SUPPLEMENTARY INFORMATION

Light-Driven Water Oxidation by $BiVO_4/TiO_2$ Photoanode Modified with D102 Organic Dye and Copper(II) Meso-Tetra(4-Carboxyphenyl)Porphyrin

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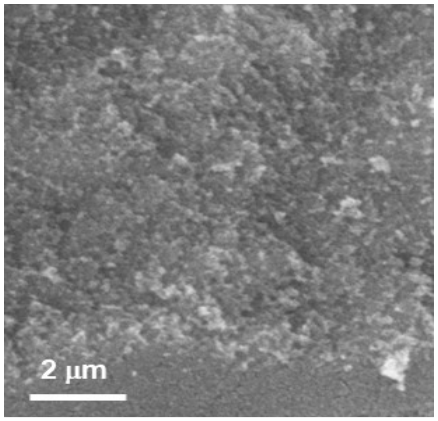

Fig. S1. SEM image of $BiVO_4/TiO_2$/D102-CuTCPP

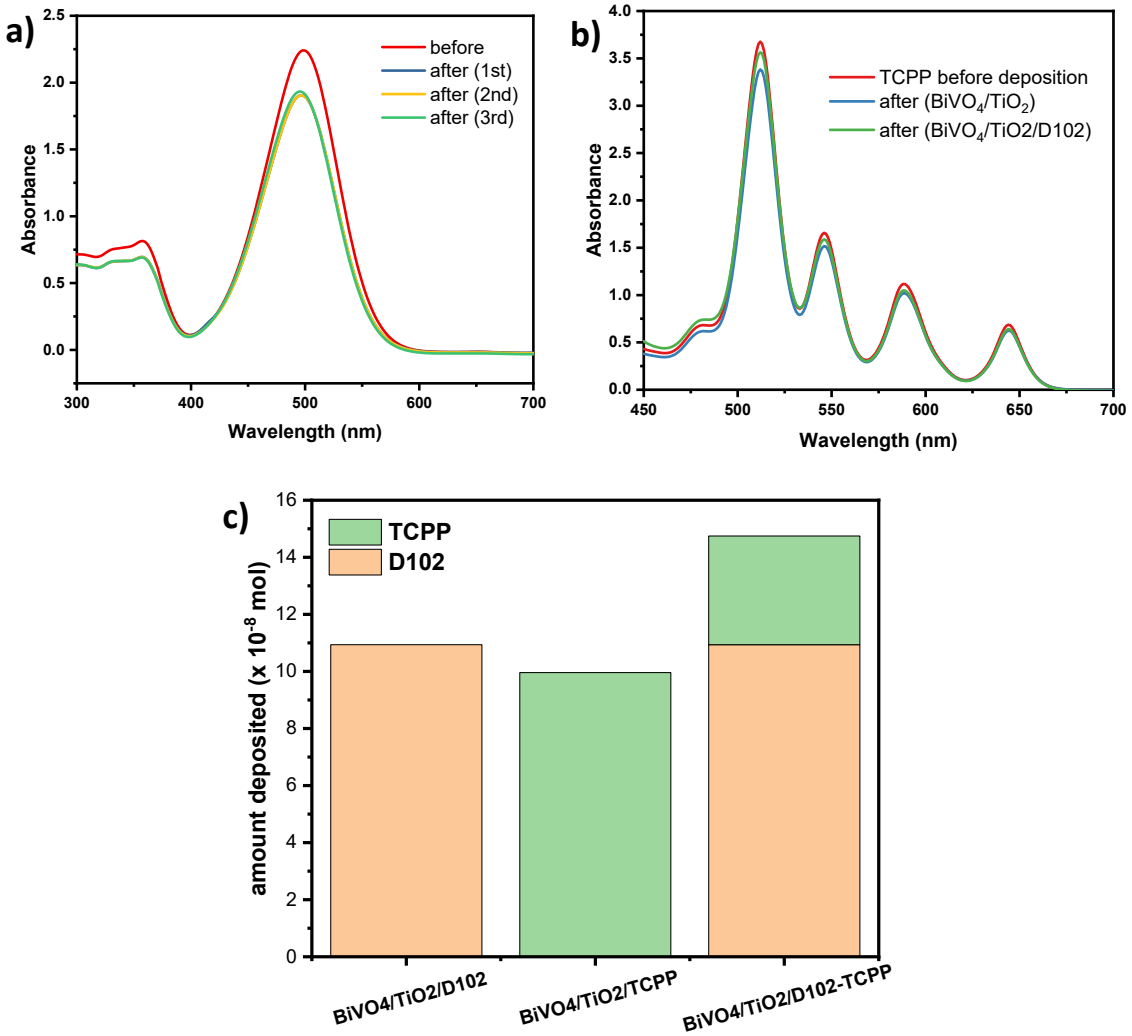

