

SUPPORTING INFORMATION

Cu-Doped Mesoporous SnO₂ Nanoparticles with Rich Grain Boundaries and Oxygen Vacancies for Photocatalytic CO₂-to-CO Conversion

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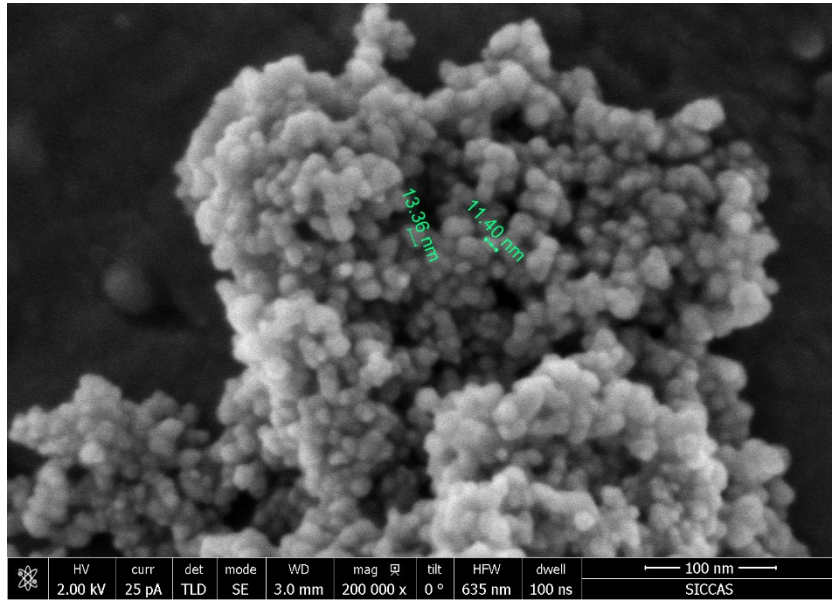


Figure S1. The high-magnification SEM image of the sample Cu(1)-SnO₂.

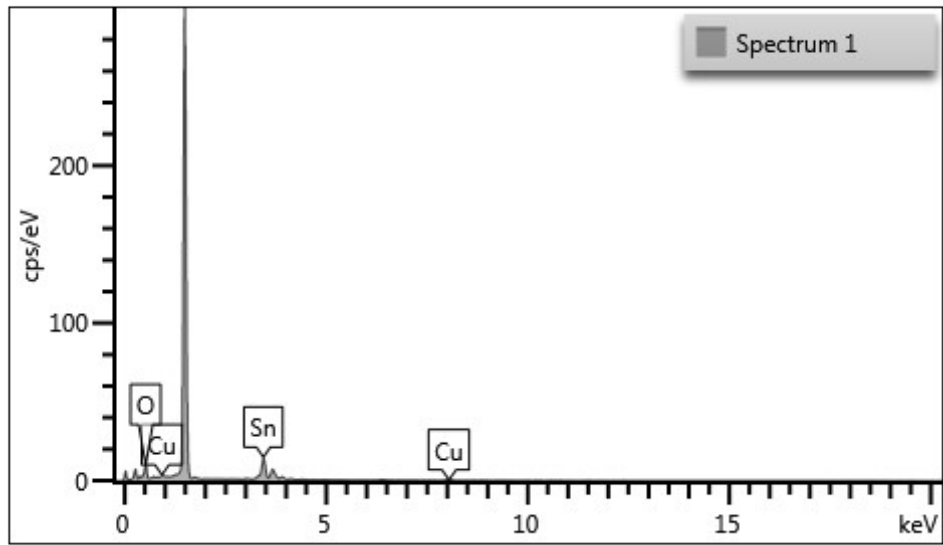


Figure S2. The corresponding EDX spectrum of the optimal sample Cu(1)-SnO₂.

