

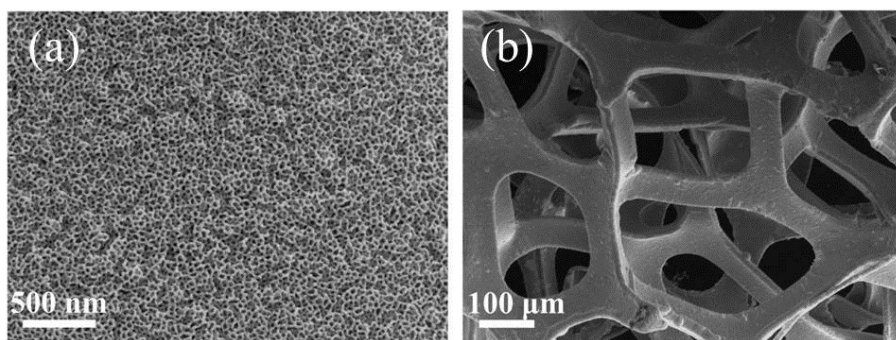
Electronic Supplementary Information for

**Interconnected porous Au<sub>3</sub>Pt film on Ni foam: an efficient electrocatalyst for  
alkaline hydrogen evolution reaction**

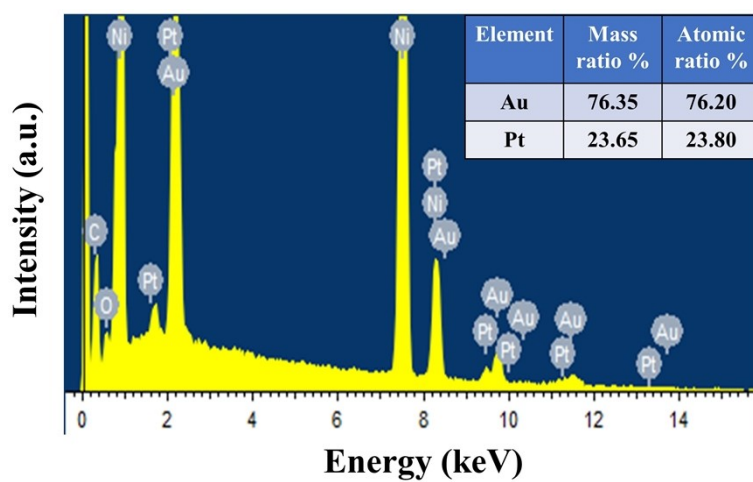
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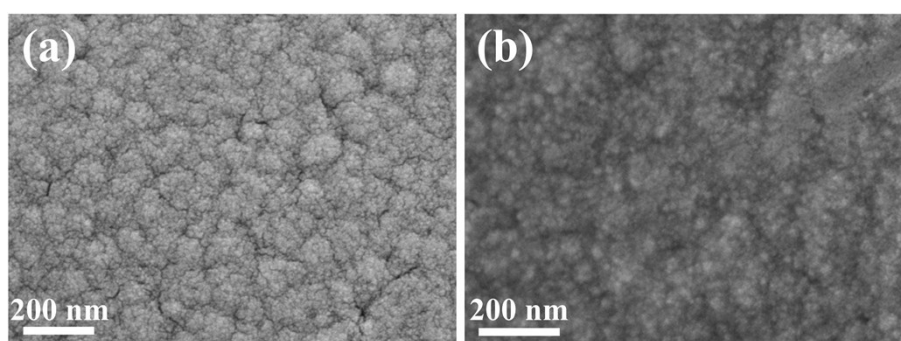
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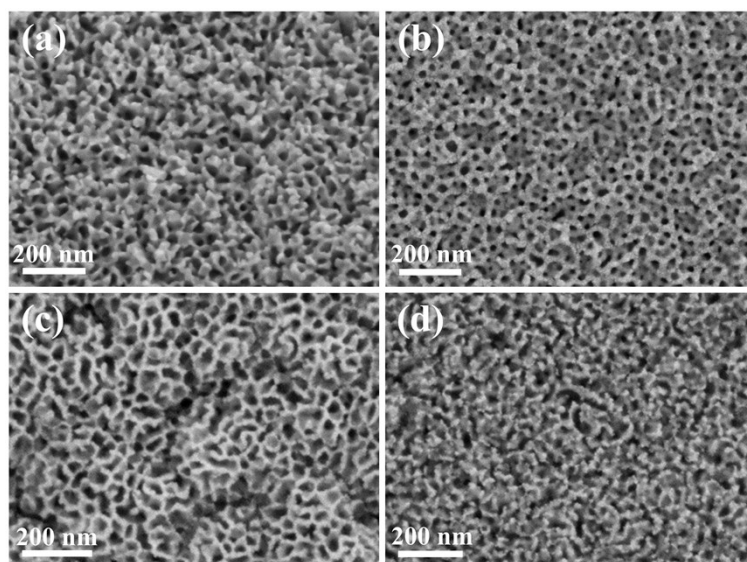
**Fig. S1** SEM images of the (a) pAu<sub>3</sub>Pt/NF (b) and NF.



