Supporting Information

CO_2 Plasma-Treated TiO_2 Film as an Effective Electron Transport Layer for High-Performance Planar Perovskite Solar Cells

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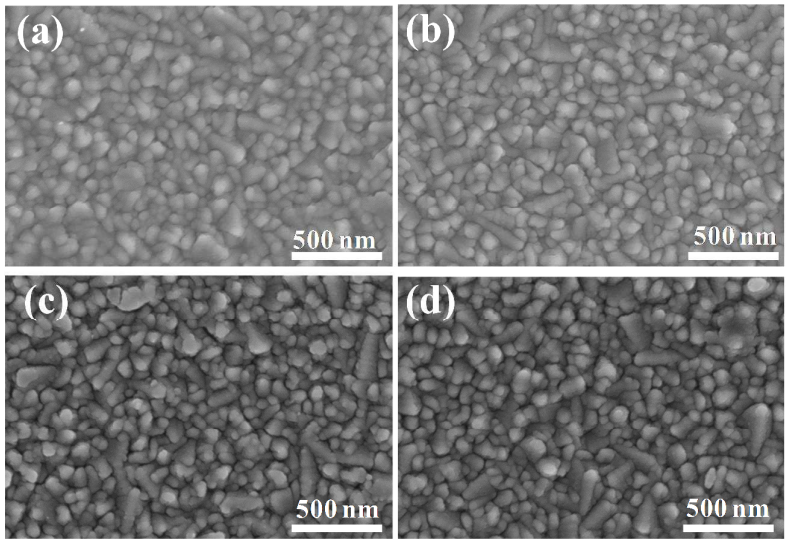

Figure S1. Top-view SEM images of (a) the pristine TiO_2 film, and CO_2 plasma treated TiO_2 films at 200 °C for (b) 90 s, (c) 5 min, and (d) 10 min, respectively.

Table S1. Trap filled limit transition point

TiO_2		V_{TFL} (V)	n_{trap} (cm^{-3})	σ_0 (mS $cm^{-1}\times10^{-2}$)
Pristine		0.58	1.23×10^{16}	1.49
CO_2 plasma treatment	90 s	0.21	0.45×10^{16}	9.29
	5 min	0.23	0.49×10^{16}	7.13
	10 min	0.30	0.64×10^{16}	0.57

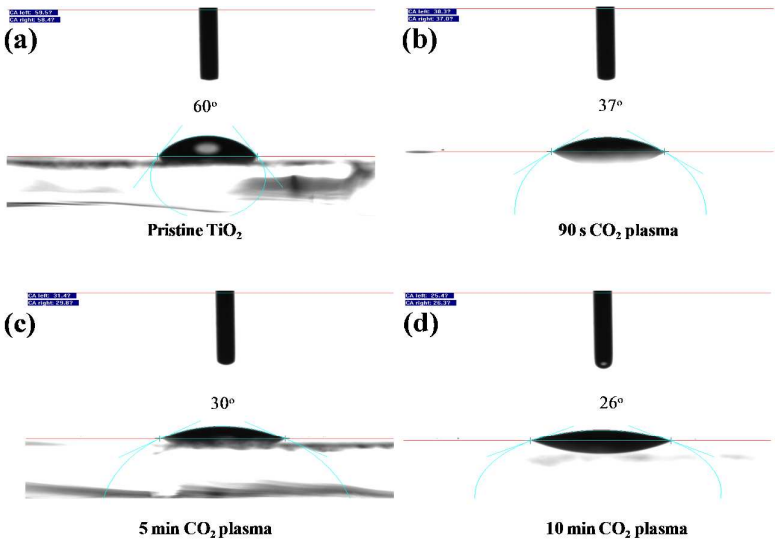

Figure S2. Static contact angles of (a) the pristine TiO_2 film, and TiO_2 films treated by CO_2 plasma for (b) 90 s, (c) 5 min, and (d) 10 min, respectively.

