Supporting information for

Reassembled nanoporous gold leaf electrocatalyst for efficient CO_2 reduction

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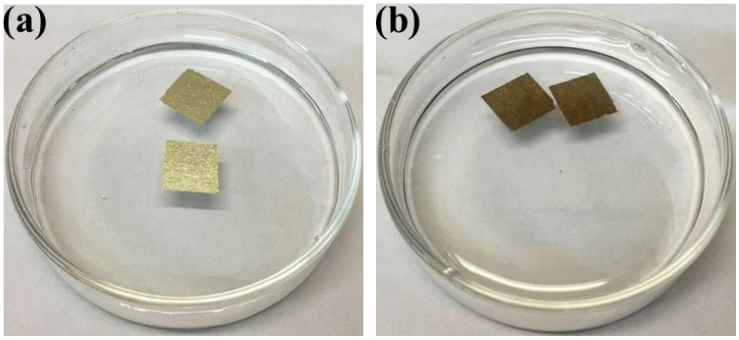

Figure S1. Optical images of NPGL before (a) and after (b) de-alloying for 4 h in nitric acid.

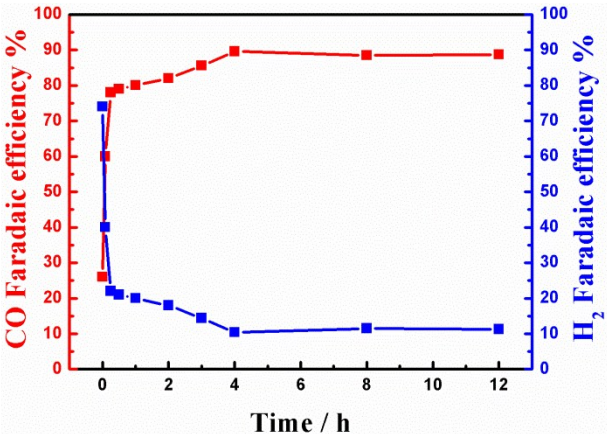

Figure S2. CO FE (left axis) and H_2 FE (right axis) of NPGL de-alloyed for different time at -1.2 V (*vs.*Ag/AgCl).

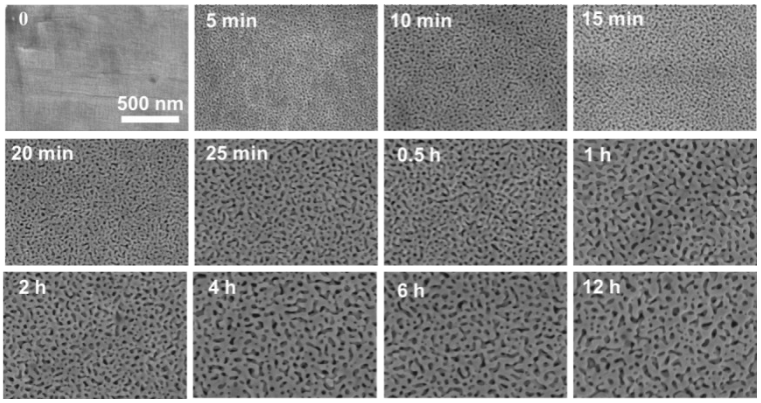

Figure S3. Top down SEM images of NPGL de-alloyed for different time in nitric acid.

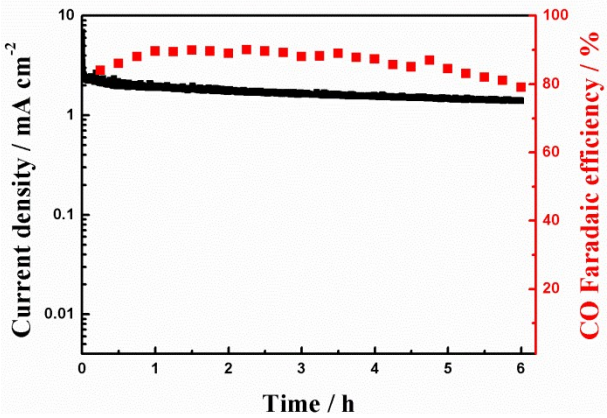

Figure S4. The CO_2 reduction activity of NPGL at -1.2 V (*vs.* Ag/AgCl) for 6 h.

