Supplementary Information

Constructing Cu defects band within TiO_2 and supporting NiOx nanoparticles for efficient CO_2 photoreduction

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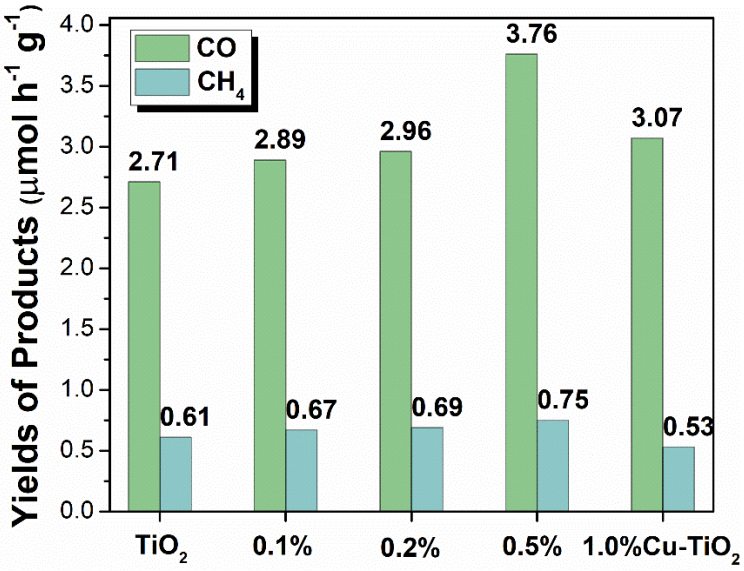

Fig. S1 Photocatalytic CO_2 reduction performance over Cu-TiO_2 composites with different loading ratios of Cu.

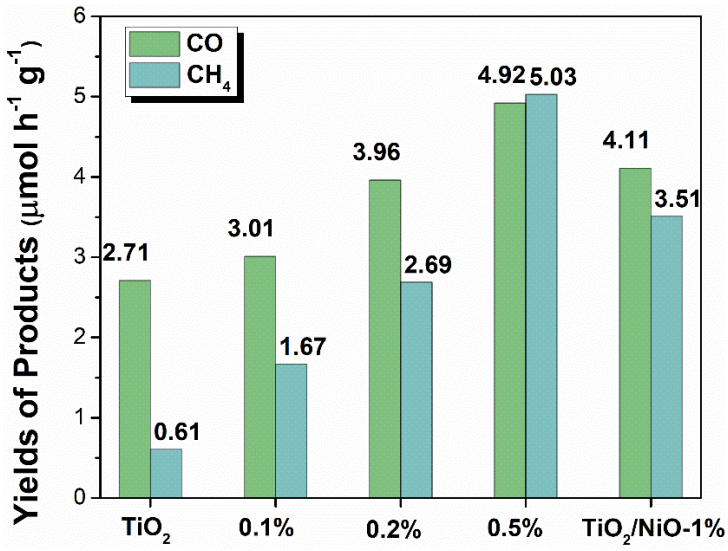

Fig. S2 Photocatalytic CO_2 reduction performance over TiO_2/NiO composites with different loading ratios of NiO.

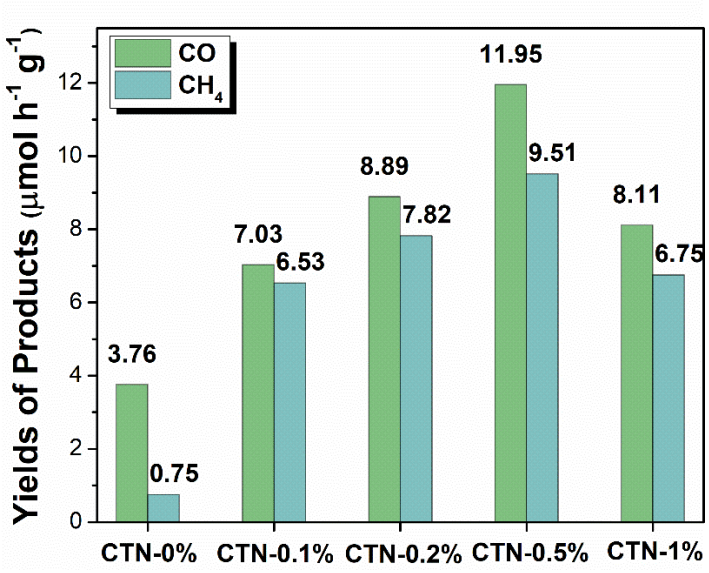

Fig. S3 Photocatalytic CO_2 reduction performance over CTN composites with different loading ratios of NiO.

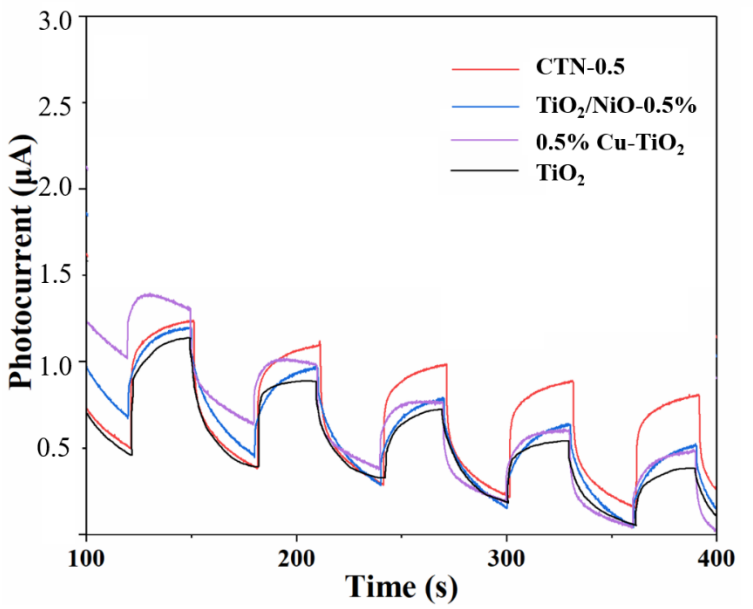

Fig. S4 Photocurrent behavior for prepared TiO_2, 0.5% Cu-TiO_2, TiO_2/NiO-0.5% and CTN-0.5.

Tab. S1 Photocatalysts published in recent work used to photoreduction CO_2 to CH_4 performance.

Photocatalysts	**Light source**		**Reaction solution**	**CO yields (μmol h^{-1} g^{-1})**	**CH_4 yields (μmol h^{-1} g^{-1})**	**AQE (%)**
This work	**420 nm**	**300 W Xe lamp**	**water**	**11.85**	**9.51**	**0.64%**
AuCu-TiO_2[1]	—	300 W Xe lamp	water	4.98	22.47	—
Cu_2O/Ni-MOF[2]	—	300 W Xe lamp	water	21.7	—	—
Cu–Ni@CN[3]	420 nm	300W Xe lamp	water	—	75.2	0.82%
Cu_2O/Ni-MOF[4]	—	300W Xe lamp	water	21.7	—	—
Ni/TiO_2-OV_2[5]	—	300W Xe lamp (λ＞420 nm)	water	22.56	3.93	—
Cu/TiO_2[6]	—	300W Xe lamp	water	15.27	0.98	—
MOF-808-CuNi[7]	420 nm	300W Xe lamp	[Ru(bpy)$_3$] Cl_2·$6H_2O$ 20% TEOA acetonitrile	2.3	158.7	2.31

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