Supporting Information for

Zinc-cobalt oxides as efficient water oxidation catalysts: the promotion effect of ZnO

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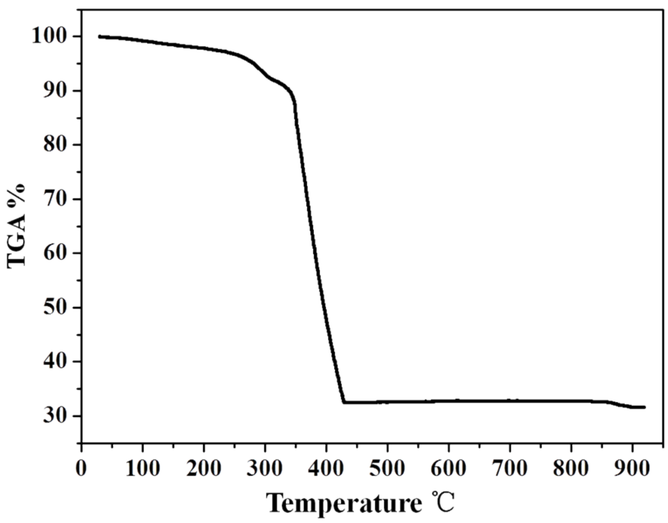

Figure S1. TG profile of Zn-$Co_{1.0}$-coordination polymers.

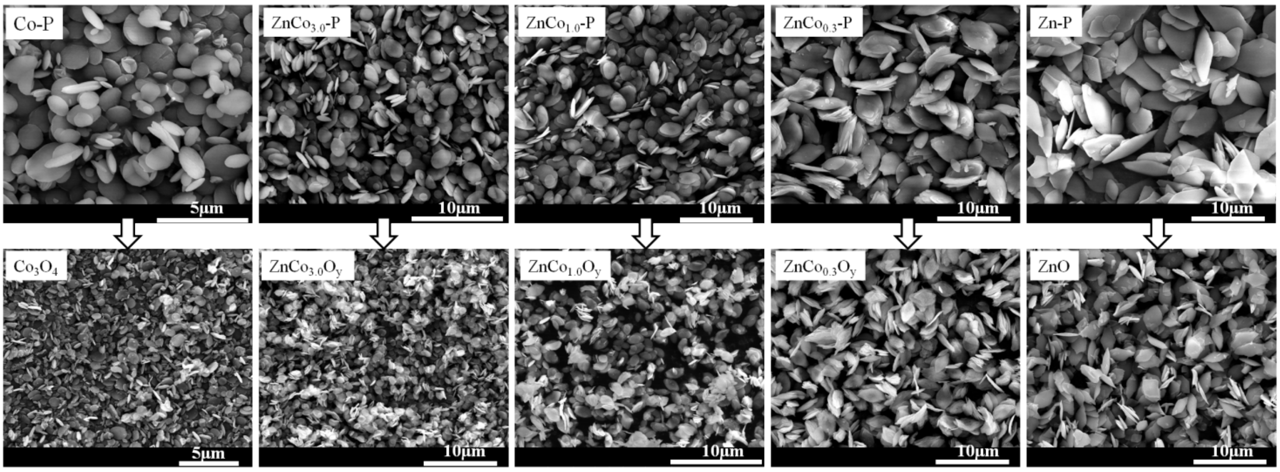

Figure S2. SEM images of a section of Zn-Co_x-coordination polymer precursors and $ZnCo_xO_y$ oxides, the ligand PTCDA was abbreviated as P in the images.