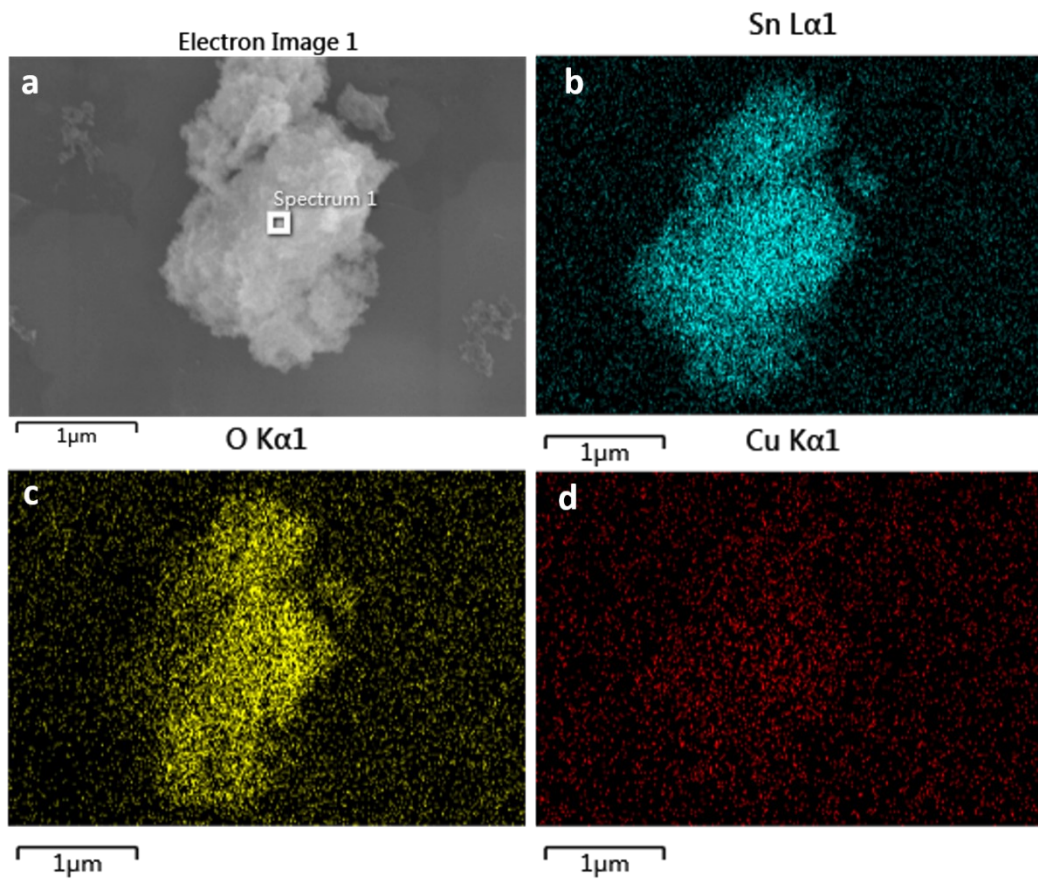


Figure S3. The SEM images and the corresponding element mapping images of Cu(2)-SnO₂.

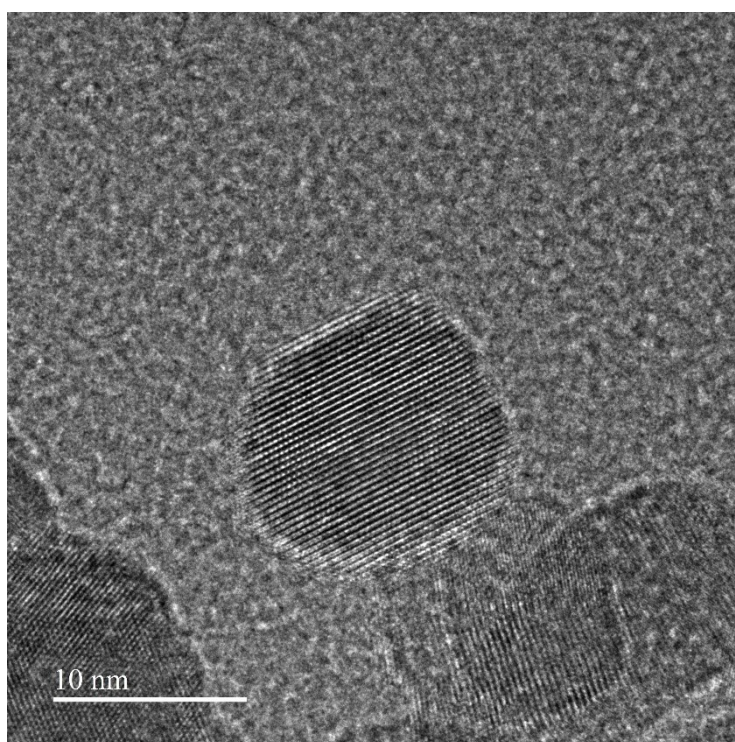


Figure S4. The high-magnification TEM image of the sample Cu(1)-SnO₂.

