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Supporting information

Synergetic effects by Co^{2+} and PO_4^{3-} on Mo-doped $BiVO_4$ for an improved photoanodic H_2O_2 evolution

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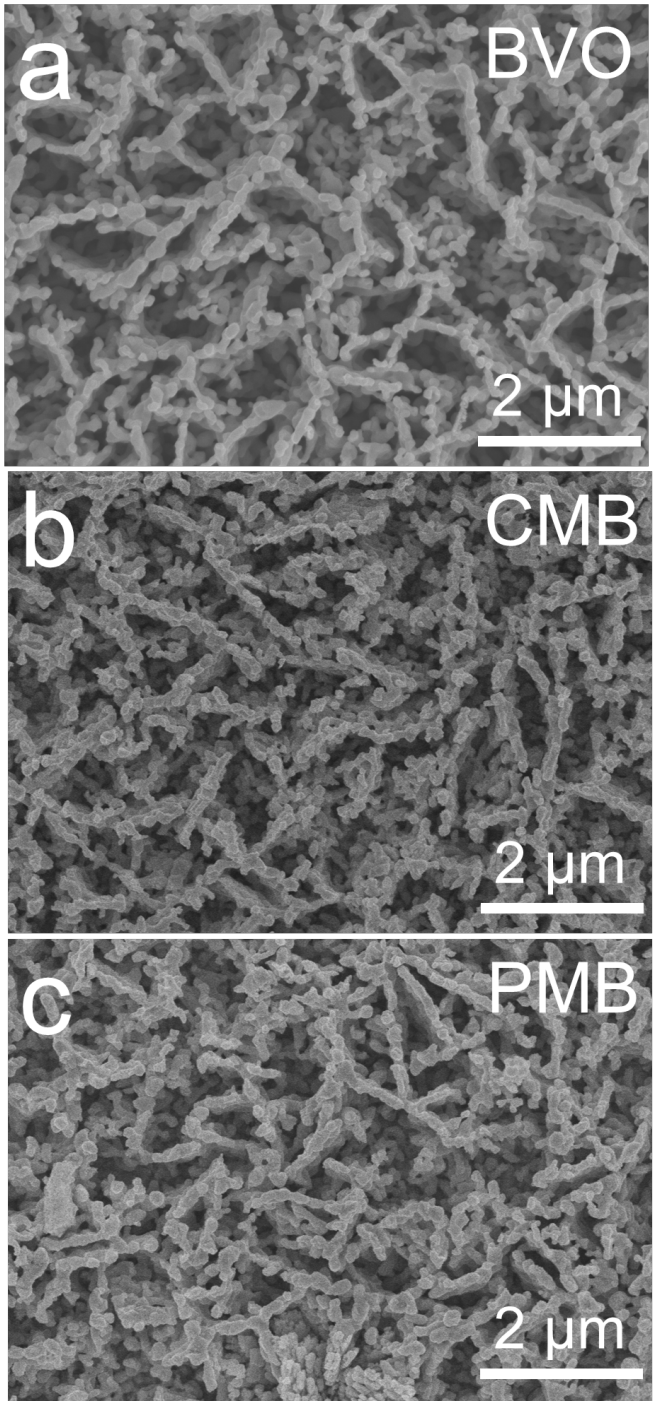

Figure S1. The SEM of (a) BVO, (b) CMB and (c) PMB.

