Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information

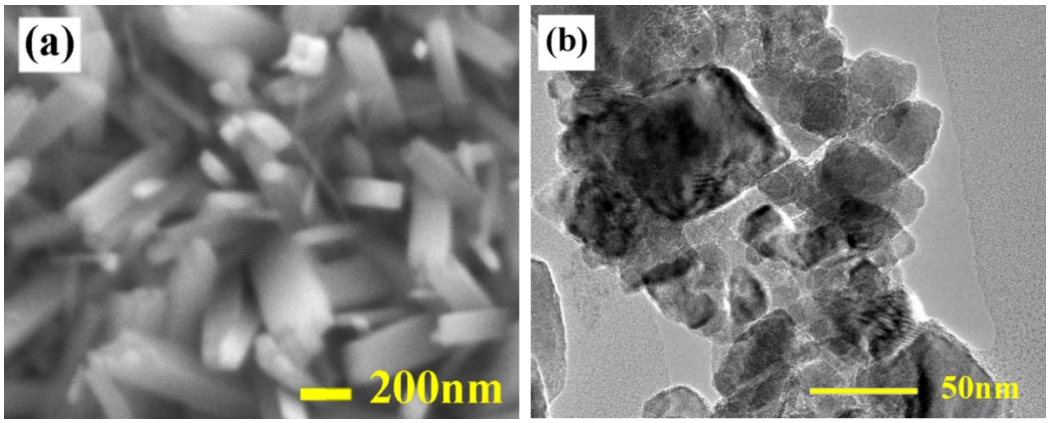

Fig. S1 (a) SEM image of TiO_2 nanorods arrays and (b) TEM block image

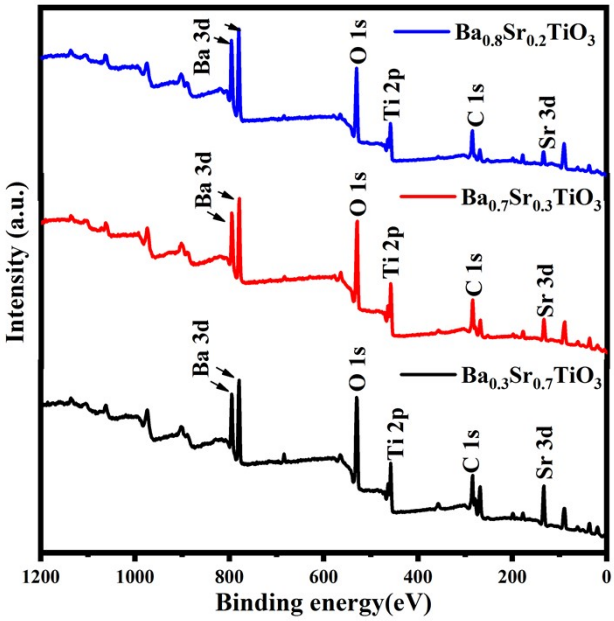

Fig. S2 XPS spectra of $Ba_{0.8}Sr_{0.2}TiO_3$, $Ba_{0.7}Sr_{0.3}TiO_3$ and $Ba_{0.3}Sr_{0.7}TiO_3$

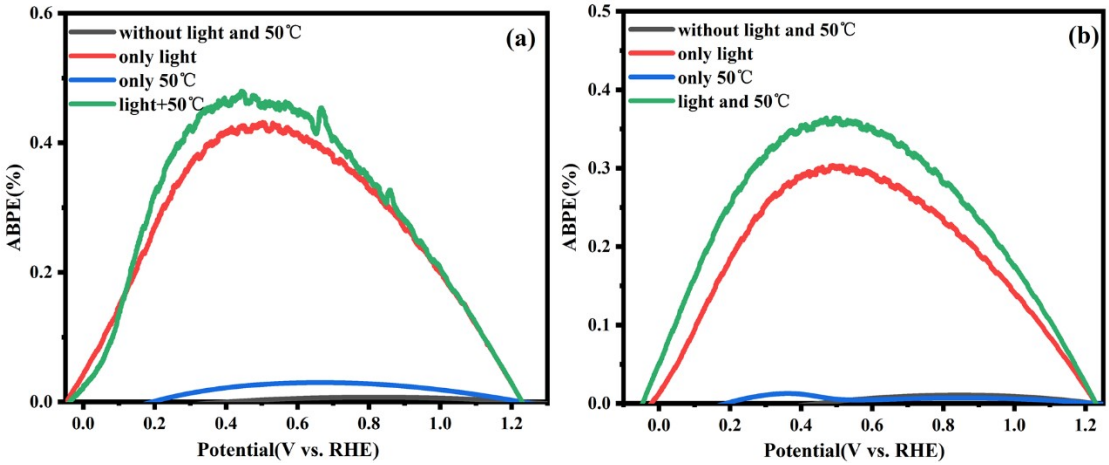

Fig. S3 The applied bias photon-to-current efficiency (ABPE) of (a) $Ba_{0.8}Sr_{0.2}TiO_3$ and (b) $Ba_{0.3}Sr_{0.7}TiO_3$ photoanode