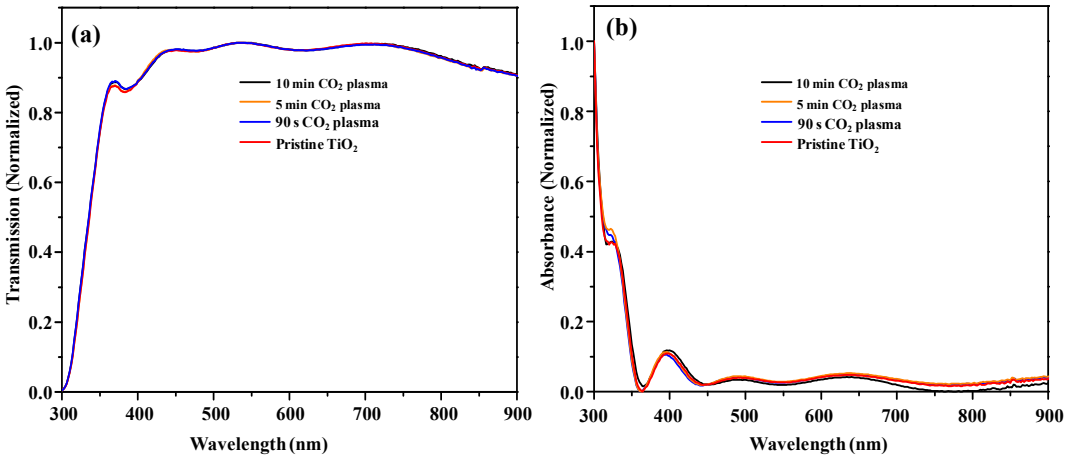

Figure S3. (a) Transmittance and (b) absorbance spectra of the TiO_2 films with CO_2 plasma treatments.

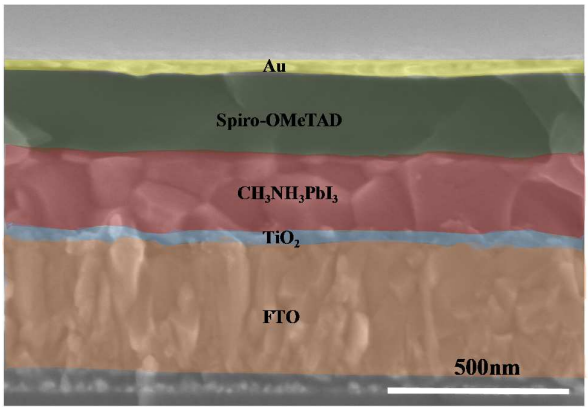

Figure S4. Cross-sectional SEM micrograph of planar perovskite solar cells.

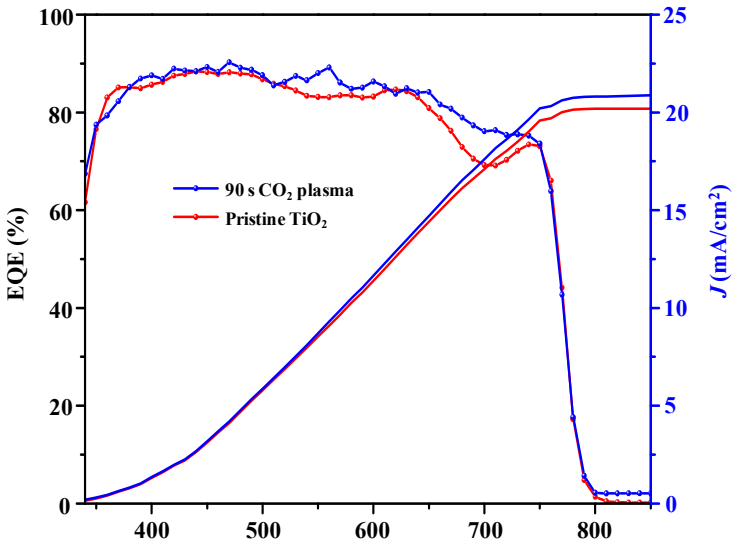

Figure S5. EQE of PSC devices based on the pristine and 90 s CO_2 plasma treated TiO_2 ETLs.