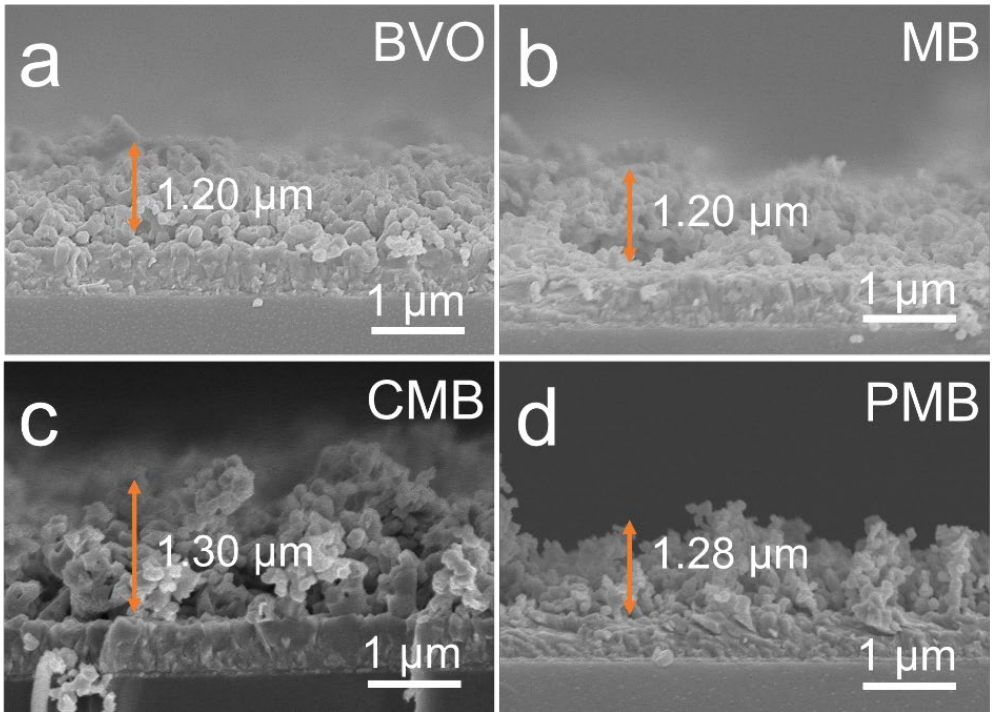

Figure S2. SEM cross section images of (a) BVO, (b) MB, (c) CMB and (d) PMB.

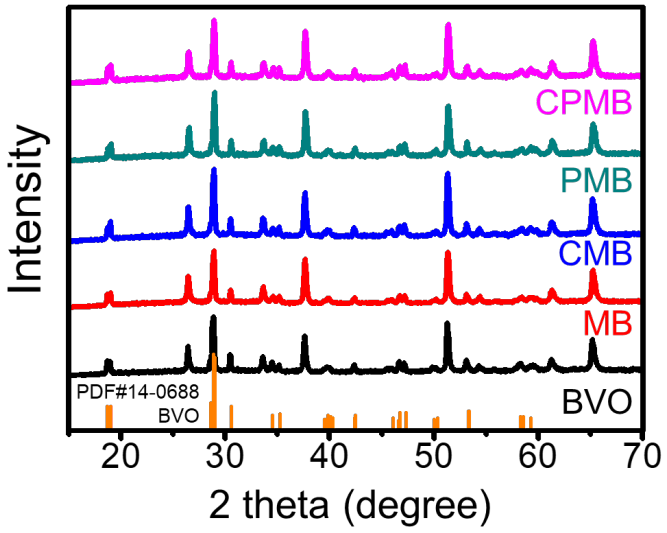

Figure S3. The XRD images of BVO, MB, CMB, PMB and CPMB.

