

Supporting Information

**Shape Effect of Cuprous Oxide Particles on Stability in Water and
Photocatalytic Water Splitting**

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Figure S1-S6;

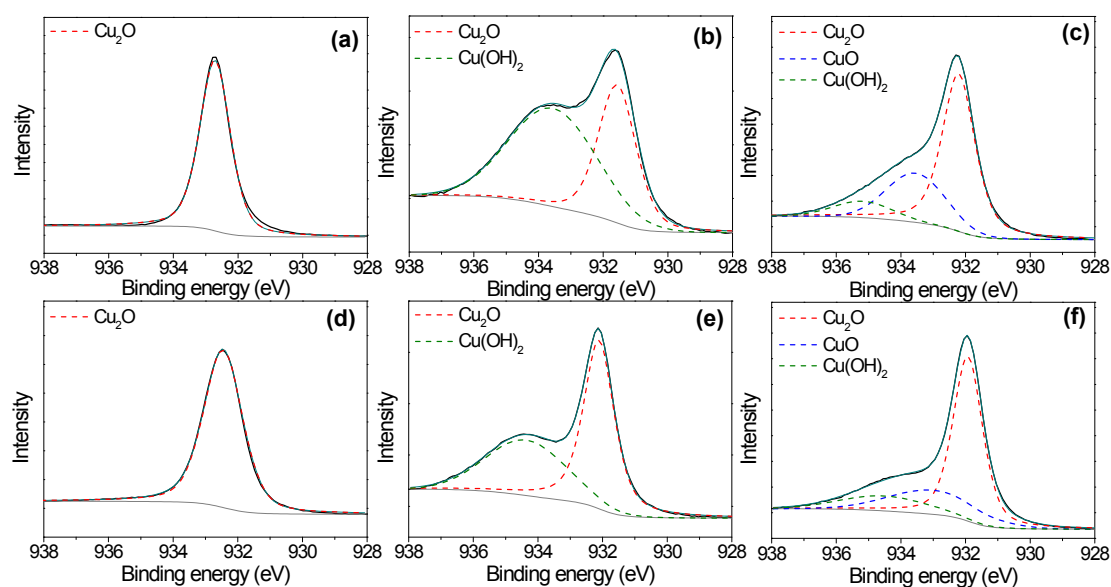


Figure S1. XPS Cu 2p_{3/2} peaks of (a)~(c) cubic and (d)~(f) octahedral Cu₂O. (a), (d) as-made Cu₂O crystals; (b), (e) after three weeks in deionized water; (c), (f) after 9 hrs in photo-irradiation

