

Electronic Supplementary Information

La₂Sn₂O₇ enhanced photocatalytic CO₂ reduction with H₂O by deposition of Au cocatalyst

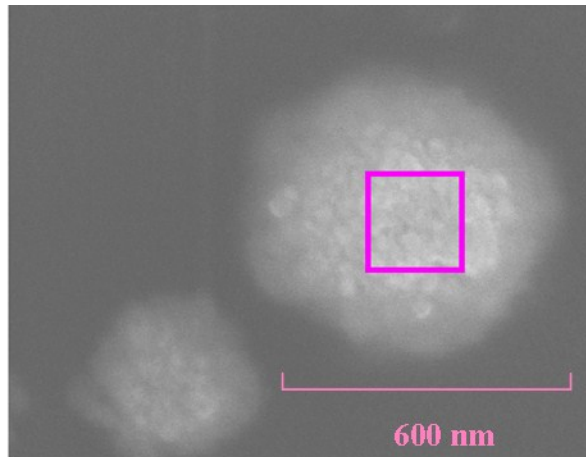
Shuang Chen, Bao Pan, Longquan Zeng, Shijian Luo, Xuxu Wang, Wenyue Su*

State Key Laboratory of Photocatalysis on Energy and Environment,

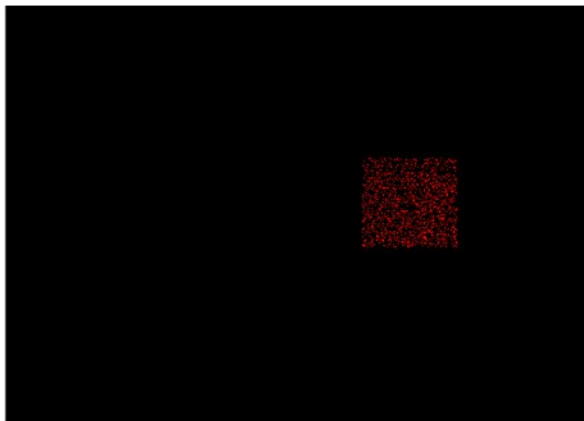
Fuzhou University, Fuzhou, 350002, P. R. China

Corresponding author Tel & Fax: (+86)591-83779237.