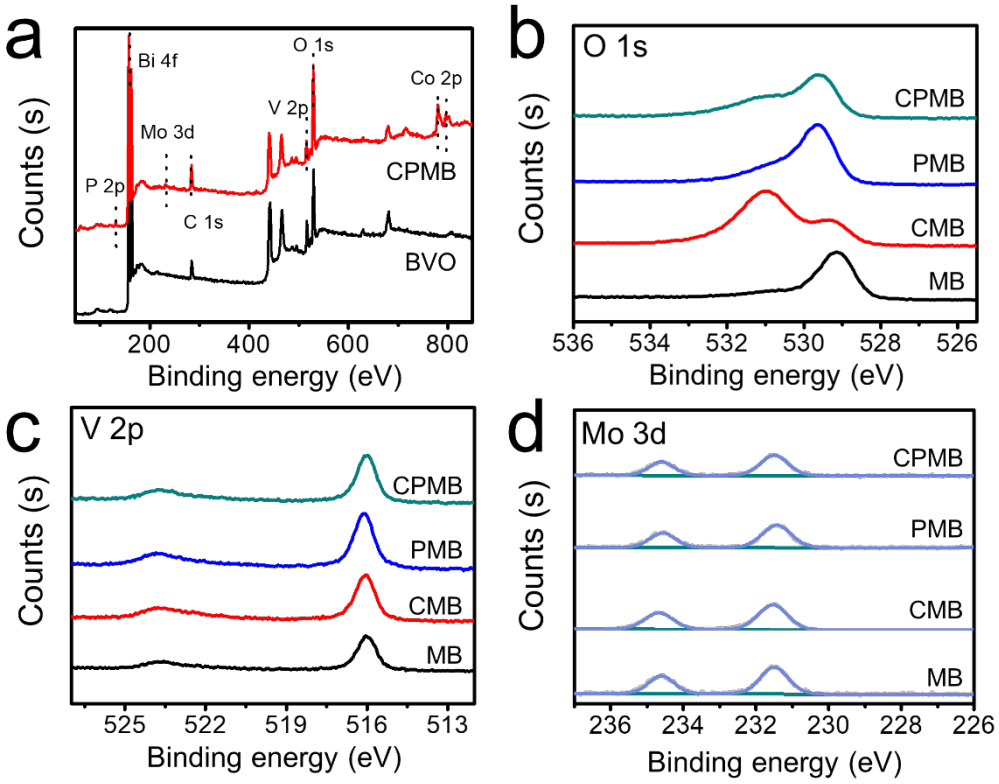

Figure S4. The high-resolution XPS spectra of (a) survey, (b) V 2p, (c) O 1s, (d) Mo 3d for the MB, CMB, PMB and CPMB.

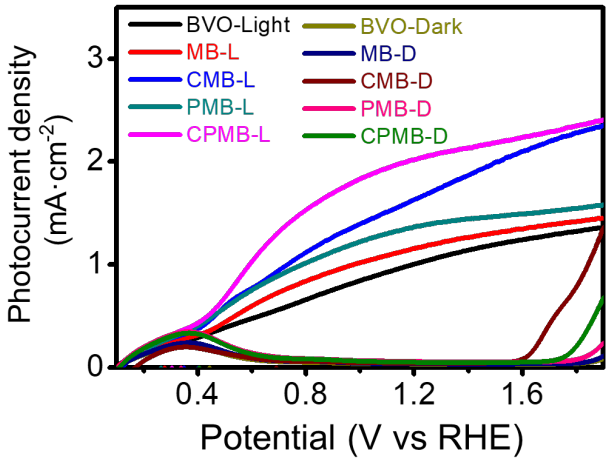

Figure S5. Photocurrent densities of the photoanodes with CO_2 gas bubbling in cooling bath (below 5 ℃) in phosphate buffer solution under AM 1.5G illumination.

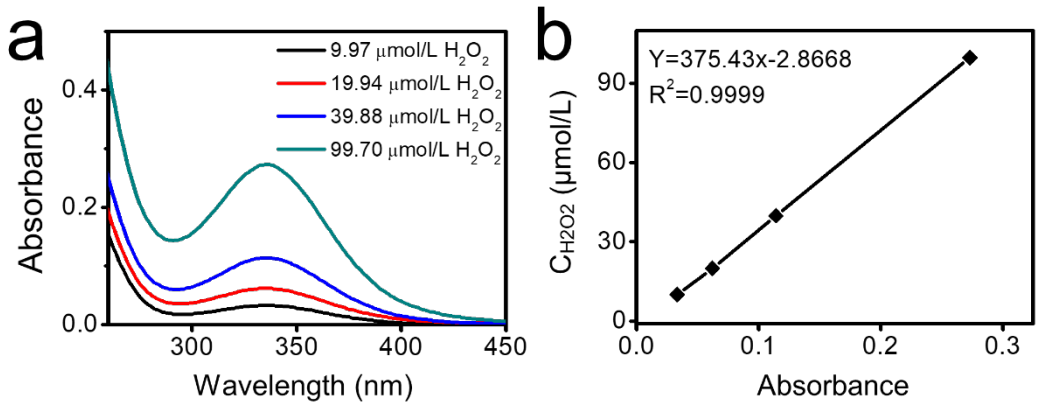

Figure S6. (a) Absorbance curve of standard concentration, (b) the standard curve.