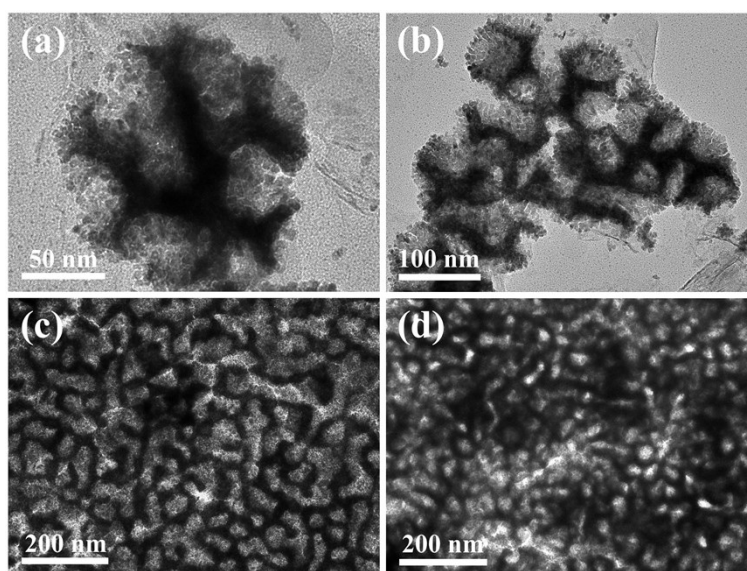
**Fig. S2** EDS spectrum of the pAu<sub>3</sub>Pt/NF.



**Fig. S3** SEM images of samples prepared by replacing PS-*b*-PEO with (a) F127 and (b) PVP under the typical condition used for the typical synthesis.



**Fig. S4** SEM images of samples prepared with different amounts of metallic precursors under the typical synthesis. The added metallic precursor amounts of  $\text{HAuCl}_4$  and  $\text{K}_2\text{PtCl}_4$  were (a) 2.0 mL and 0 mL (pAu/NF), (b) 1.5 mL and 0.5 mL (pAu<sub>3</sub>Pt/NF), (c) 1.0 mL and 1.0 mL (pAu<sub>2</sub>Pt<sub>2</sub>/NF), (d) 0.5 mL and 1.5 mL (pAuPt<sub>3</sub>/NF).



**Fig. S5** TEM images of samples prepared with different reaction times under the typical conditions for (a) 20 s, (b) 1 min, (c) 10 min, and (d) 30 min.