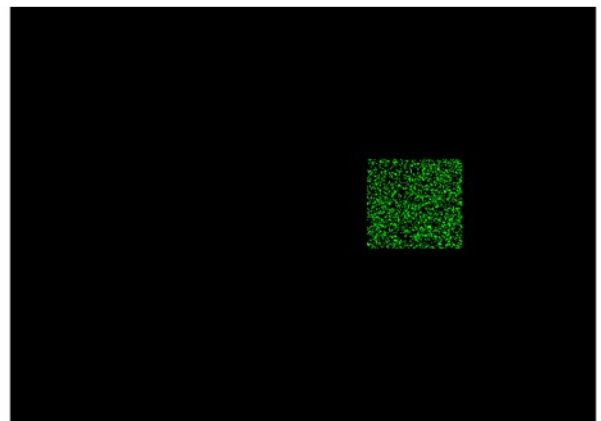
E-mail: suweny@fzu.edu.cn



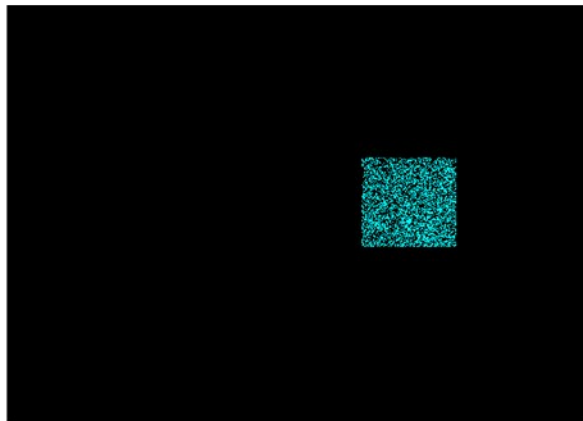
SEM



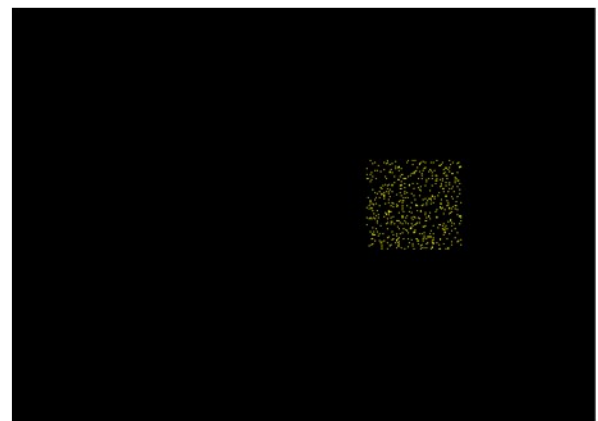
La La1



Sn La1



O Ka1



Au Ma1

Fig. S1 EDX-mapping images of the 1 wt% Au/La₂Sn₂O₇ sample.

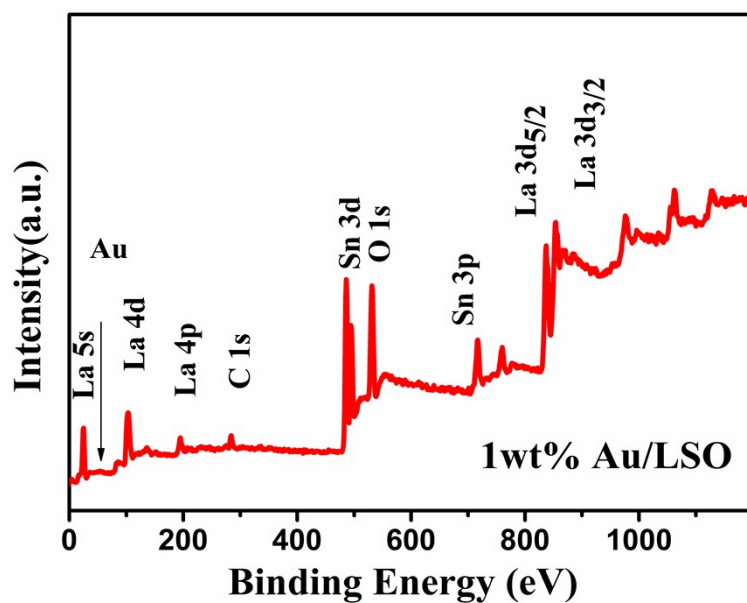


Fig. S2 XPS survey spectrum of the 1 wt% Au/La₂Sn₂O₇ sample.

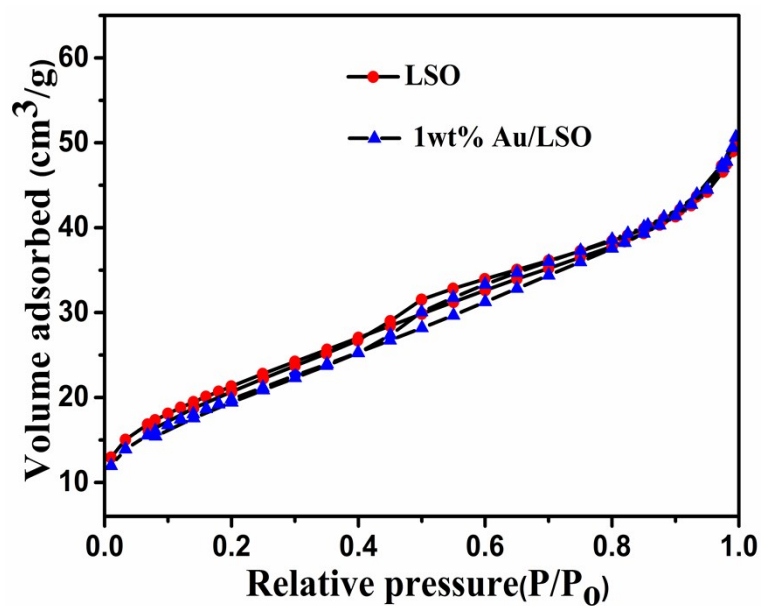


Fig. S3 N₂ adsorption/desorption isotherms (77 K) of La₂Sn₂O₇ and 1 wt% Au/La₂Sn₂O₇ samples.