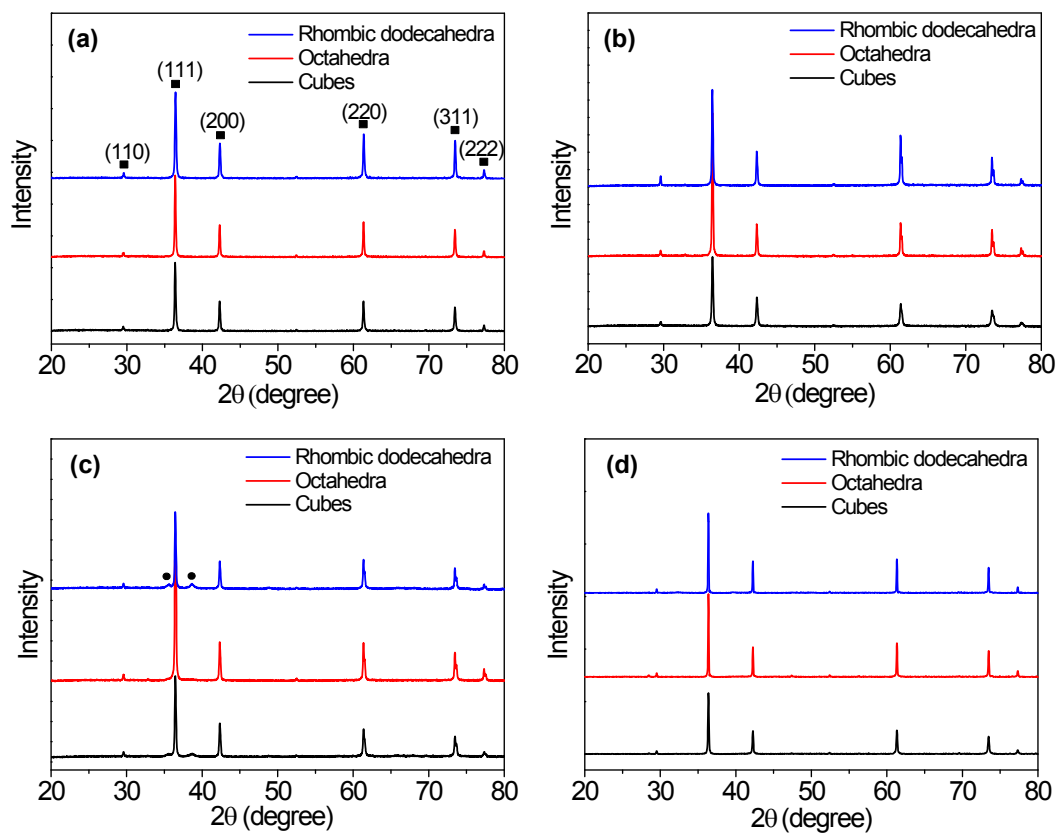


Figure S2. XRD patterns of cubic, octahedral, and rhombic dodecahedral Cu_2O crystals; (a) as-made crystals; (b) after 3 weeks in deionized water; (c) after 9 hrs in light irradiation. (d) XRD patterns of TiIrO_x -coated Cu_2O for each shape. ■ indicates the peaks of Cu_2O and ● indicates the peaks of CuO . The deionized water was used without purging.

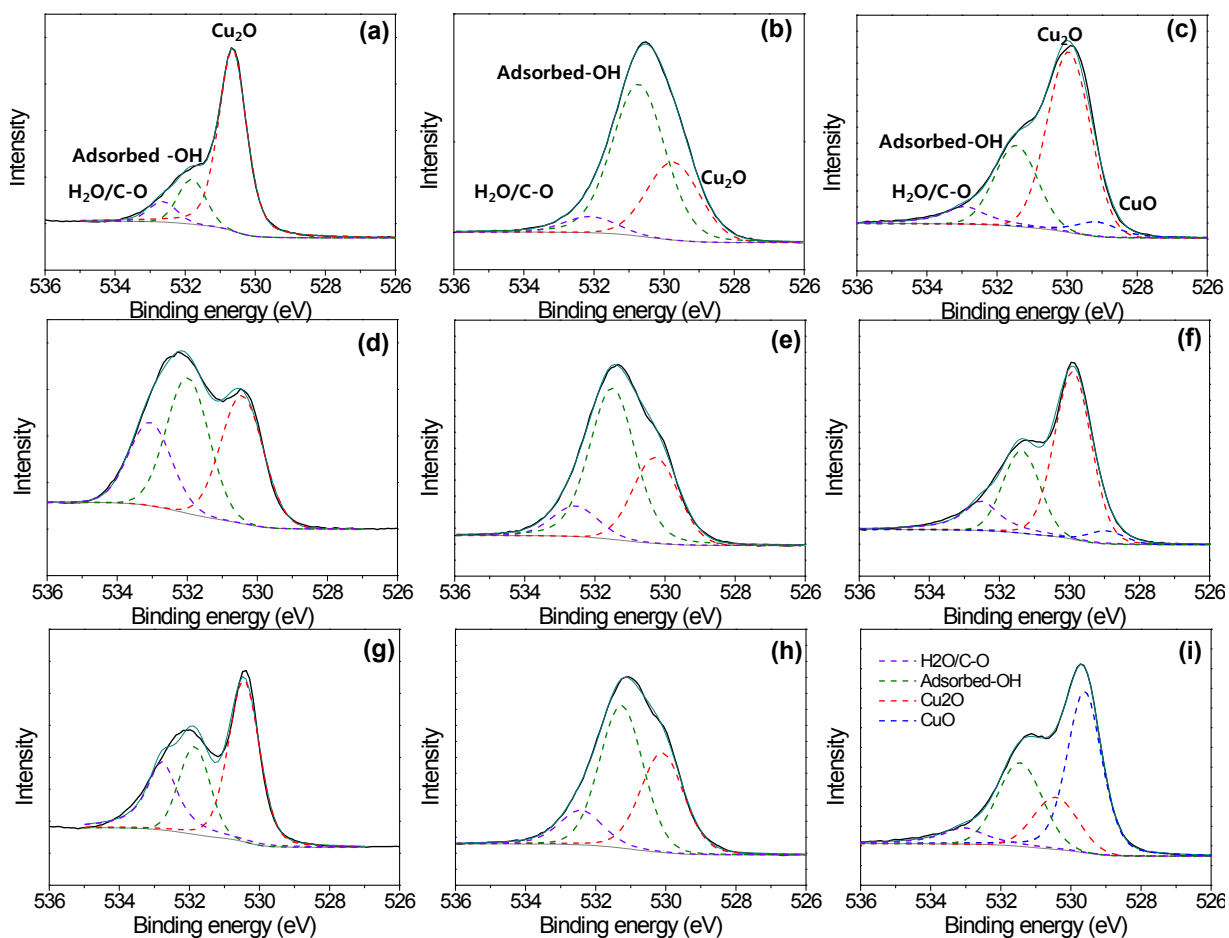


Figure S3. XPS O1s peaks of (a)~(c) cubic (d)~(f) octahedral, and (g)~(i) rhombic dodecahedral Cu_2O . (a), (d), (g) as-made Cu_2O crystals; (b), (e), (h) after three weeks in deionized water; (c), (f), (i) after 9 hrs in photo-irradiation.

