

Supporting Information for

## Electrochemically Grown Ultrathin Platinum Nanosheet Electrodes with Ultralow Loadings for Energy-Saving and Industrial-Level Hydrogen Evolution

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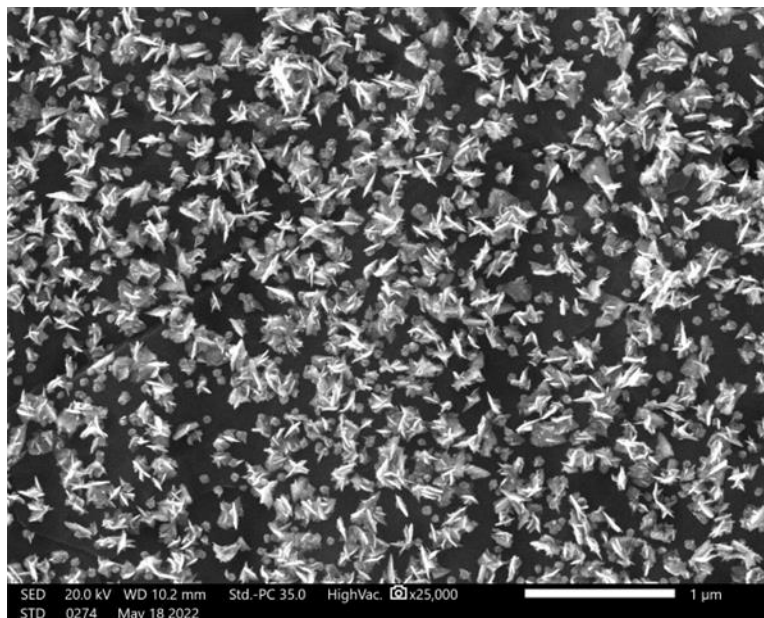
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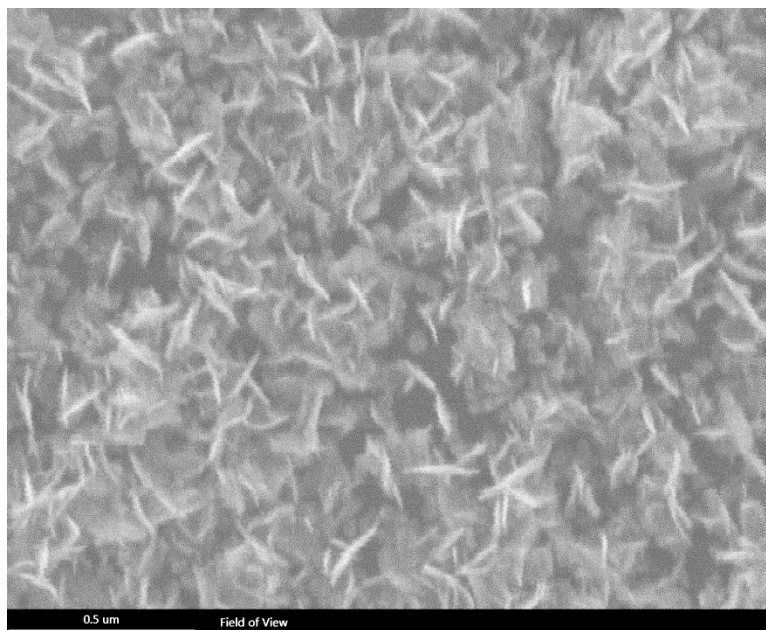
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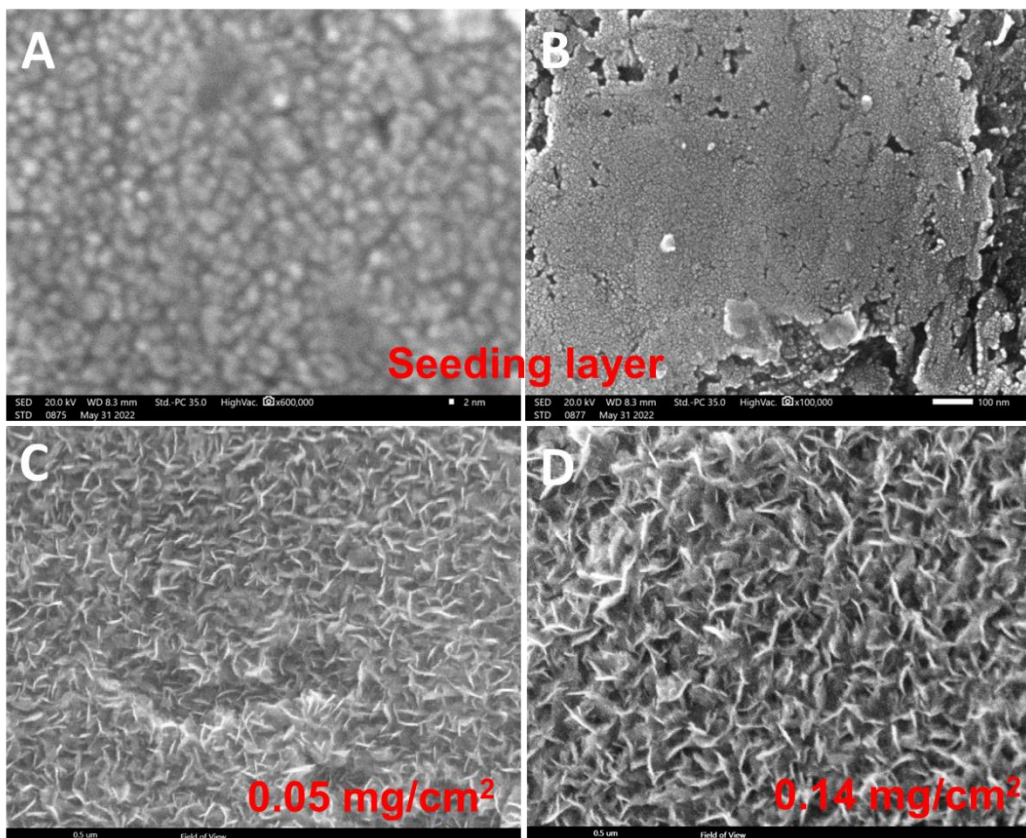
### Supplementary Figures and Table