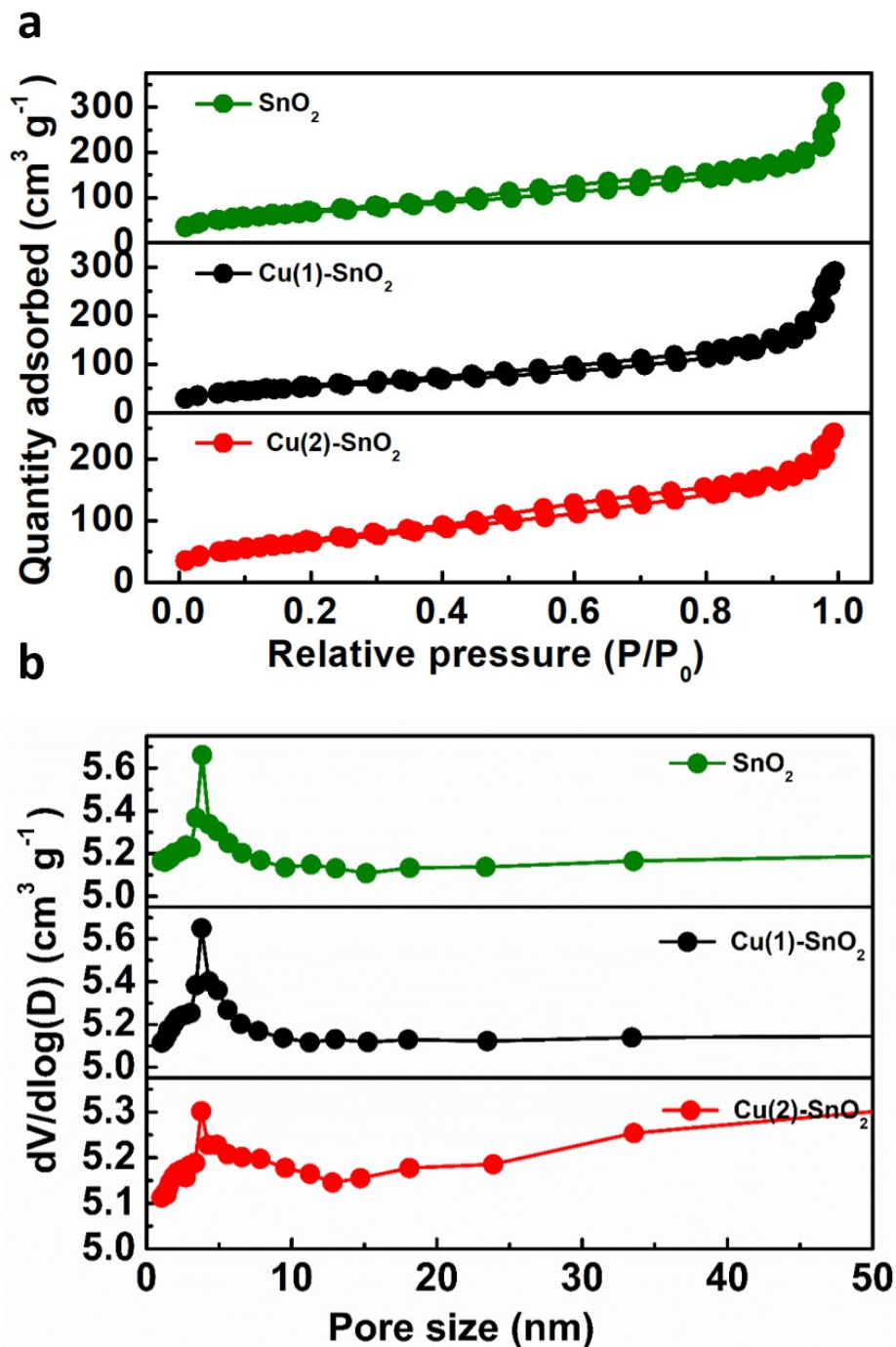


Figure S5. The curves of a) N_2 adsorption-desorption and b) the corresponding pore size distribution for the catalysts SnO_2 , Cu(1)-SnO_2 and Cu(2)-SnO_2 .