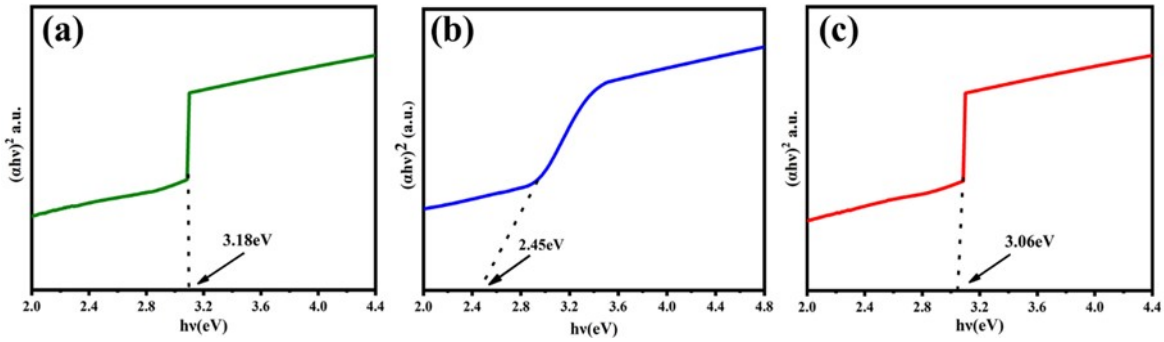

Fig. S4 UV-Vis absorption spectra of different doping concentrations corresponding to tauc plots of (a) $Ba_{0.8}Sr_{0.2}TiO_3$; (b) $Ba_{0.7}Sr_{0.3}TiO_3$; (c) $Ba_{0.3}Sr_{0.7}TiO_3$

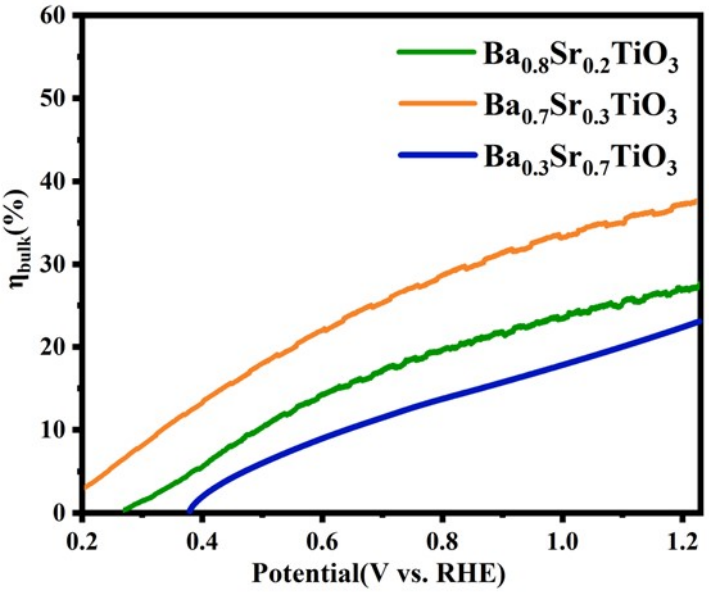

Fig. S5 The bulk charge separation efficiency of three different doping concentrations photoanodes

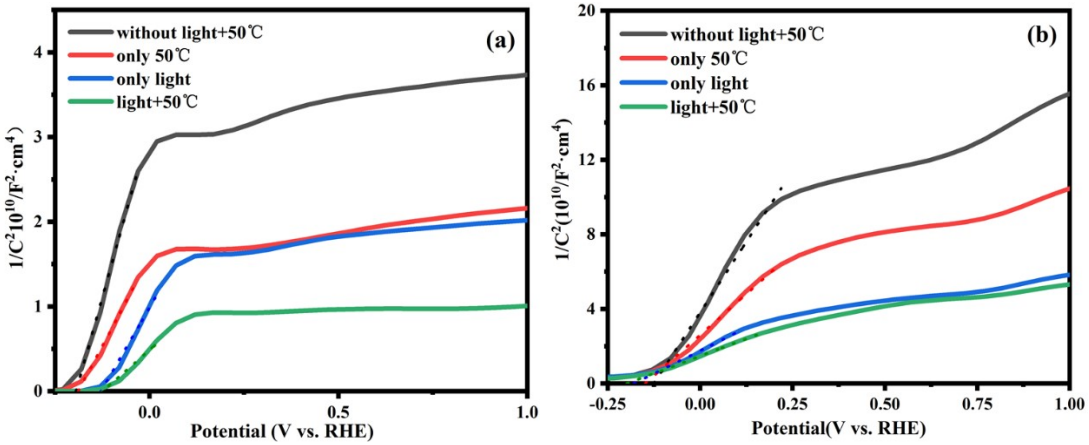

Fig. S6 Mott-Schottky plots of (a) $Ba_{0.8}Sr_{0.2}TiO_3$ and (b) $Ba_{0.3}Sr_{0.7}TiO_3$ photoanode

Tab. S1 Flat band potential (V_{fb}) and donor density (N_A) of $Ba_{0.8}Sr_{0.2}TiO_3$ electrodes deduced from Mott-Schottky

Conditions	V_{fb} （V vs. RHE）	N_A （$\times 10^{20}$ cm^{-3}）
Dark	3.094	0.11
Only light	1.577	0.229
Only 50℃	0.989	0.211
Light and 50℃	0.487	0.452

Tab. S2 Flat band potential (V_{fb}) and donor density (N_A) of $Ba_{0.7}Sr_{0.3}TiO_3$ electrodes deduced from Mott-Schottky

Conditions	V_{fb} （V vs. RHE）	N_A （$\times 10^{20}$ cm^{-3}）
Dark	0.834	0.18
Only light	0.245	3.46
Only 50℃	0.587	0.509
Light and 50℃	0.102	7.62

Tab. S3 Flat band potential (V_{fb}) and donor density (N_A) of $Ba_{0.3}Sr_{0.7}TiO_3$ electrodes deduced from Mott-Schottky

Conditions	V_{fb} （V vs. RHE）	N_A （$\times 10^{20}$ cm^{-3}）
Dark	3.808	0.058
Only light	2.610	0.179
Only 50℃	1.759	0.100
Light and 50℃	1.473	0.237