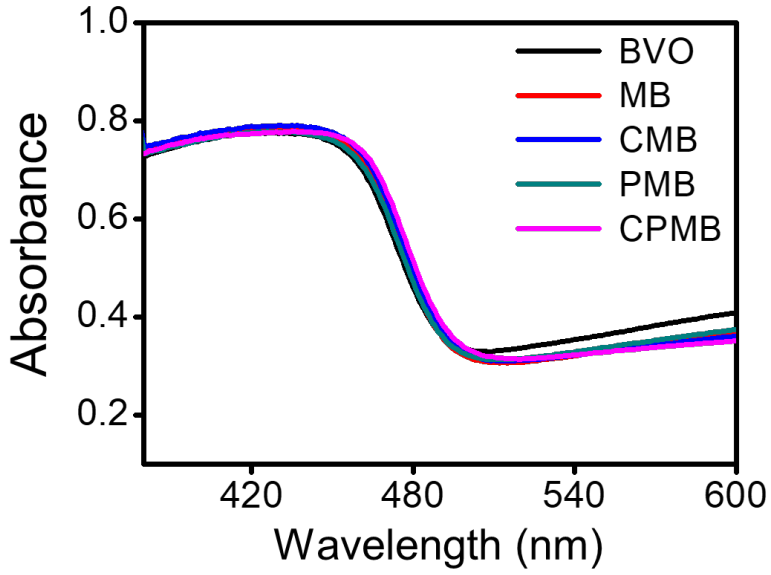

Figure S7. UV-Vis DRS spectra of photoanodes.

