Self-Doped SrTiO_{3-ð}with Enhanced Activity for Artificial Photosynthesis under Visible Light – Supporting Information

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Table S1* ICP Mass s	pectroscopy result	of nitrogen	residual ir	ı sample
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SrTiO ₃	Sr	Ti	Ο	Ν
Element content	/	/	/	<0.01%



Fig.S1* (a) TEM of 1400 $^{\circ}$ C sample, blue lines indicate the *CS* along <101> direction (b) Ruddlesden-Popper defect model with *CS* projected along <100> direction



Fig.S2* XPS and EPR (120K) of samples treated in Ar at 1200 °C



Fig.S3* XPS and EPR (120K) of samples treated in Ar at 1250 $^{\rm o}{\rm C}$



Fig.S4* XPS and EPR (120K) of samples treated in Ar at 1300 $^{\circ}$ C



Fig.S5* XPS and EPR (120K) of samples treated in Ar at 1350 $^{\circ}$ C



Fig.S6* XPS and EPR (120K) of samples treated in Ar at 1400 $^{\circ}\mathrm{C}$

Sample

Surface area (m^2/g)

^{1.0} T			· .		· · ·	· · ·	· - 7	0.010-			· · ·				·	<u> </u>
	Peak a (4)1.0417	rea: (1)9.8 7e-001;(5)	8488e-002 1.02058e-0	; (2)1.0855 001;(6)1.04	9e-001;(3) 211e-001;(1.06143e-0 7)1.08948e	01; +001	0.008-	125	50 °C san	nple, tota	ll CO ₂ ad	Isorption	=0.01953	3 ml/m ² _{cata}	a]
- 5.0 signal								0.006 -								A
TCD		0		(4)	0	(0)	0	0.004-	./\							
			(3)	(7)	(3)	(0)	(/) -	0.002 -		and and	ylagus	and the second s	Negatives	Marco .	لر	! _ -
0.0+	3	6	9	12	15	18	2	0.000-	100	200	300	400	500	600	700	800
Time (min)										I	'emperat	ure (°)				

Table S2* Surface area of samples treated in Ar at different temperatures 1250 °C

1.8

1200 °C

2.4

1300 °C

1.2

1350 °C

1.1

1400 °C

0.8









Fig.S9* CO2 pulse adsorption and TPD of 1350 °C sample with 1 m² surface area

Program of Pulsed Adsorption and Temperature Programmed Desorption of CO2

- 1.01 Experiment, chemisorption LDH-CO₂, prep Ar 50 ml/min
- 1.02 Temperature ramp, Temp: 300 °C, Ramp: 10 °C/min, Level: 30 min
- 1.03 Temperature ramp, Temp: 30 °C, Ramp: 10 °C/min, Level: 30 min
- 1.04 Change gas flow, Prep (None) Carrier/Ref(He) Loop (Carbon dioxide) Valves: Bypass Analyze Fill Bypass
- 1.05 Wait, wait for 5 min
- 1.06 Wait, wait until baseline is stable
- 1.07 Start recording, One measurement every 1.0 second
- 1.08 Start repeat, repeat until peaks are equal or 10 times
- 1.09 Dose, inject loop gas, wait for change from baseline or 3.0 min, then return to baseline
- 1.10 Stop repeat
- 1.11 Stop recording
- 2.01 Experiment, TPD LDH-CO2 Prep (None) Carrier/Ref (He) Loop (None) Valves: Bypass Analyze Fill Bypass
- 2.02 Wait, wait until baseline is stable
- 2.03 Start recording, one measurement every 1.0 minute
- 2.04 Temperature ramp, Temp: 800 °C, Ramp: 10 °C/min, Time: 0
- 2.05 Stop recording
- Termination