**Fig. S1** SEM image of Pt-NSs without the seeding layer:  $0.07 \text{ mg}_{\text{Pt}}/\text{cm}^2$  Pt-NSs



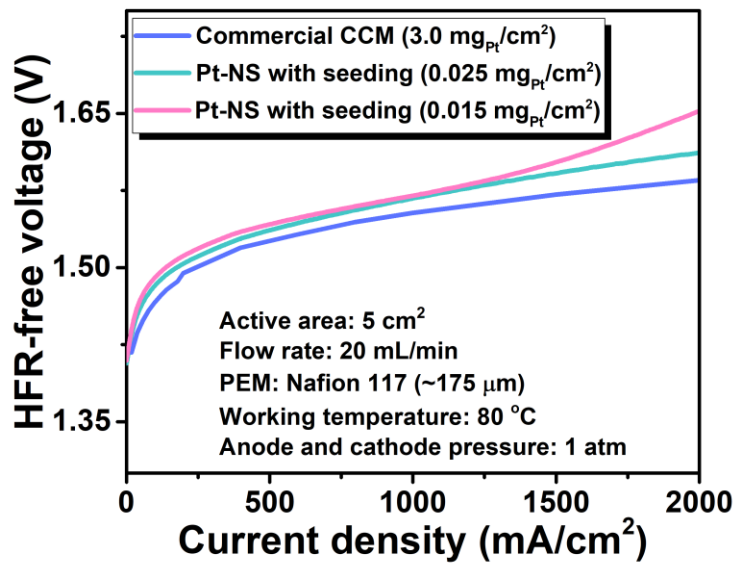
**Fig. S2** SEM image of Pt-NSs without the seeding layer:  $0.14 \text{ mg}_{\text{Pt}}/\text{cm}^2$  Pt-NSs