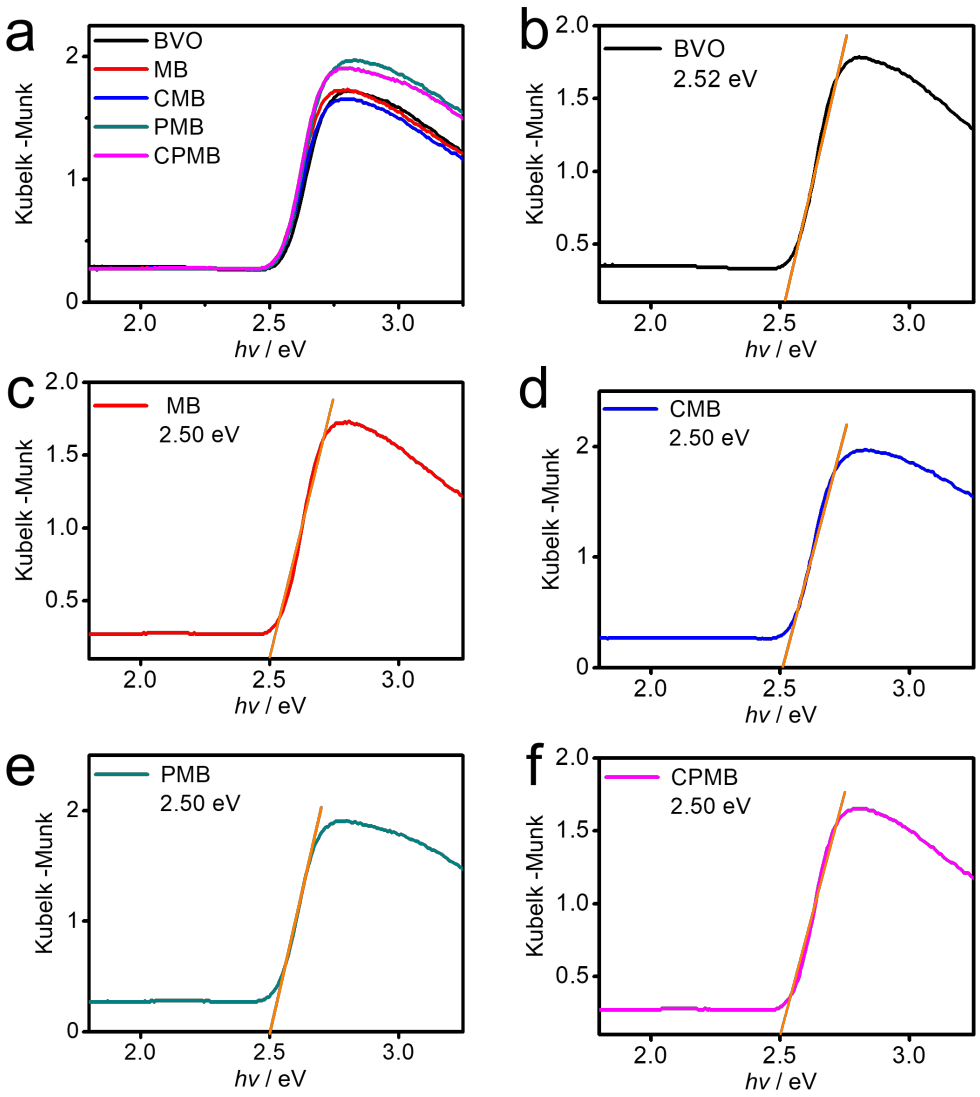

Figure S8. The Kubelka-Munk plots of (a) each photoanode material (b) BVO, (c) MB, (d) CMB (e) PMB and (f) CPMB, respectively.

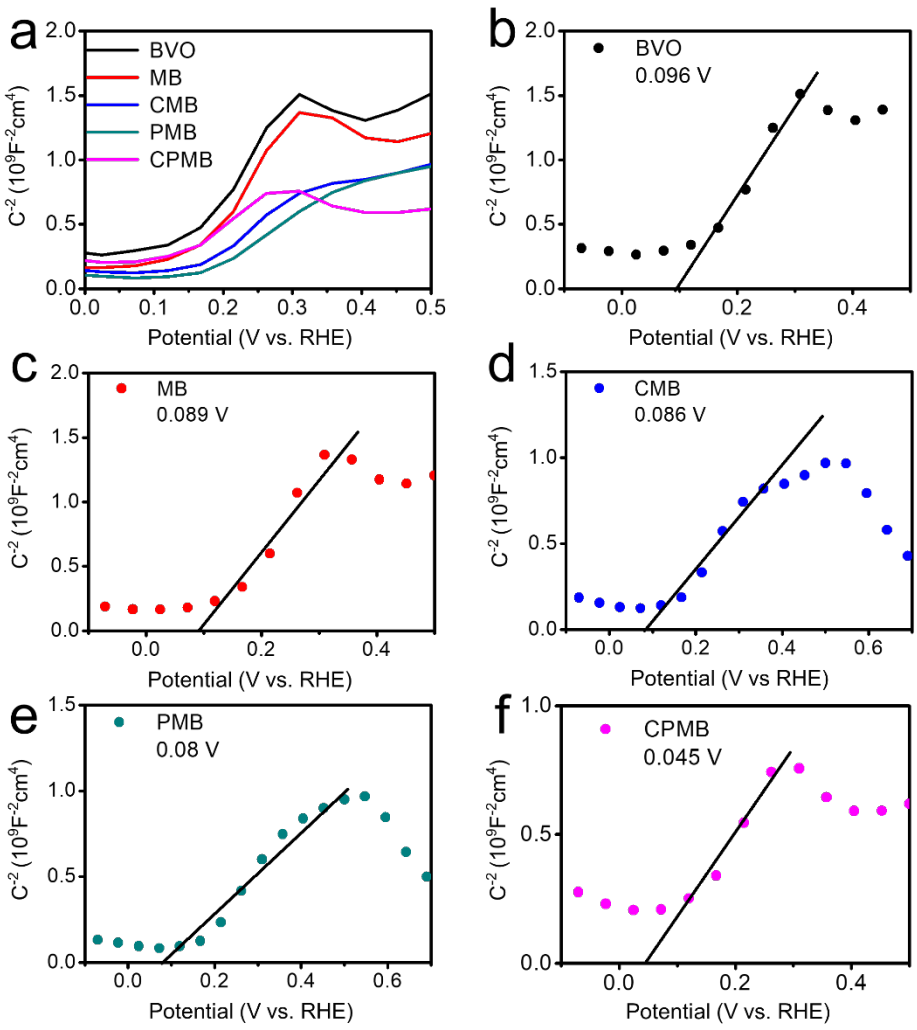

Figure S9. The corresponding Mott-Schottky plots to measure the flat-band potentials of (a) each photoanode material (b) BVO, (c) MB, (d) CMB (e) PMB and (f) CPMB, respectively.

