Supporting Information

CoO/Co_3O_4 heterostructures with intimate contact promote photocatalytic CO_2 reduction

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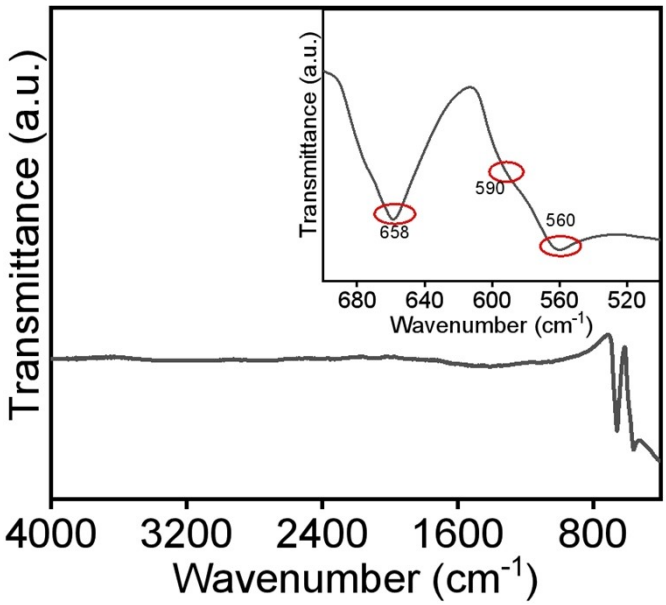

Fig. S1 FT-IR spectrum of obtained CoO/Co_3O_4.

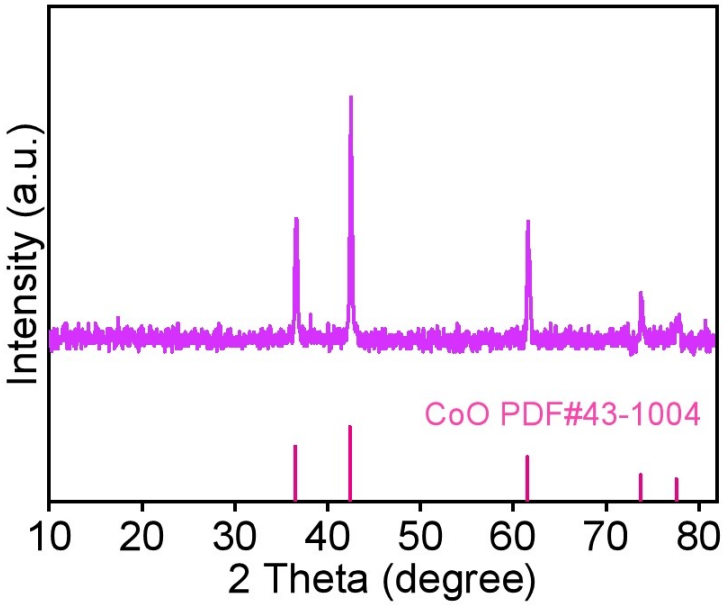

Fig. S2 X-ray diffraction (XRD) pattern of C-CoO.

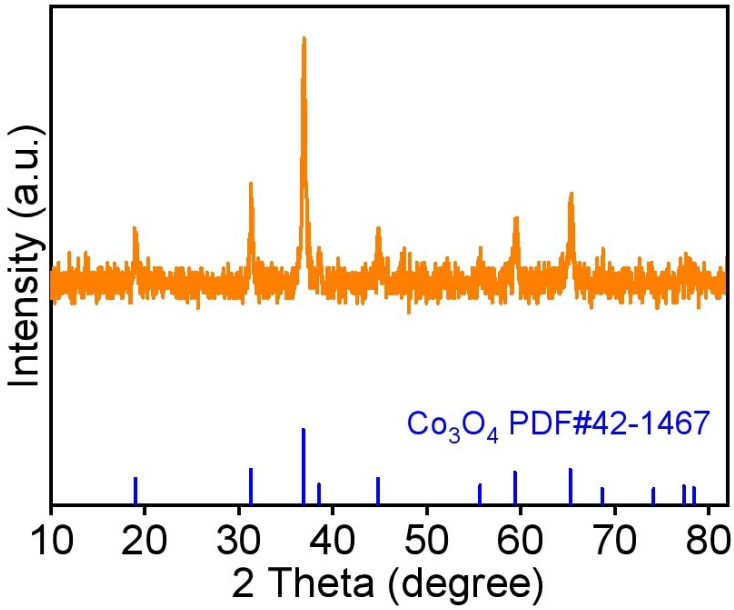

Fig. S3 X-ray diffraction (XRD) pattern of T-Co_3O_4.