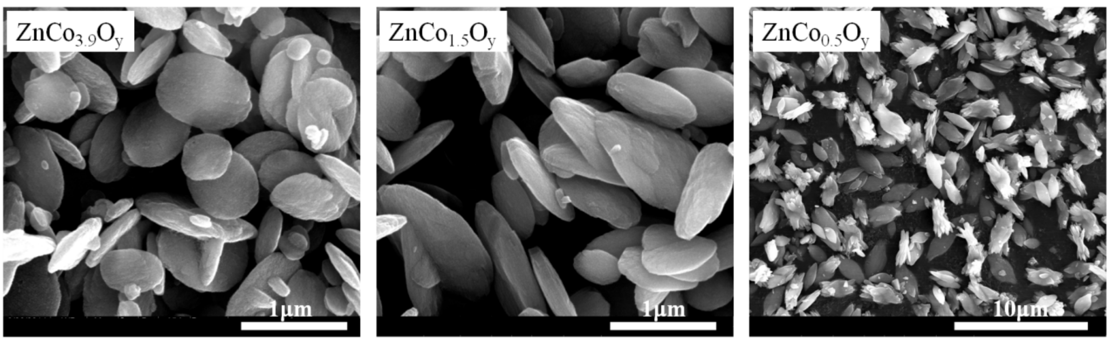

Figure S3. SEM images of a section of $ZnCo_xO_y$ oxides.

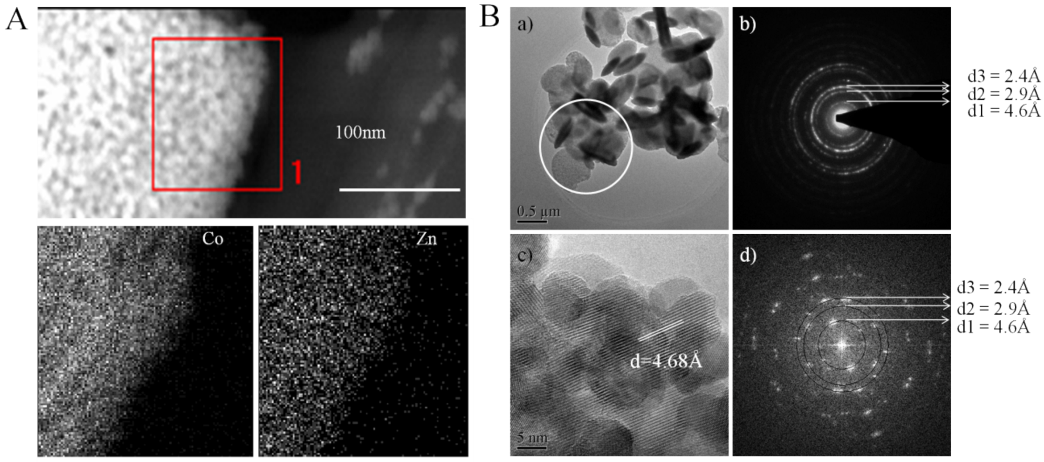

Figure S4. A, Elemental mapping of Zn and Co in $ZnCo_{3.0}O$; B, Selected-area electron diffraction (SAED) analyses (b) toward (a), Fourier transforming (d) to the whole area of HR-TEM (c).

Element distribution analysis on the selected nano-region (Figure S4 A) shows the similarity of Zn and Co, which proves that no phase separation is occurred in $ZnCo_{3.0}O_y$. Polycrystalline diffraction ring (Figure S4 B (b)) shows no specific diffractive (d_{002}=2.6Å) of ZnO, which is different from Co_3O_4. From Fourier transforming (Figure S4 B (d)), the specific diffractive (d_{002}=2.6Å) of ZnO was not found either.

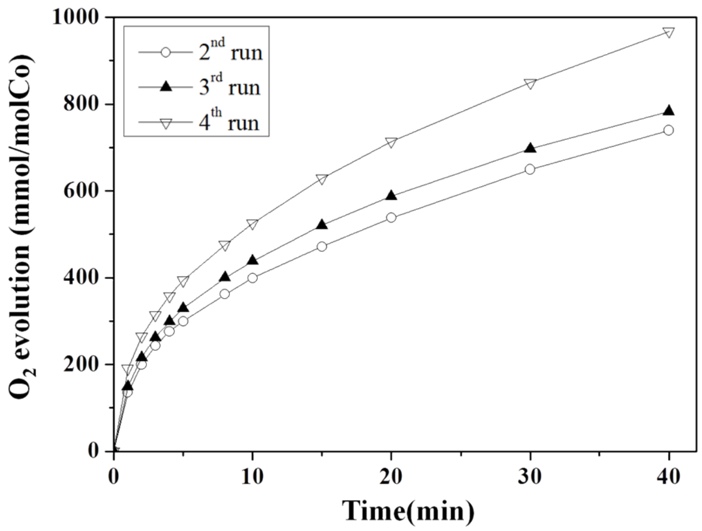

Figure S5. Recycling data of $ZnCo_{1.0}O_y$ in water oxidation using Ce(IV) as oxidants.

