Supporting Information

Highly efficient visible-light-driven CO₂ reduction to formate by new

anthracene-based zirconium MOF via dual catalytic routes

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Fig. S1 The experimental and simulated PXRD patterns of NNU-28.



Fig. S2 The PXRD patterns of NNU-28 after soaking in acid or base.



Fig. S3 The TG curve of NNU-28.



Fig. S4 The UV-Vis spectrum of ligand in DMF at room temperature.



Fig. S5 The ion chromatography traces of HCOO⁻ (Black and red curves are standard solutions with [HCOO⁻] concentrations of 1 mg/L and 5 mg/L, respectively. The blue curve is for CO_2 photoreduction by NNU-28 at 10h, where it was 5 times diluted.).



Fig. S6 The PXRD pattern of NNU-28 after the photocatalytic experiment.



Fig. S7 The recycling of NNU-28 for CO_2 photoreduction.



Fig. S8 The in situ time-evolution EPR measurements of ligand under visible light.



Fig. S9 The IR spectrum of NNU-28.

empirical formula	C ₉₆ H ₄₂ O ₁₆ Zr ₃
formula weight	1724.96
crystal system	Trigonal
space group	<i>R</i> -3 <i>m</i>
<i>a</i> / Å	28.1333(9)
b / Å	28.1333(9)
<i>c</i> / Å	69.411(5)
γ / °	120
V / Å ³	47577(5)
Z	12
F(000)	10392
θ range collected	0.88 to 25.09
limiting indices	$-33 \le h \le 32$
	$-32 \le k \le 33$
	$-82 \le l \le 61$
Reflections collected/unique	93681 / 10047
data/restraints/parameters	10047 / 0 / 375
R (int)	0.1692
goodness-of-fit on F ²	0.927
Final <i>R</i> indices ([$I \ge 2\sigma(I)$])	$R_1 = 0.0488, wR_2 = 0.1289$
<i>R</i> indices (all data)	$R_1 = 0.1125, wR_2 = 0.1429$

Table S1. Crystal data and structure refinement of NNU-28