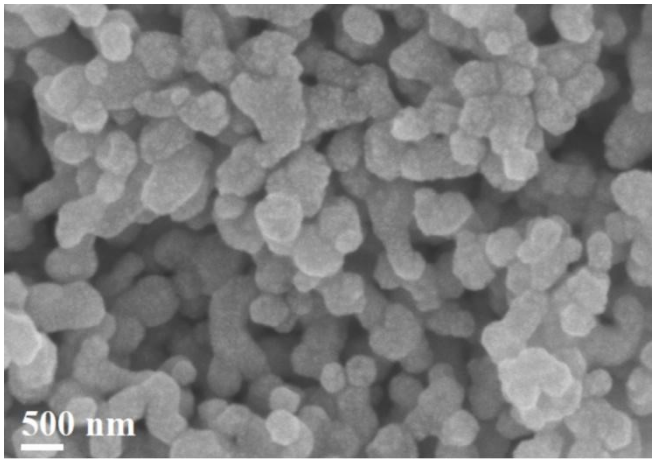

Fig. S4 Field emission scanning electron microscopic (FESEM) image of C-CoO.

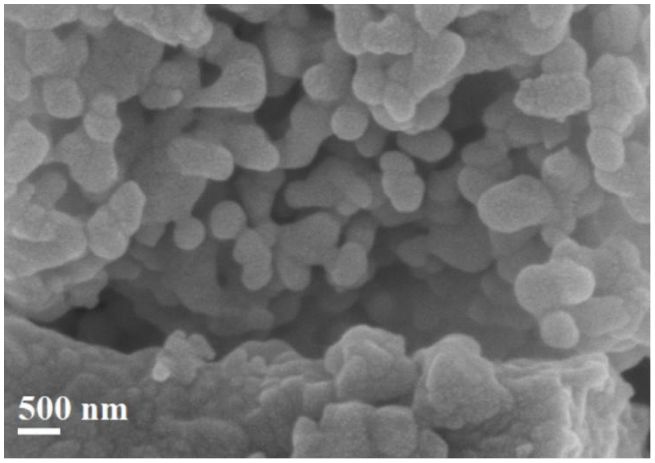

Fig. S5 Field emission scanning electron microscopic (FESEM) image of T-Co_3O_4.

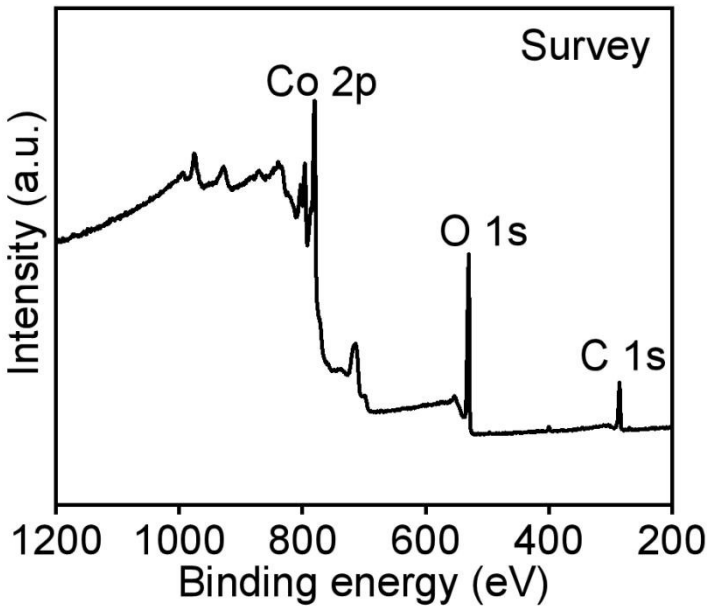

Fig. S6 XPS survey spectra of C-CoO.

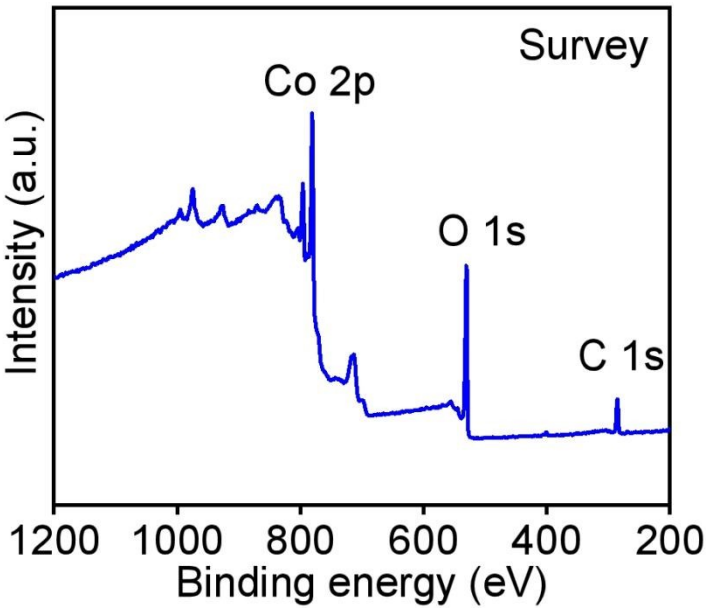

Fig. S7 XPS survey spectra of T-Co_3O_4.

