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Supplementary Information

Enhanced charge collection and surface activity of $CuBi_2O_4$ photocathode via crystal facet engineering

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Figures

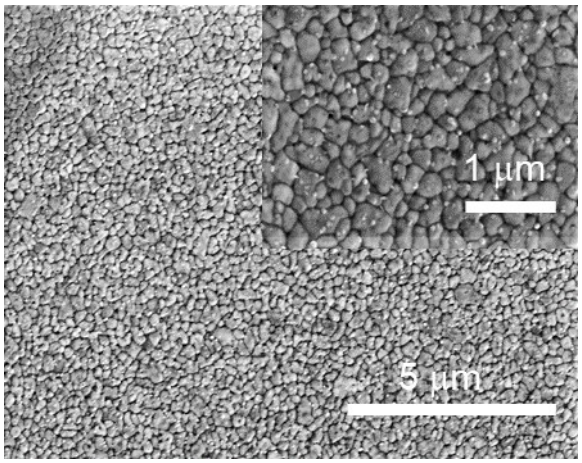

Figure S1. SEM image of grained CBO (g-CBO) film.

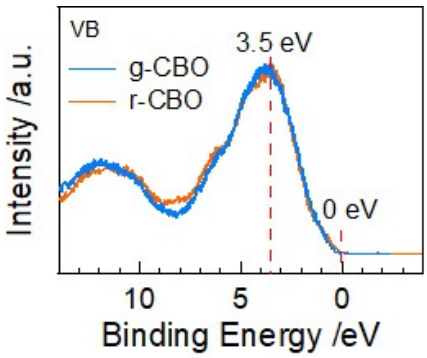

Figure S2. High-resolution XPS spectra of valence band for CBO films.

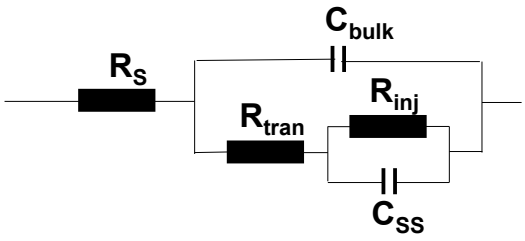

Figure S3. Representative two-RC-unit equivalent fitting models. A typical two-RC-unit equivalent circuit generally consists of three resistances and two capacitors: a series resistance (Rs, essentially small and constant) by the electrolyte, external contact and conductive substrate layer, a transport resistance (R_{tran}) at surface states by the trapping holes, an injection resistance (R_{inj}) at semiconductor–liquid junction, a bulk capacitor of space charge region (C_{bulk}), and a surface states capacitor (C_{ss}).

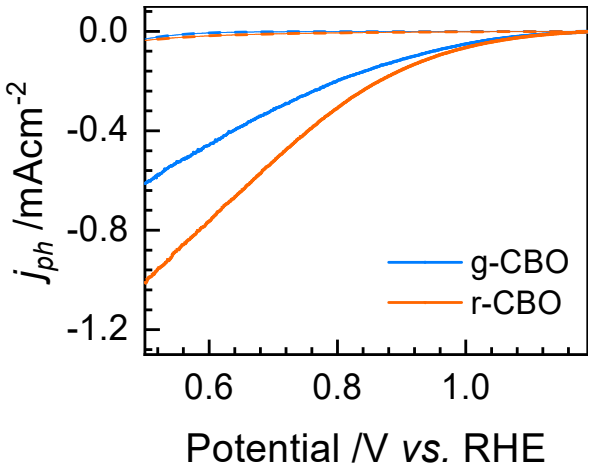

Figure S4. The J-V curves of r-CBO and g-CBO under Xe lamp illumination in 0.1 M $KHCO_3$ with 0.1 M $Na_2S_2O_8$ (pH 8.4) as the electron scavenger.

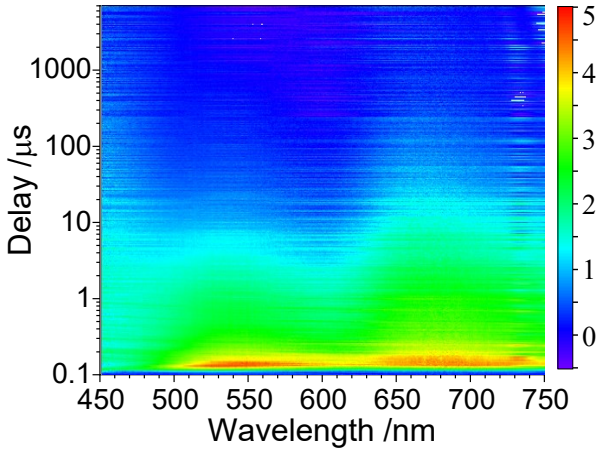

Figure S5. Contour maps of transient absorption spectra in the range of -100 fs to 7.4 ns for g-CBO