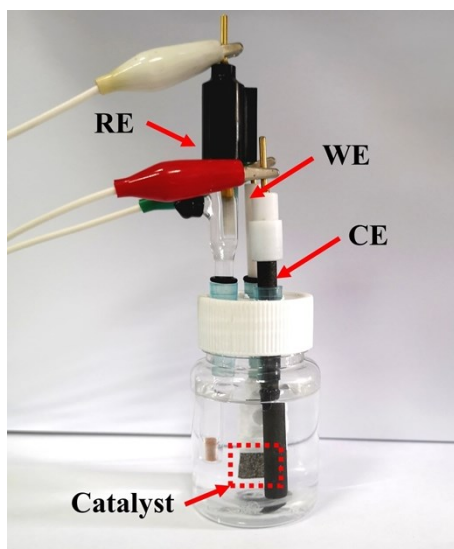


Fig. S6 Digital photograph of experimental set-up for HER.

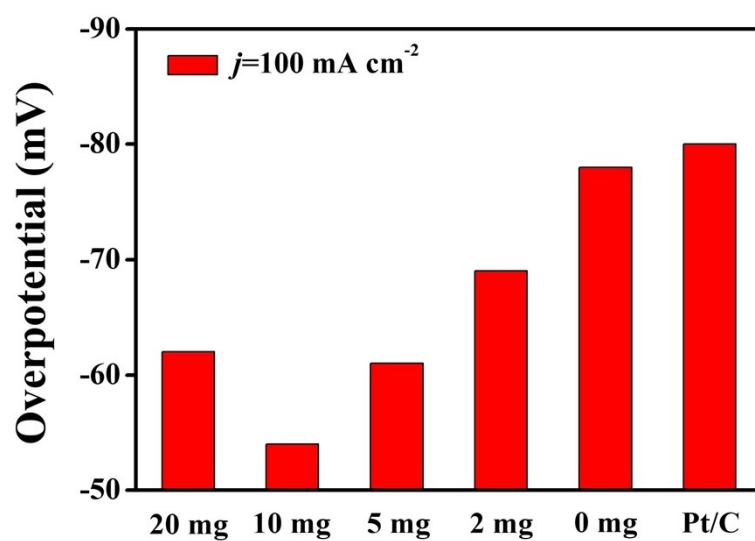
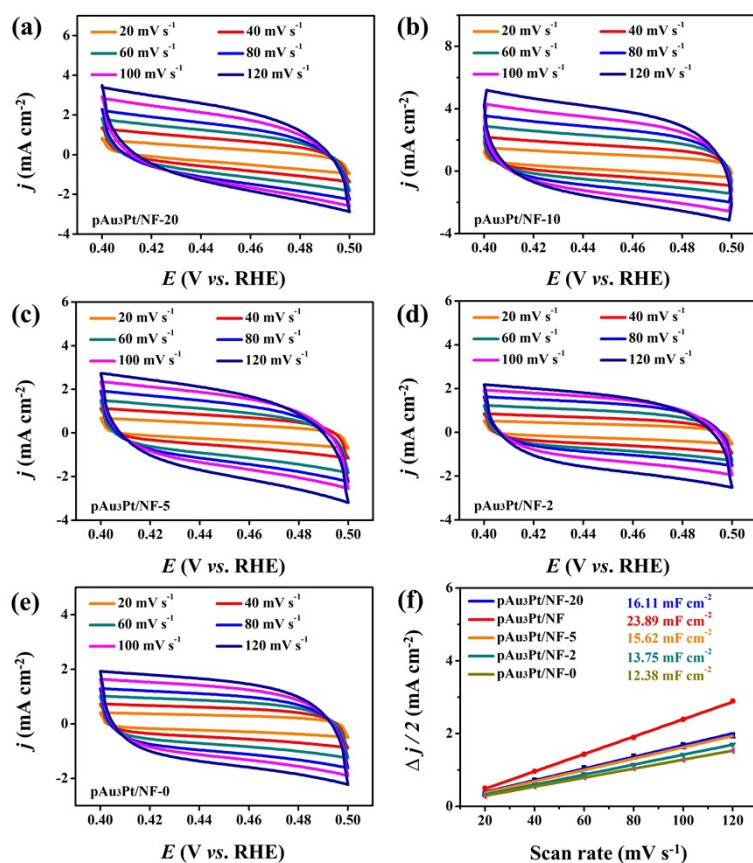
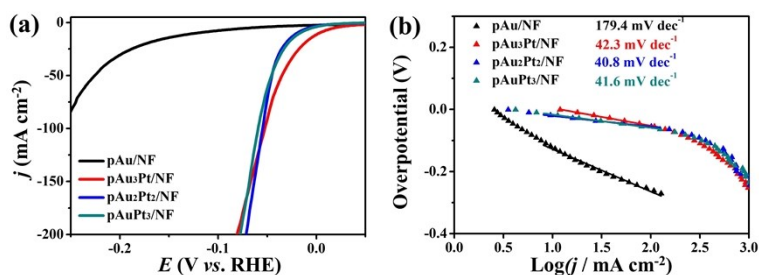