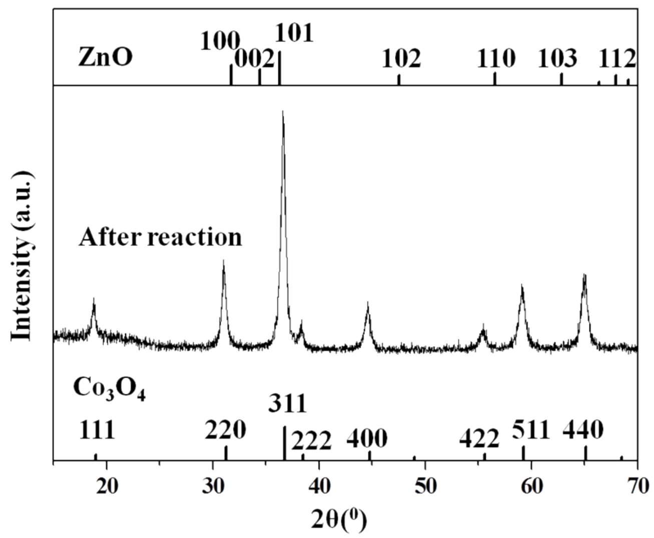

Figure S6. XRD pattern of $ZnCo_{1.0}O_y$ after water oxidation using Ce(IV) as oxidant.

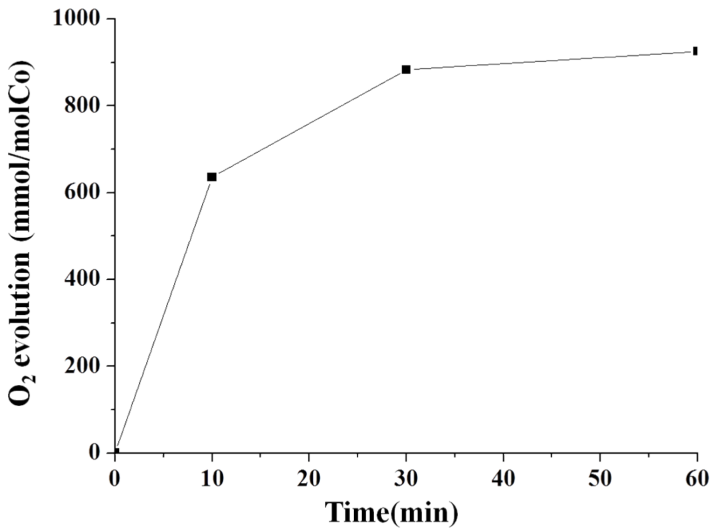

Figure S7. Recycling data of $ZnCo_{1.0}O_y$ in water oxidation utilizing a reactor – gas chromatography (GC) combination system.

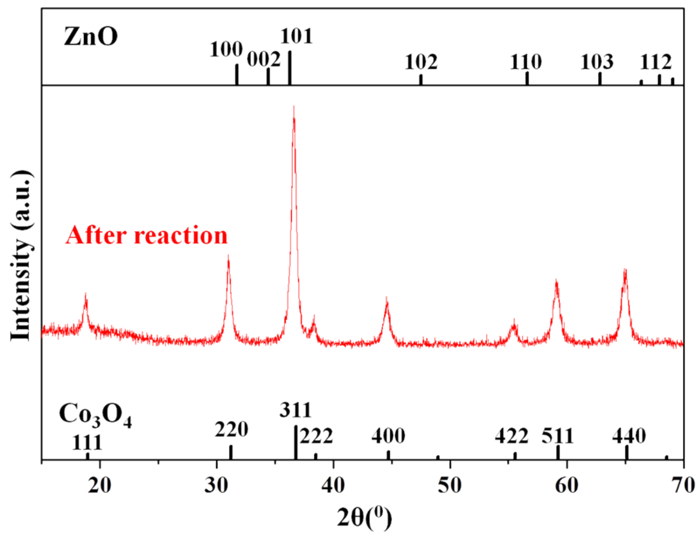

Figure S8. XRD pattern of $ZnCo_{1.0}O_y$ after water oxidation in a reactor – gas chromatography (GC) combination system.