Supporting Information

FeOOH-templated synthesis of hollow porous platinum nanotubes as superior electrocatalyst towards methanol electrooxidation

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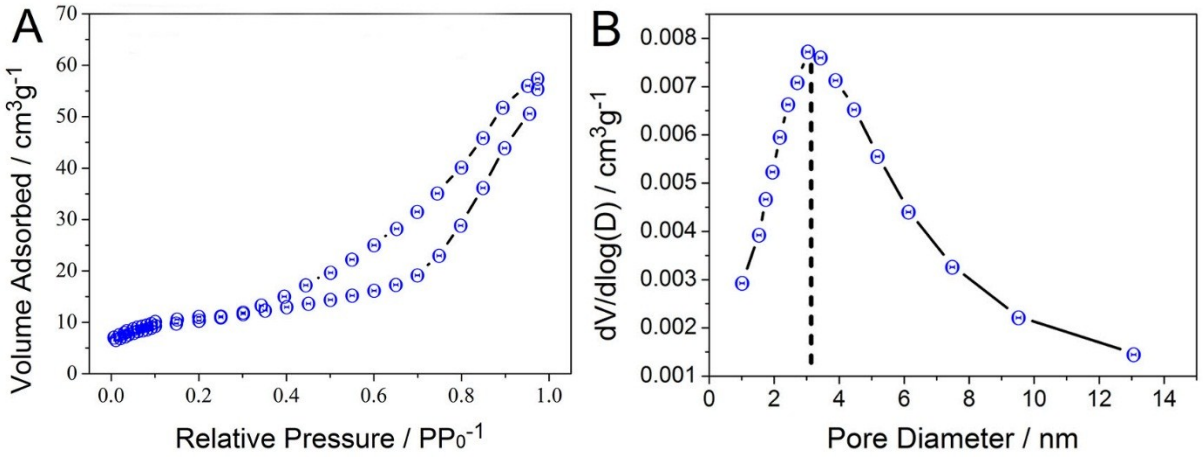

Fig. S1 (A) N_2 adsorption–desorption isotherms and (B) the corresponding pore distribution curve of the Pt-NTs.

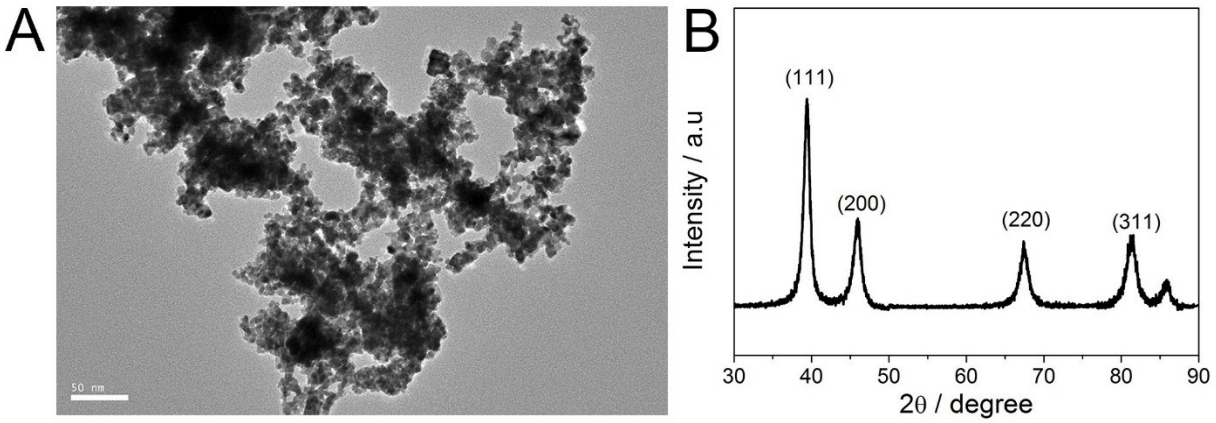

Fig. S2 (A) TEM image and (B) XRD pattern of commercial Pt black catalyst.

The size of Pt black was difficult to observe by TEM image due to the aggregation of Pt particles (Fig. S2A). Scherrer analysis based on {111} diffraction peak of XRD pattern (Fig. S2B) shows an average crystallite-size of around 8.3 nm, which is very closed to that of Pt-NTs.