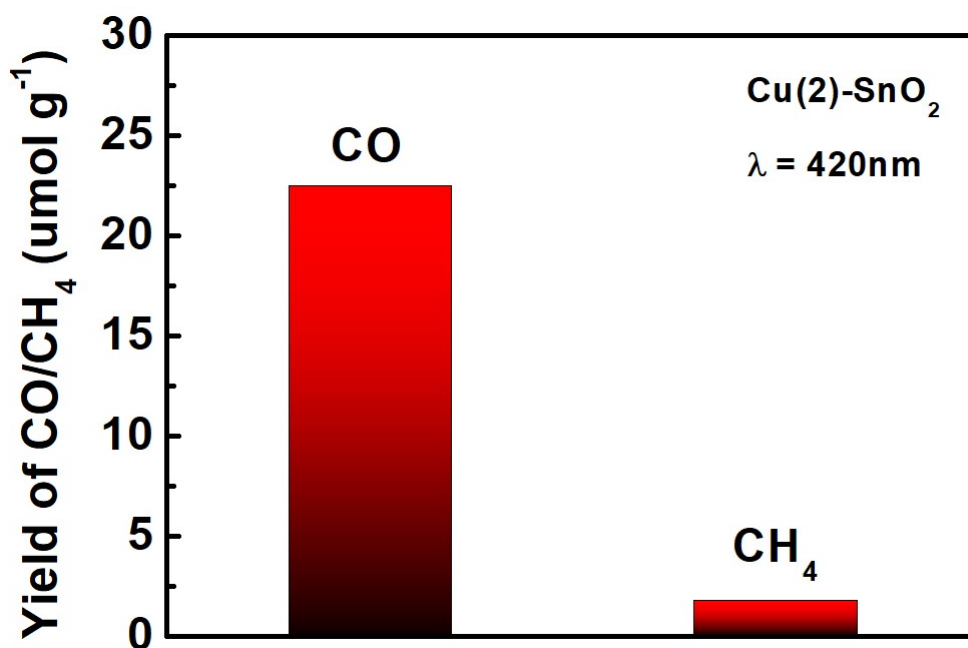


Figure S6. The photocatalytic CO₂ reduction performance on the sample Cu(2)-SnO₂ under Xe lamp irradiation with light wavelength of 420 nm in 1 h.