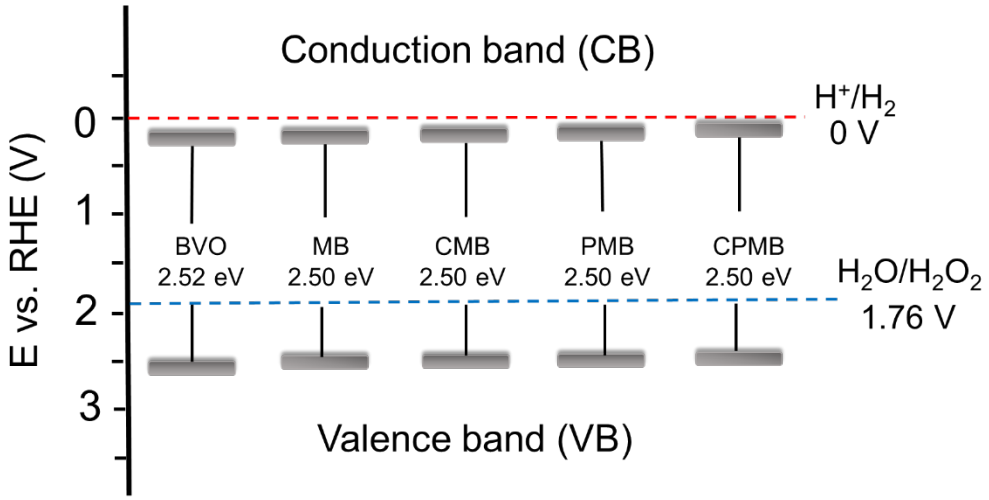

Figure S10. The band structure of photoanodes.

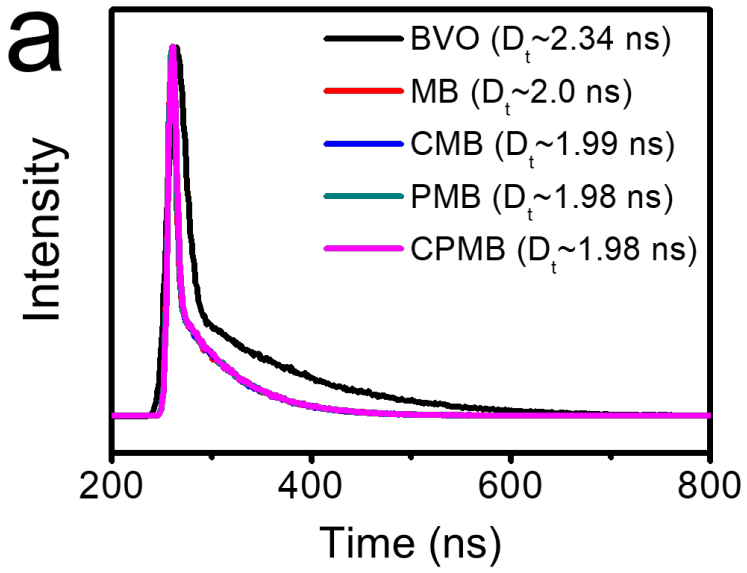

Figure S11. The time-resolved photoluminescence spectra of the BVO, MB, CMB, PMB and CPMB photoanodes.