Fig S2. Absorption spectra of **a)** D102 solutions and **b)** TCPP solutions before and after depositions, together with (c) the comparison of their loading amount on 0.81 cm^2 surface in nmol cm^{-2}.

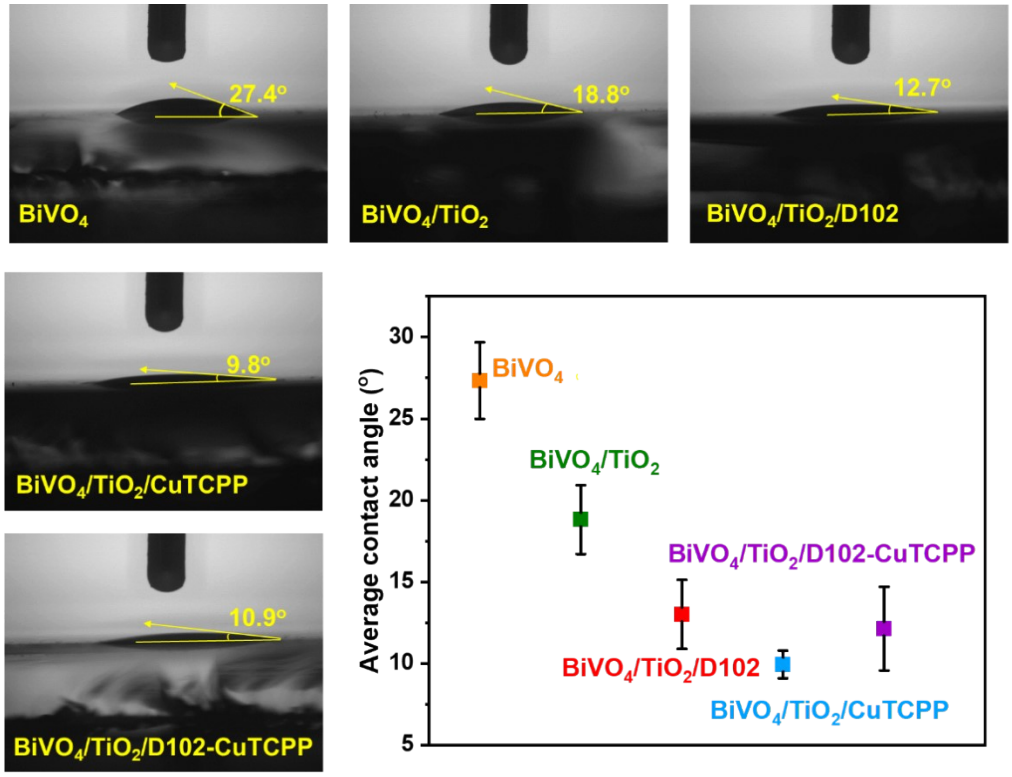

Fig S3. Typical images of the contact angle measurements of the synthesized photoanodes with the comparison of average contact angles obtained from five repetitions on different electrode surfaces.

