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1 2	Photo-assisted effectively selective reduction of CO ₂ to methanol
3 4	on Cu-ZnO-ZrO ₂ catalyst
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8 9	Jian Wang, Xiuli Qu, Xavier Djitcheu, Qingrun Meng, Zenan Ni * , Huimin Liu, Qijian Zhang *
10 11 12	
13 14	
15 16 17	School of Chemical and Environmental Engineering, Liaoning University of Technology, Jinzhou 121001,
18 19	P. R. China
20 21 22	
23 24	
25 26 27	
28 29	Corresponding authors:
30 31 32	
33 34	Qijian Zhang, email: zhangqijian@tsinghua.org.cn
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Fig. S1. Diagram of a photothermal synergistic catalytic reactor.



Fig. S2. (a) N₂ sorption isotherms. (b) pore size distribution curves of the corresponding catalysts





Cu-ZnO-ZrO₂ catalysts.

	Catalyst	Cu(%)	Zn(%)	Zr(%)	O(%)	O _v (%)	O ²⁻ (%)	
	Cu-ZnO	0.33	45.91		53.76	40.04	59.96	
	Cu-ZnO-	0.26	26.72	11.93	61.09	53.63	46.57	
	ZrO ₂							
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Table S1. Percentage of elements in the catalyst for semi-quantitative analysis of XPS.

group	Catalyst	Condition	Time (h)	Methanol yield (g·kg _{cat} ⁻¹ ·h ⁻¹)
1	Blank	N ₂	6	0
2	Blank	CO_2	6	0
3	Blank	CO ₂ +H ₂	6	0
4	Blank	CO ₂ +H ₂ (light)	6	0
5	Cu-ZnO-ZrO ₂	N_2	6	0
6	Cu-ZnO-ZrO ₂	CO ₂ +H ₂	6	44.88
7	Cu-ZnO-ZrO ₂	CO ₂ +H ₂ (light)	6	65.84

Table S3. Controlled experiments under different experiment conditions.