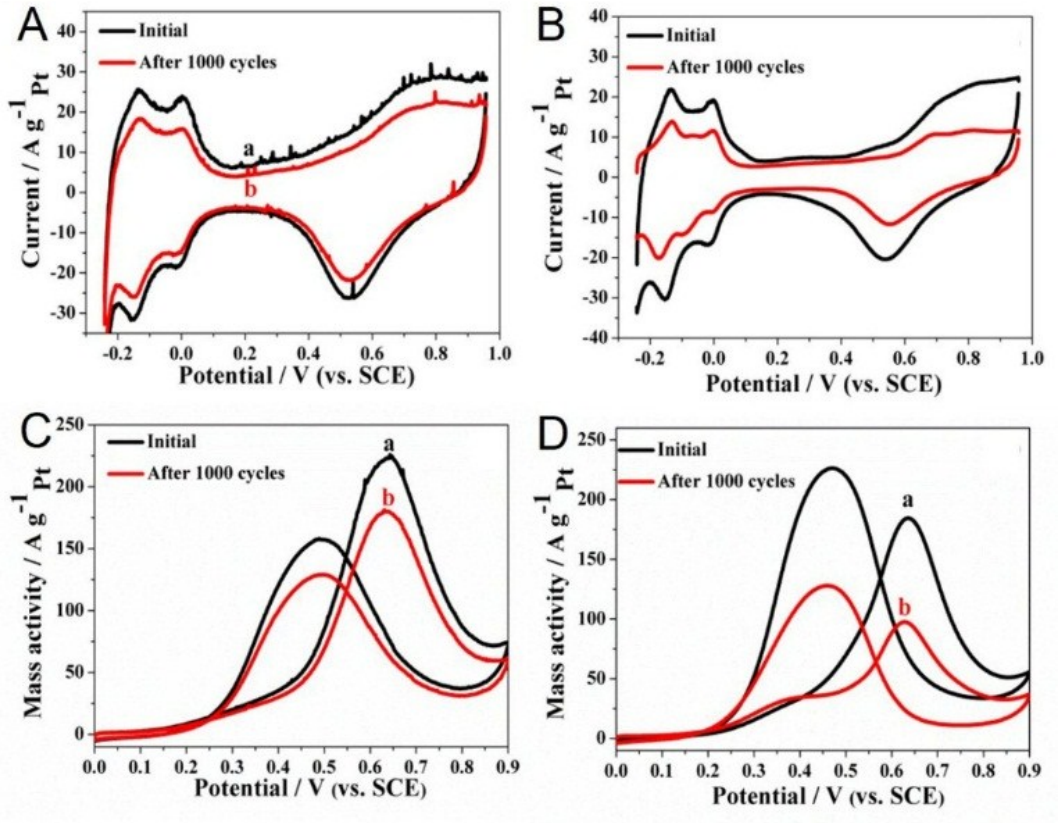

Fig. S3 CVs of (A) the Pt-NTs and (B) Pt black (a) before and (b) after 1000 cycles in N_2-saturated 0.5 M H_2SO_4 solution (scan rate: 50 mV s^{-1}); CVs of (A) the Pt-NTs and (B) Pt black (a) before and (b) after 1000 cycles in N_2-saturated 0.5 M H_2SO_4 + 0.5 M CH_3OH solution (scan rate: 50 mV s^{-1}).

Table S1. Comparison of MOR activity of Pt-NTs with other Pt catalysts previously reported.

Sample	Mass activity (peak current)	Electrolyte	Reference
Pt Nanorods aggregates	60 A g^{-1}	0.5 M H_2SO_4 + 2.0 M CH_3OH	[1]
Pt nanowires	109.5 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	[2]
Porous Pt nanowires	192.8 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	[3]
Pt hollow cubes	193.8 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	[4]
Pt nanowires (30/200)	213 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	[5]
Mesoporous Pt particles	228 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	[6]
Pt hollow nanospheres	250 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	[7]
Porous Pt nanotubes	260 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	[8]
Pt black	165 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	this work
Pt-NTs	231 A g^{-1}	0.5 M H_2SO_4 + 0.5 M CH_3OH	this work

References

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