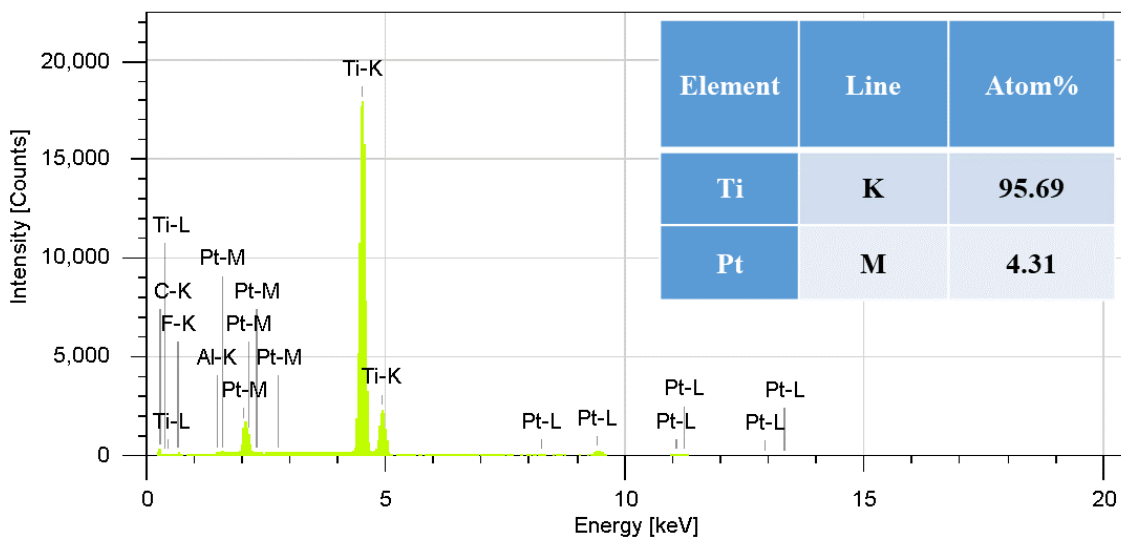
**Fig. S3** SEM images of Pt nanoparticle seeding layers (A and B); SEM images of Pt-NSs with the seeding layer, (C)  $0.050 \text{ mg}_{\text{Pt}}/\text{cm}^2$  Pt-NSs, (D)  $0.140 \text{ mg}_{\text{Pt}}/\text{cm}^2$  Pt-NSs

**Table S1** EIS fitting parameters derived from the Nyquist plots in **Fig. 4C**

Electrode	$R_{\Omega}$ [ $m\Omega \cdot cm^2$ ]	$R_{hf}$ [ $m\Omega \cdot cm^2$ ]	$Q_{hf}$ [ $mF \cdot s^{n-1}/cm^2$ ]	$n_{hf}$	$R_{lf}$ [ $m\Omega \cdot cm^2$ ]	$Q_{lf}$ [ $mF \cdot s^{n-1}/cm^2$ ]	$n_{lf}$	$C_{dl,hf}$ [ $mF/cm^2$ ]	$C_{dl,lf}$ [ $mF/cm^2$ ]	Error (%)
Pt-NS	2.06	1.75	85.46	0.600	0.416	5.39	0.766	23.5	0.833	0.012
Pt-NP	2.14	3.26	63.7	0.345	1.87	138	0.819	3.26	115	0.023



**Fig. S4** HFR-free cell polarization curves of commercial CCM and Pt-NS with seeding layer: 0.025 mg<sub>Pt</sub>/cm<sup>2</sup> and 0.015 mg<sub>Pt</sub>/cm<sup>2</sup>



**Fig. S5** EDS analysis of the tested Pt-NS CCLGDL (0.025 mg<sub>Pt</sub>/cm<sup>2</sup>)