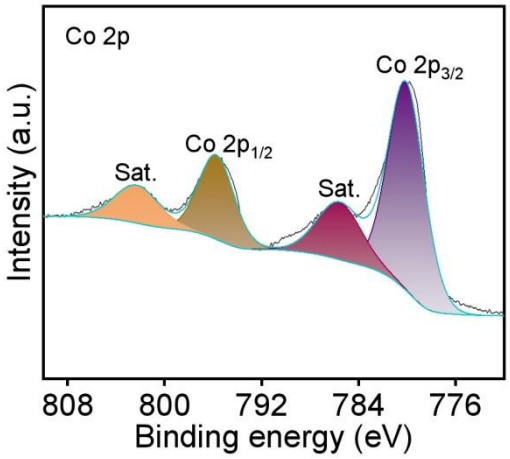

Fig. S8 High-resolution XPS spectra of Co 2p of C-CoO.

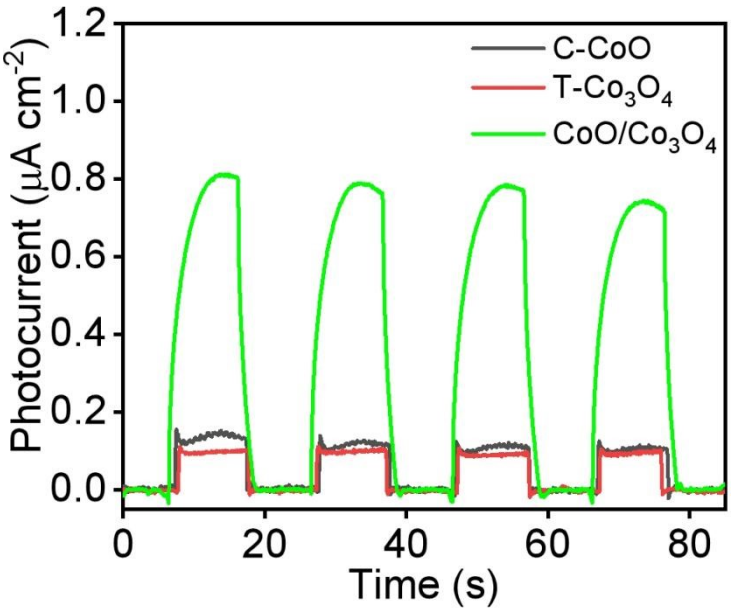

Fig. S9 Transient photocurrent curves of C-CoO, T-Co_3O_4 and CoO/Co_3O_4.

Table S1. Comparison of the photocatalytic CO_2 reduction activities of metal oxide-based photocatalysts.

Photocatalyst	Light source	Conditions	Dosage	CO ($\mu mol\ g^{-1}\ h^{-1}$)	CH_4 ($\mu mol\ g^{-1}\ h^{-1}$)	Ref
CoO@N-GC-500	UV-Vis light: 300 W Xe lamp	CO_2 and H_2O vapor	50 mg	5.16	10.03	1
Co@Ni/GC-700	UV-Vis light: 300 W Xe lamp	CO_2 and H_2O vapor	50 mg	4.89	9.79	2
ZnO@Co_3O_4	UV-Vis light: 300 W Xe lamp	CO_2 and H_2O vapor	100 mg	6.50	0.99	3
NiO/g-C_3N_4	UV-Vis light: 300 W Xe lamp	CO_2 , H_2O, triethanolamine	20 mg	2.75	1.79	4
MnO_2/g-C_3N_4	UV-Vis light: 300 W Xe lamp	CO_2 and H_2O vapor	50 mg	/	9.6	5
15%CuO/g-C_3N_4	UV-Vis light: 300 W Xe lamp	CO_2 and H_2O vapor	50 mg	3.78	/	6
Ordered mesoporous TiO_2	UV-Vis light: 300 W Xe lamp	CO_2 and H_2O vapor	100 mg	0.19	0.15	7
Co-OMT-4	UV-Vis light: 300 W Xe lamp	CO_2 and H_2O vapor	100 mg	2.09	0.33	8
CoO/Co_3O_4	300W Xe lamp		20 mg	9.95	/	This work

References

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