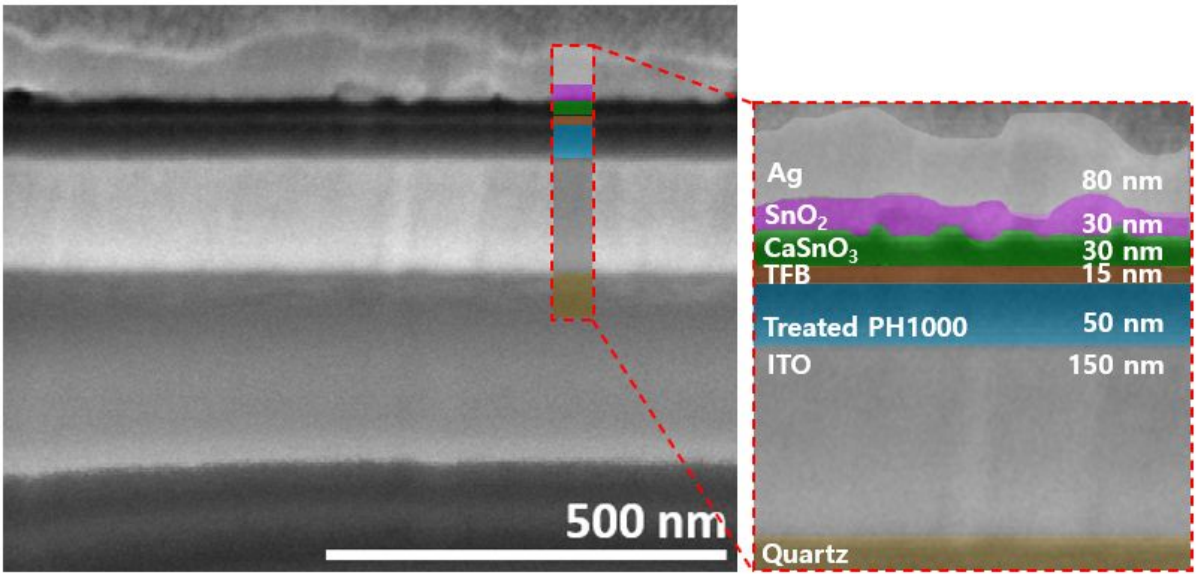

Figure S6. FIB-SEM image of the $CaSnO_3$-based p-i-n detector (pi_2n device).

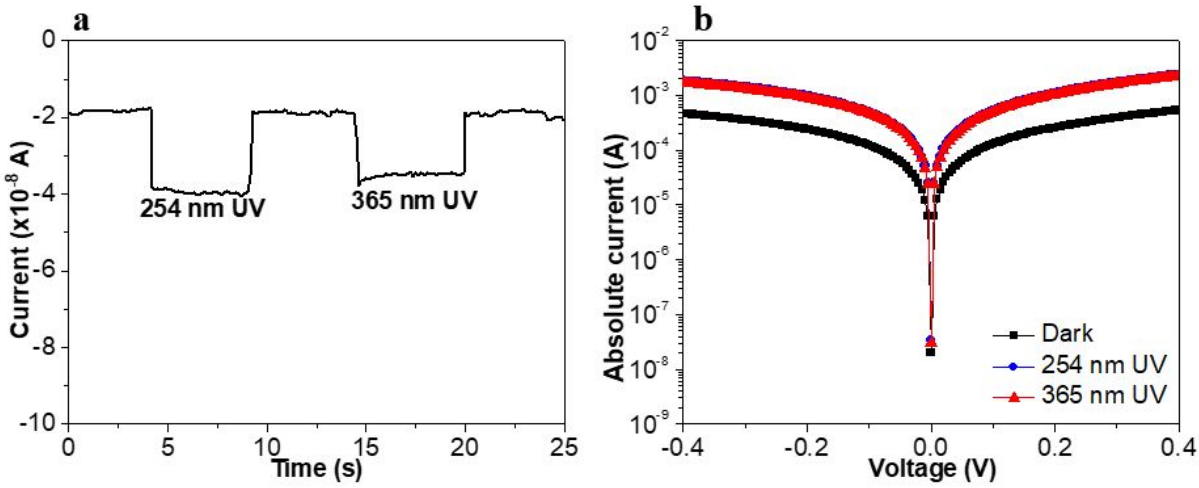

Figure S7. Photoresponses (a) and I-V plots (b) of the p-n device under 254 nm- and 365 nm-UV illumination at 0 V.