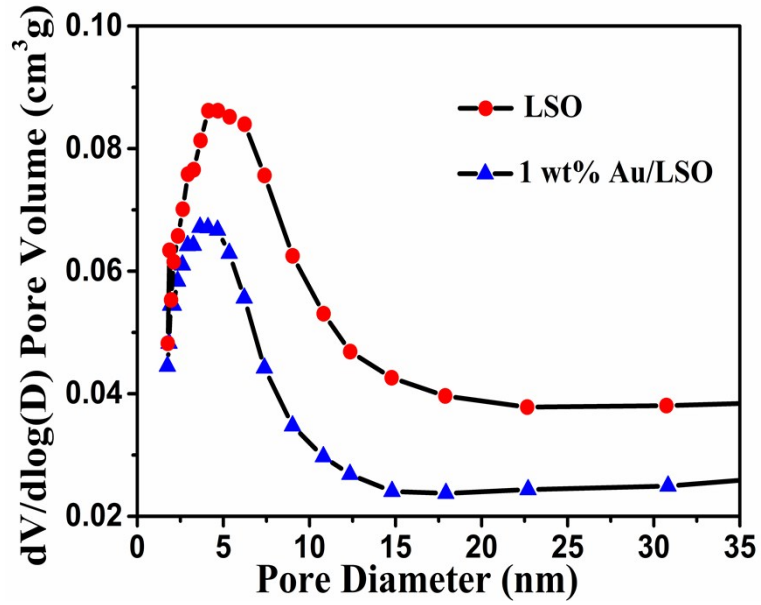


Fig. S4 Pore size distribution curves of La₂Sn₂O₇ and 1 wt% Au/La₂Sn₂O₇ samples

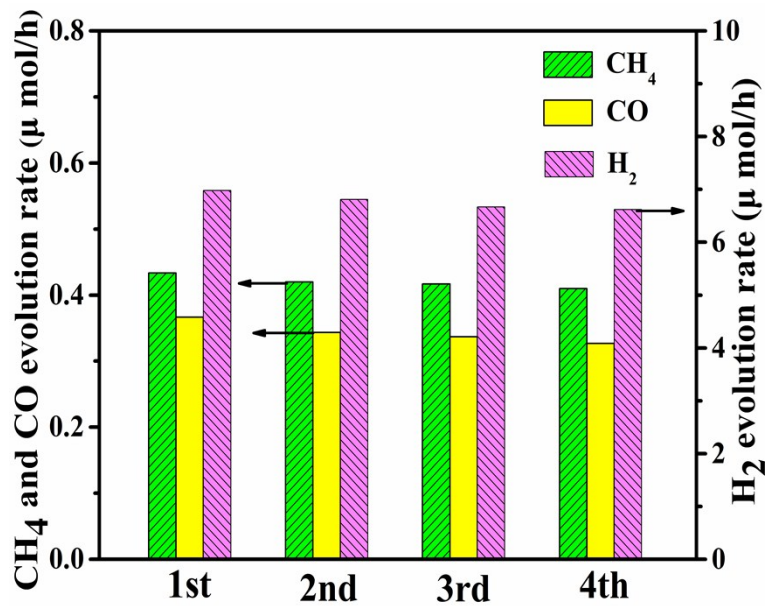


Fig. S5 The stability test of 1wt% Au/La₂Sn₂O₇ sample for CO₂ reduction with H₂O during four repeats of reaction.

Table S1 The loading amount of Au in the prepared samples.

Samples	Au loading (wt.%)	
	Intended	Actual
0.5 wt.% Au/LSO	0.5	0.33
1.0 wt.% Au/LSO	1.0	0.51
2.0 wt.% Au/LSO	2.0	1.20
3.0 wt.% Au/LSO	3.0	1.84

Table S2 The photocatalytic CO₂ reduction activity of La₂Sn₂O₇, Au/La₂Sn₂O₇ and P25 samples.

Catalysts	CH ₄ (μmol)	CO (μmol)	H ₂ (μmol)	AQY (%)
La ₂ Sn ₂ O ₇	0.60	0.31	6.90	0.90
P25	0.58	0.21	4.70	0.68
0.5 wt% Au/La ₂ Sn ₂ O ₇	0.76	0.56	9.86	1.26
1 wt% Au/La ₂ Sn ₂ O ₇	1.30	1.10	20.94	2.54
2 wt% Au/La ₂ Sn ₂ O ₇	1.26	1.00	15.89	0.56
3 wt% Au/La ₂ Sn ₂ O ₇	0.82	0.77	12.63	0.38

Reaction conditions: sample (50mg), H₂O (140 mL), 125 W high-pressure mercury lamp, CO₂ (1 atm), T (20 °C), illumination time (3 h).