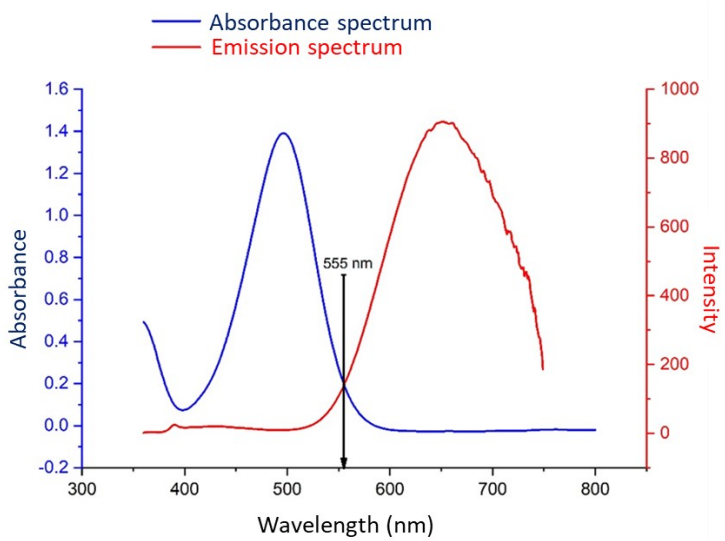

Fig S4. Absorption and emission spectra of D102 solution, showing the intersection wavelength of the absorbance curve and the emission curve at 555 nm. This data was used to calculate energy gap of HOMO and LUMO

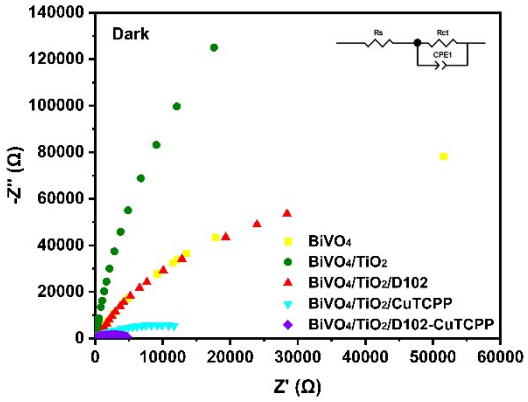

Fig S5. Nyquist plot of the synthesized electrodes in dark condition

Table S1. Fitting results of Nyquist plots of the synthesized electrodes calculated from Figure S5

Sample	R_{ct} (kΩ)	
	dark	light
$BiVO_4$	245.9	131.8
$BiVO_4/TiO_2$	134.8	86.55
$BiVO_4/TiO_2$/D102	185.8	14.5
$BiVO_4/TiO_2$/CuTCPP	14.4	11.8
$BiVO_4/TiO_2$/D102-CuTCPP	5.2	4.4