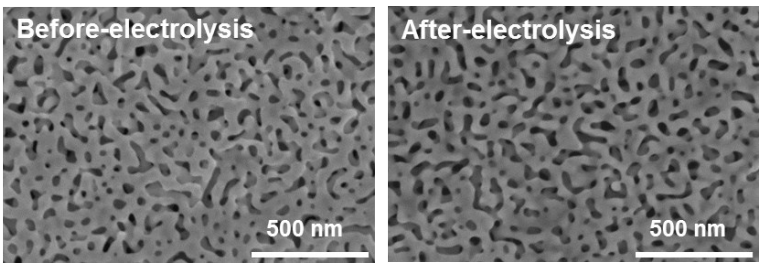

Figure S5. SEM images of NPGL before and after electrolysis at -1.2 V (*vs.* Ag/AgCl).

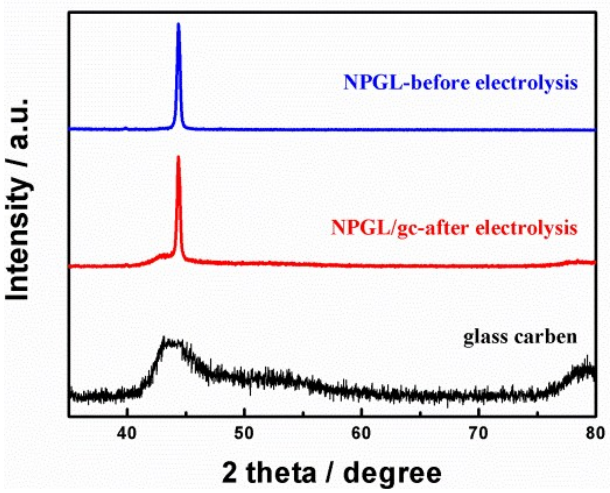

Figure S6. XRD patterns of NPGL before and after electrolysis at -1.2 V (*vs.* Ag/AgCl).

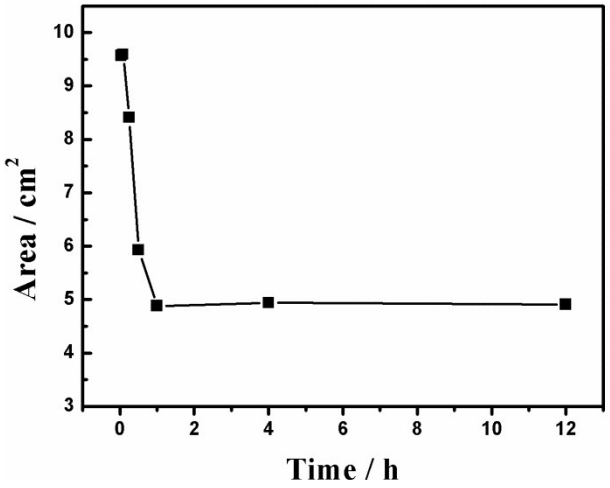

Figure S7. The relation of the electrochemical surface area of NPGL to etching time.

Table S1. Comparison of various Au catalysts for CO_2 reduction.

Sample type	Solution (pH)	V>90% (vs. RHE)	j_{co} (mA cm^{-2})	j_{co} (A g^{-1})	Tafel slope (mV dec^{-1})	Ref
NPGL（4 h)	0.5 M $NaHCO_3$ (7.2)	-0.57V	1.8	21	117	This work
Oxide-derived Au	0.5 M $NaHCO_3$ (7.2)	–0.35V	~2.25	N/A	56	1
Au25 cluster	0.1 M $KHCO_3$ (7.0)	–0.88V	N/A	N/A	N/A	2
Au/CNT	0.5 M $NaHCO_3$ (7.2)	-0.45V	N/A	35	N/A	3
Monodisperse Au NP (8 nm)	0.5 M $KHCO_3$ (7.3)	–0.67V	N/A	14	N/A	4
Mesostructured Au (1.6 μm)	0.1 M $KHCO_3$ (6.8)	–0.45V	0.004	N/A	N/A	5
Concave RD Au	0.5 M $KHCO_3$ (7.3)	–0.57V	0.1~ 0.2	~9	N/A	6
Nanoporous RA-Au (70 m)	0.2 M $KHCO_3$ (6.8)	–0.59V	0.13	N/A	81	7

References

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