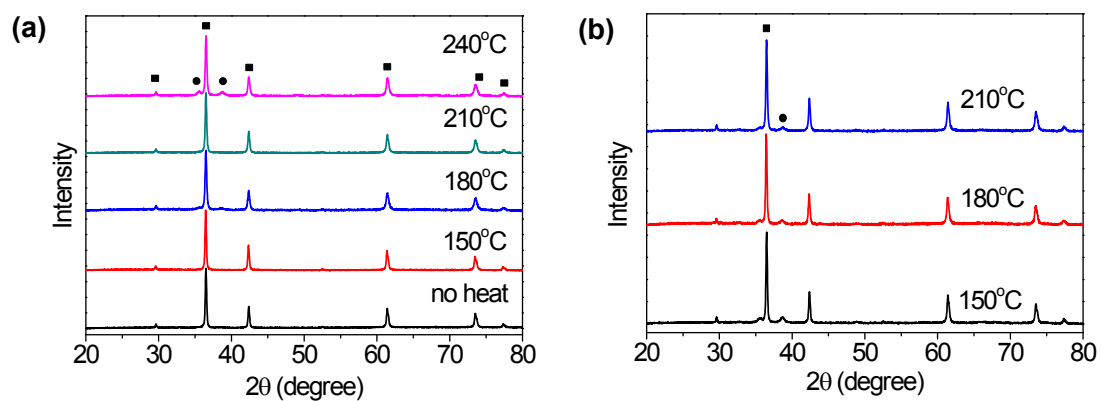


Figure S4. XRD patterns of (a) TiO_x -coated Cu_2O samples which were treated at different temperatures, and (b) after light irradiation for 9 hrs for TiO_x -coated Cu_2O samples treated at different temperatures. The deionized water was used without purging. ■ indicates the peaks of Cu_2O and ● indicates the peaks of CuO . The degree of phase deformation upon light irradiation was estimated by comparing the ratio of the peak intensity at 36.5° and 38.7° in (b).

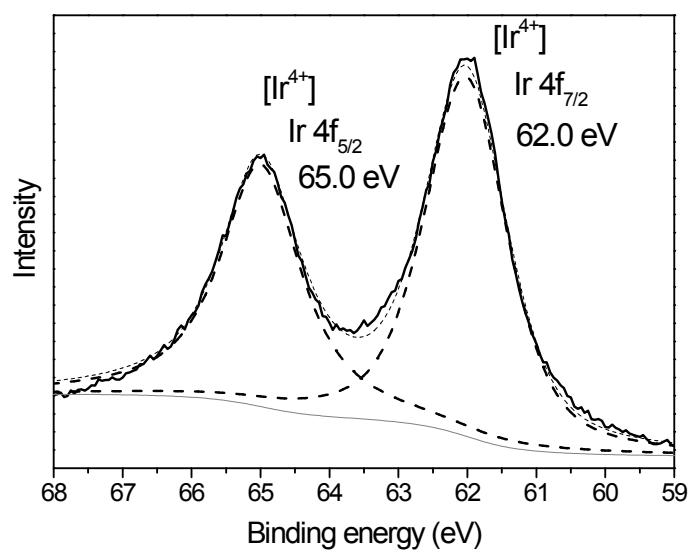


Figure S5. XPS Ir 4f peaks for TiIrO_x overlayers on rhombic dodecahedral Cu_2O particles

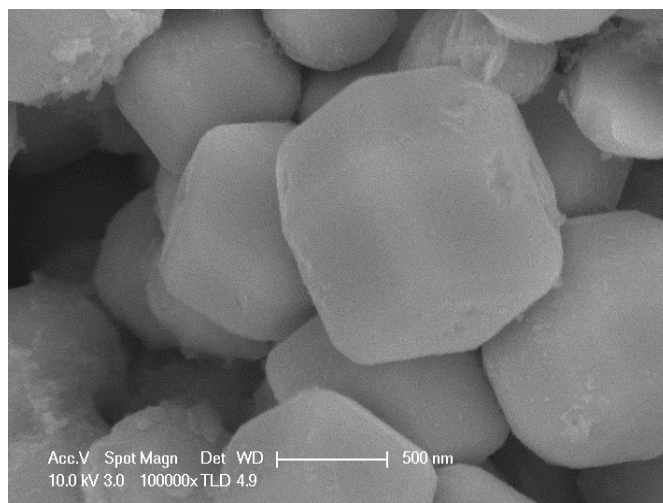


Figure S6. SEM image of TiIrO_x -coated rhombic dodecahedral Cu_2O particles after the third run of photocatalytic water splitting