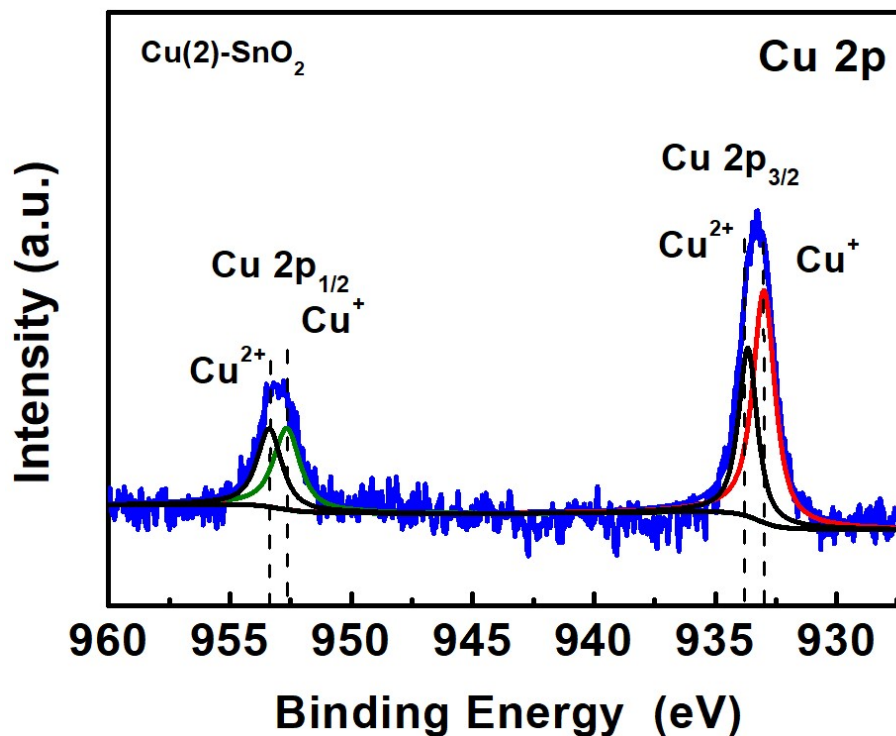


Figure S7. X-ray photoelectron spectroscopy (XPS) spectra of Cu 2p of the sample Cu(2)-SnO₂ after catalytic reaction.

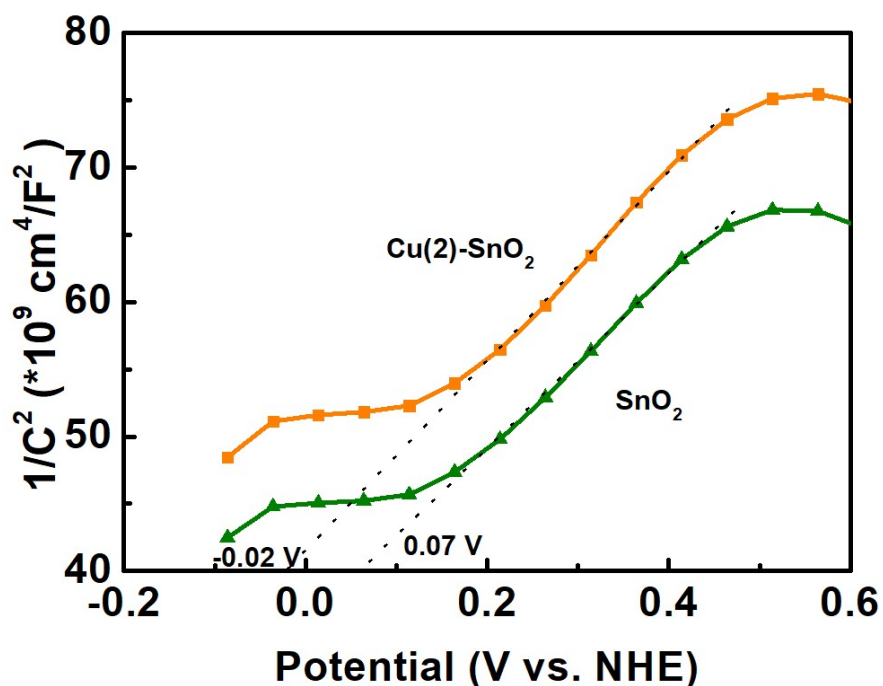


Figure S8. Mott-Schottky plots of the samples SnO₂ and Cu(2)-SnO₂.

Table S1. The textural properties and composition content of the samples SnO₂, Cu(1)-SnO₂ and Cu(2)-SnO₂.

Samples	V_{total} [cm ³ g ⁻¹]	S_{total} [m ² g ⁻¹]	d_{meso} [nm]	Cu (XPS) [at. %]	Cu (ICP-AES) [at. %]
SnO ₂	0.51	234	3.7	-	-
Cu(1)-SnO ₂	0.46	228	3.7	0.95	1.02
Cu(2)-SnO ₂	0.44	177	3.8	1.83	1.96

Table S2. CO yield and the selectivity of the samples SnO₂, Cu(1)-SnO₂ and Cu(2)-SnO₂ in 4h under UV-vis light irradiation.

Samples	<i>CO yield</i>	<i>CO selectivity</i>
	[$\mu\text{mol g}^{-1}$]	[%]
SnO ₂	30	80.54
Cu(1)-SnO ₂	91	90.02
Cu(2)-SnO ₂	107	90.37