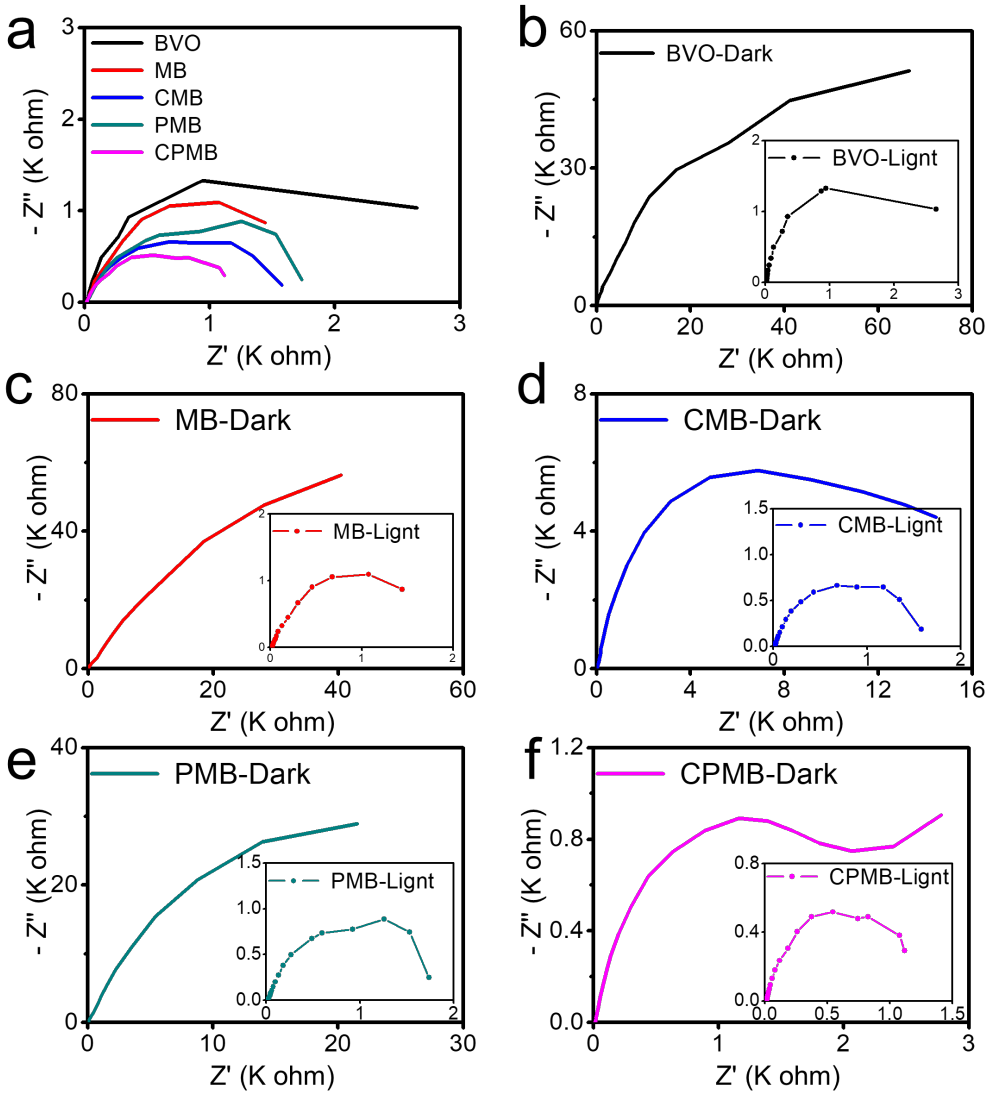

Figure S12. The Nyquist plots of EIS measurements of (a) each photoanode material to light, (b) BVO, (c) MB, (d) CMB, (e) PMB and (f) CPMB under AM 1.5G illumination (solid curves) and off (point curves), respectively.

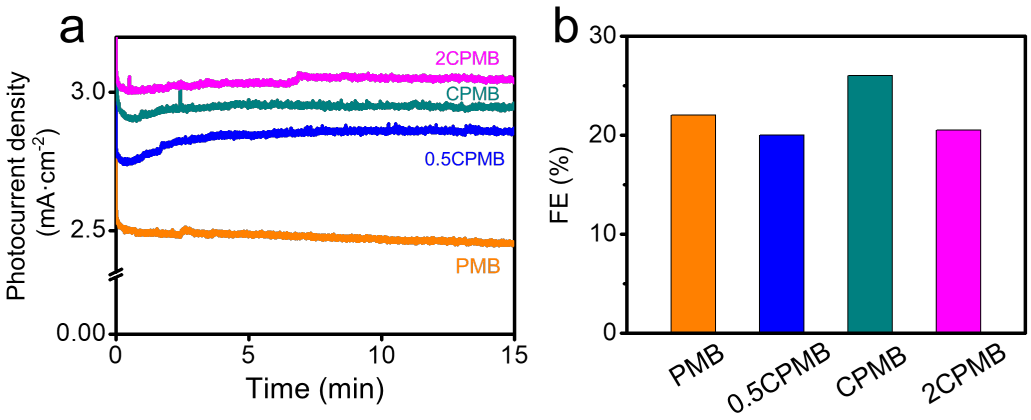

Figure S13. (a) CA curve of photoanodes for H_2O_2ER with the applied voltage of 1.7 V *vs.* RHE. (b) The H_2O_2ER of the photoanodes.