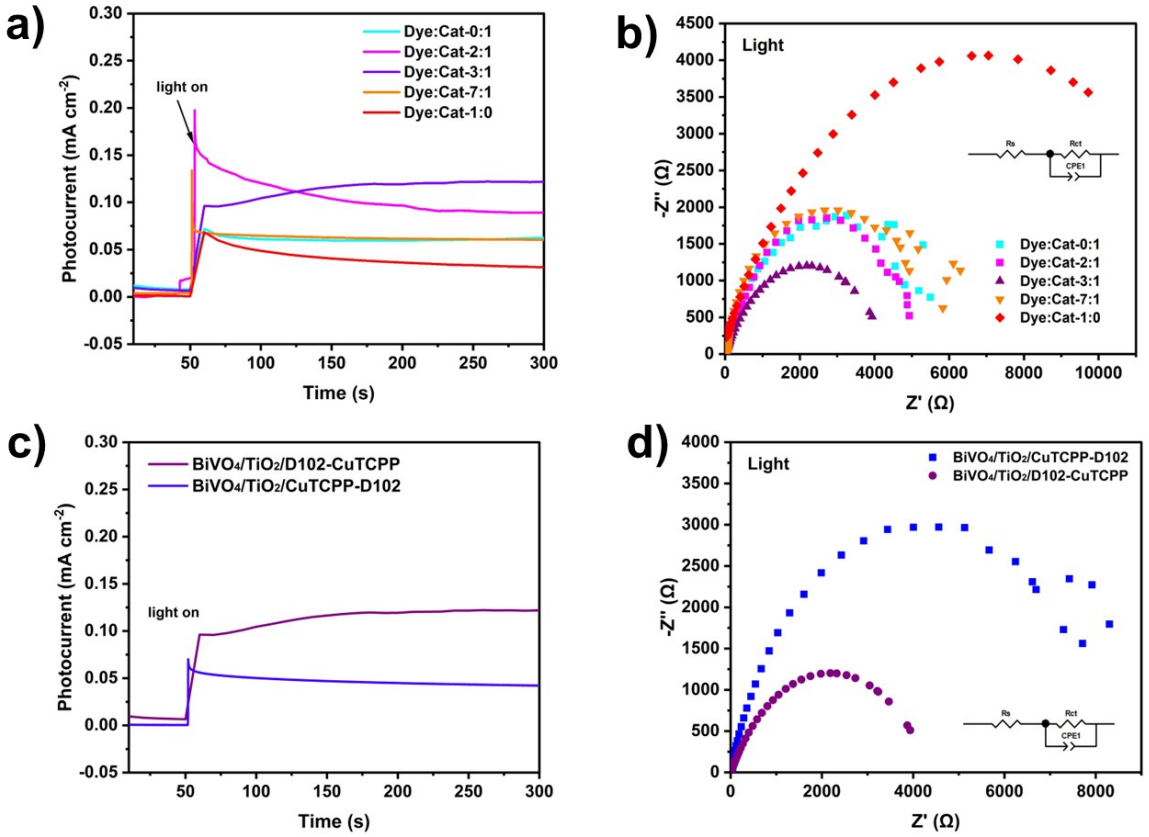

Fig S6. Chronoamperograms and Nyquist Plots of $BiVO_4/TiO_2$ electrodes prepared with (a-b) different mol ratios of D102 and CuTCPP, respectively; and (c-d) different dye and co-catalyst deposition order. $BiVO_4/TiO_2$/D102-CuTCPP was prepared by immersing $BiVO_4/TiO_2$ electrodes in D102 solution for 3 h followed by in TCPP solution for 24 h, while $BiVO_4/TiO_2$/CuTCPP-D102 was prepared by immersing $BiVO_4/TiO_2$ electrodes in TCPP solution for 24 h followed by in D102 solution for 3 h.

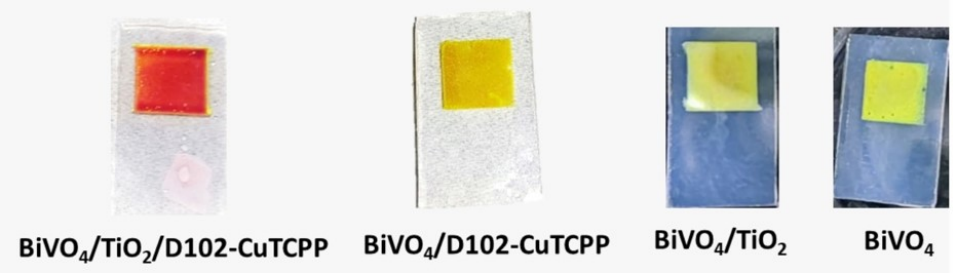

Fig S7. The photographs of $BiVO_4/TiO_2$/D102-CuTCPP; $BiVO_4$/D102-CuTCPP; $BiVO_4/TiO_2$; and $BiVO_4$ photoanodes.