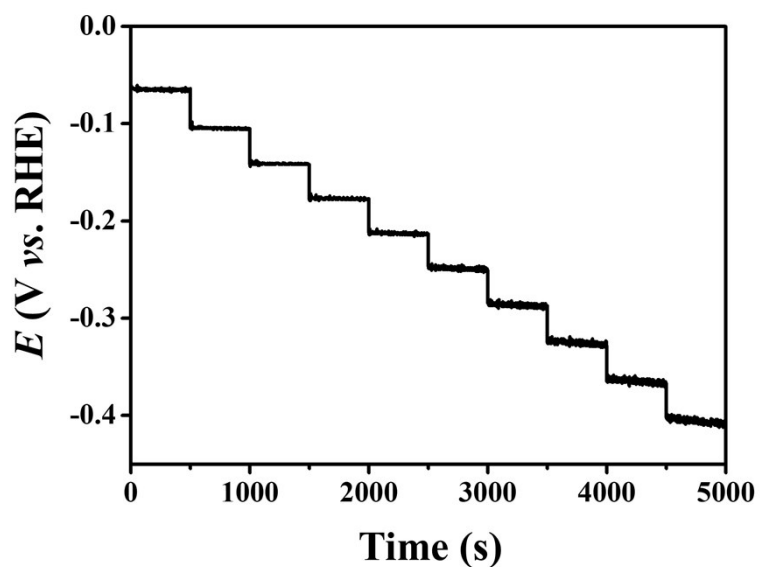
Fig. S7 Comparison of overpotentials for samples prepared with different PS-*b*-PEO amounts at current density of 100 mA cm<sup>-2</sup>.



**Fig. S8** CV curves for (a) pAu<sub>3</sub>Pt/NF-20, (b) pAu<sub>3</sub>Pt/NF-10, (c) pAu<sub>3</sub>Pt/NF-5, (d) pAu<sub>3</sub>Pt/NF-2 and (e) pAu<sub>3</sub>Pt/NF-0. (f) Capacitive current densities at 0.45 V derived from CV curves against scan rate for different samples.



**Fig. S9** (a) LSV curves for samples prepared with different amounts of metallic precursors under the typical conditions, and (b) their corresponding Tafel plots.



**Fig. S10** Multi-current process of the pAu<sub>3</sub>Pt/NF. The current density without *iR* correction started at 20 mA cm<sup>-2</sup> and ended at 200 mA cm<sup>-2</sup> with an increment of 20 mA cm<sup>-2</sup> per 500 s.

**Table S1.** Atomic ratios of different Au-Pt alloys obtained from EDS.

Samples	Au:Pt (atomic ratio)
pAu/NF	100:0
pAu <sub>3</sub> Pt/NF	76.20:23.80
pAu <sub>2</sub> Pt <sub>2</sub> /NF	56.08:43.92
pAuPt <sub>3</sub> /NF	31.16:68.84