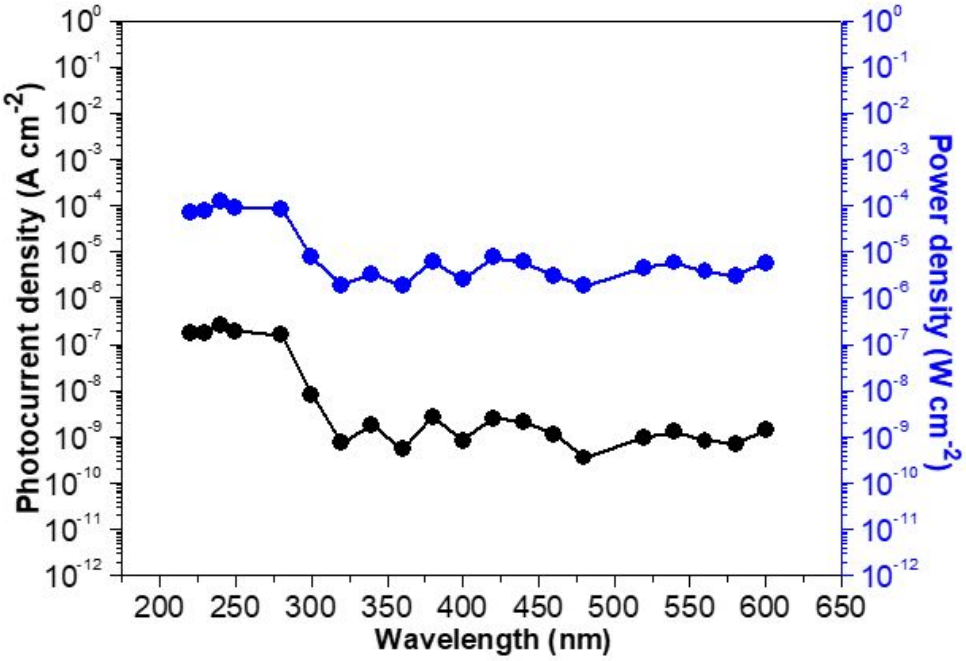

Figure S8. Photocurrent density of pi_2n device at 0 V and power density of light source with wavelength in the range of 220-600 nm.

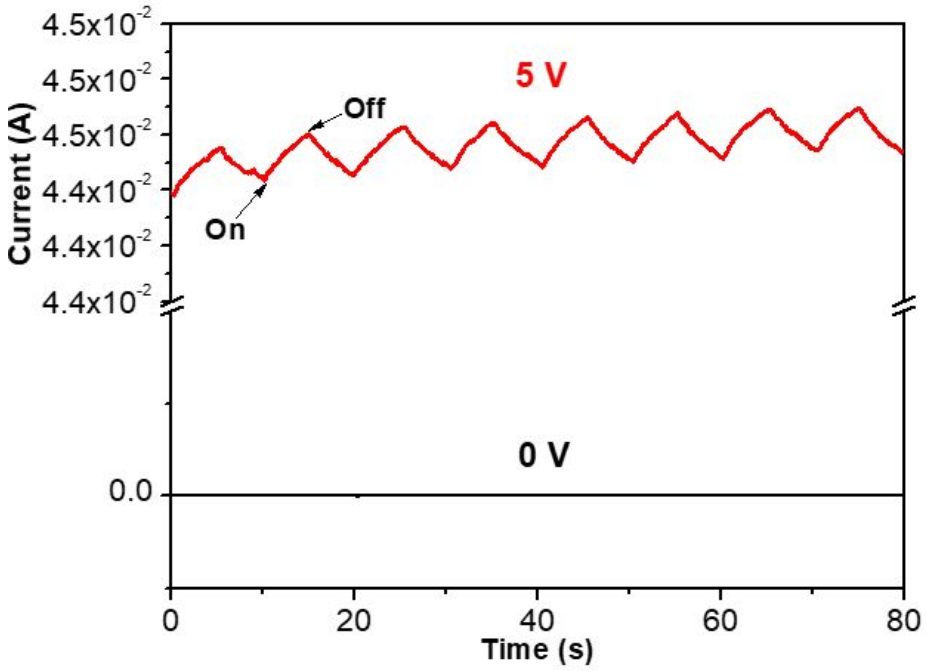

Figure S9. Photoresponse of $CaSnO_3$-based photodetector with PH1000/$CaSnO_3$/Ag structure under 254 nm-UV illumination in absence and presence of applied bias (5 V).

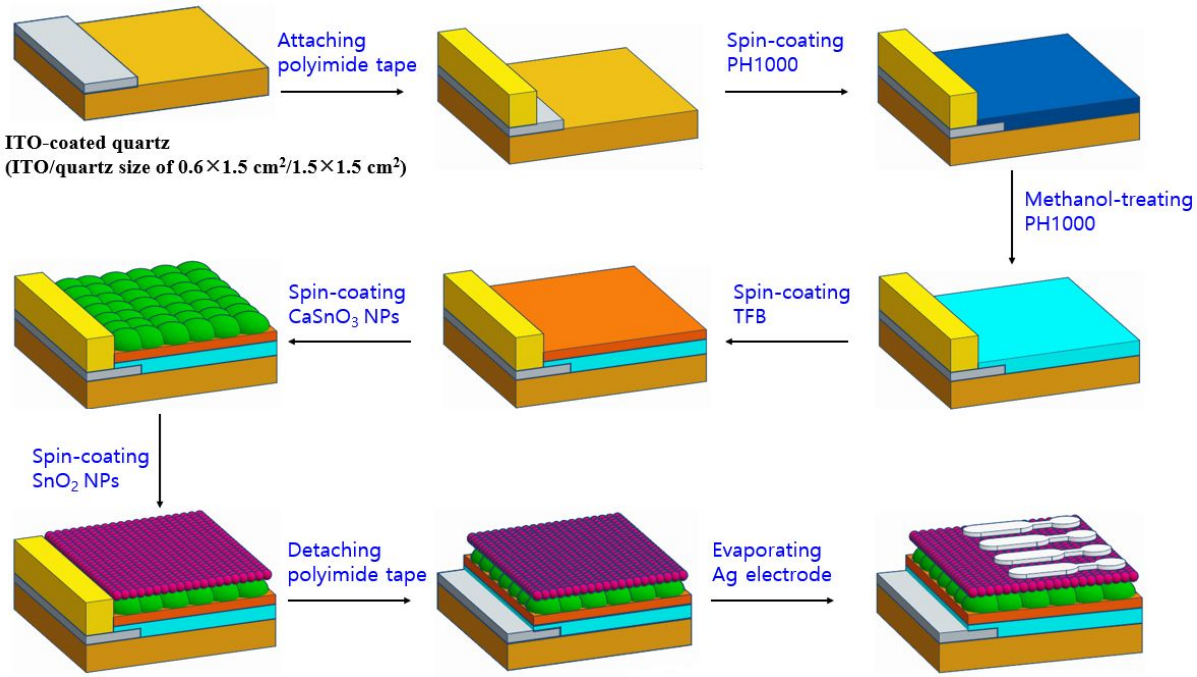

Figure S10. Schematic illustration of p-i-n photodetectors preparation.

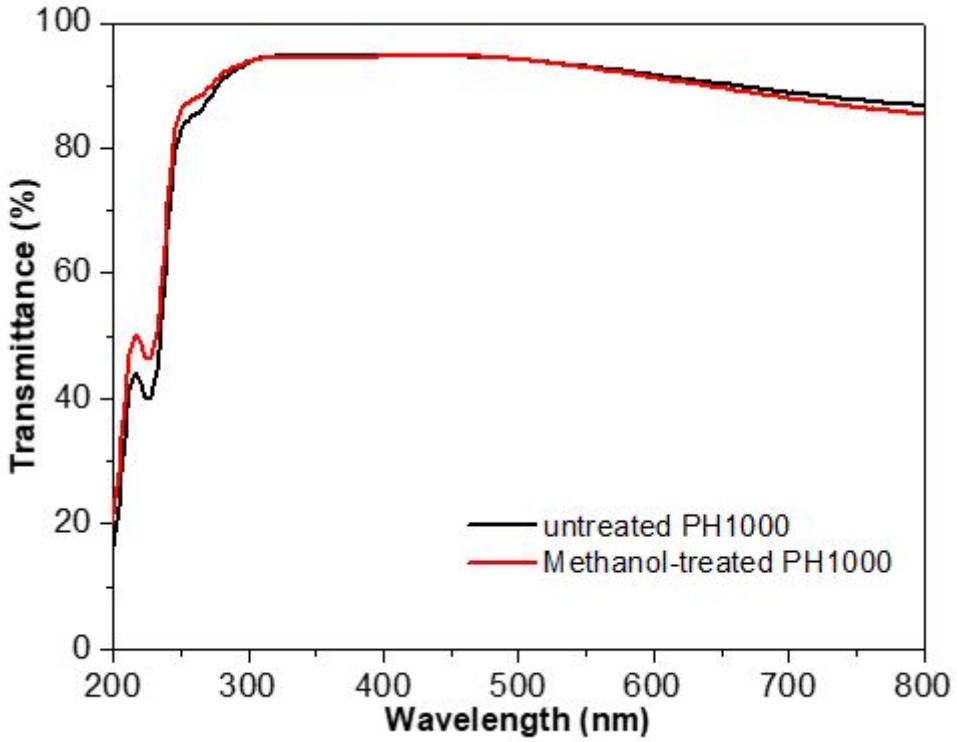

Figure S11. UV-Vis spectra of methanol-treated and untreated PH1000 film.