

Supplementary Materials

Cyanogel-Derived Synthesis of Porous PdFe Nanohydrangeas as Electrocatalysts for Oxygen Reduction Reaction

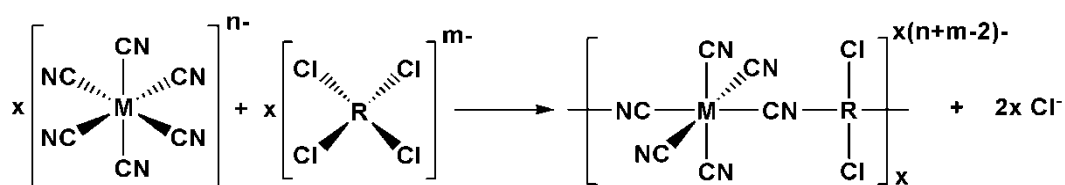
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Equation S1. Formation equation of cyanogel from transition metal cyanometalates and tetrachlorometalates in aqueous solution.

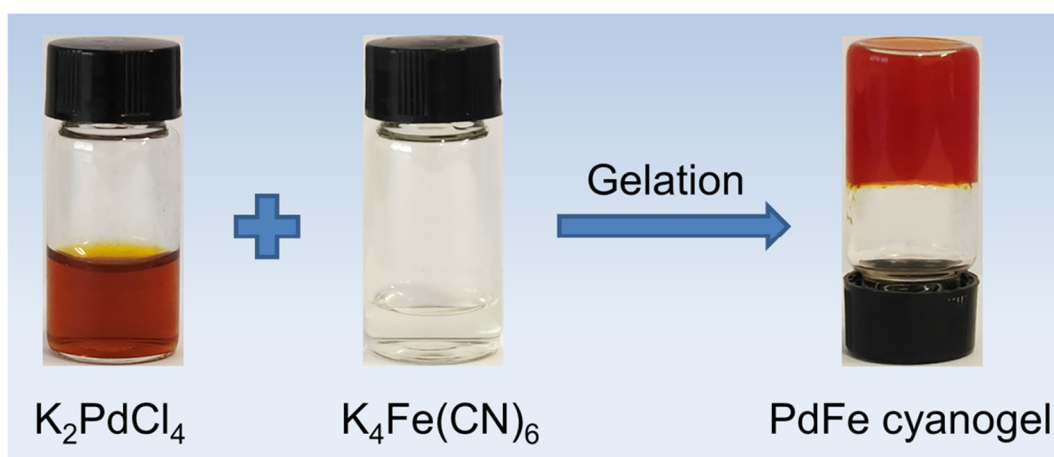


Figure S1. Digital photos showing the formation of PdFe cyanogel.

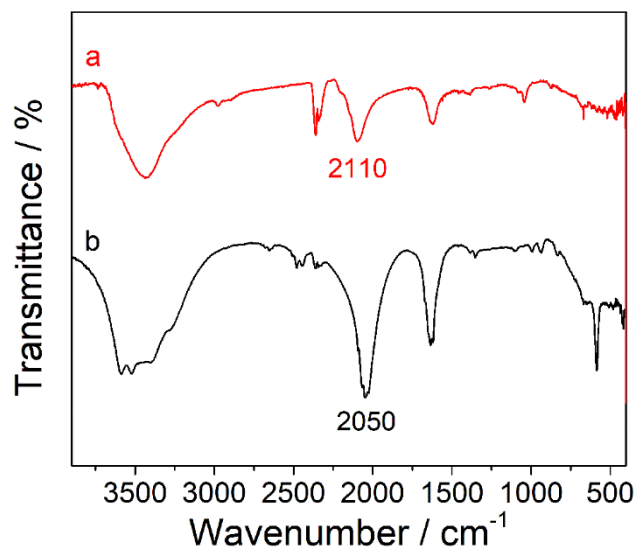


Figure S2. FTIR spectra of (a) the K₂PdCl₄/K₄Fe(CN)₆ cyanogel and (b) pure K₄Fe(CN)₆.

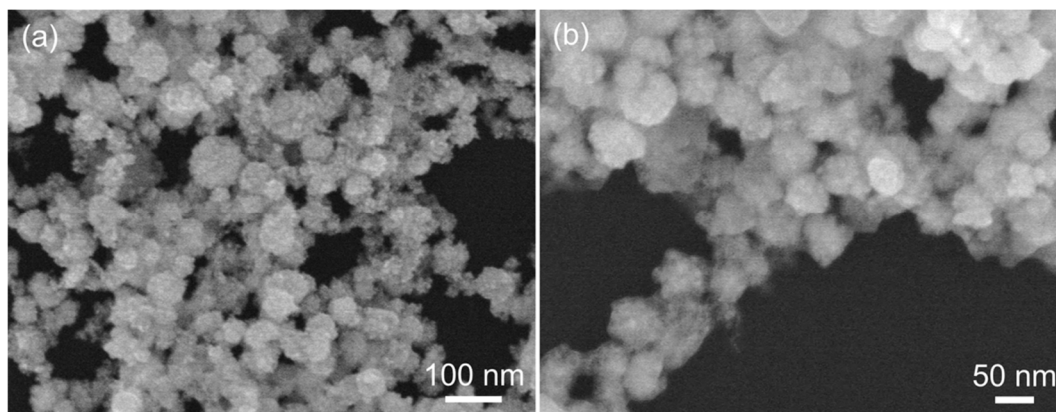


Figure S3. Typical SEM images of the porous PdFe nanohydrangeas at different magnifications.

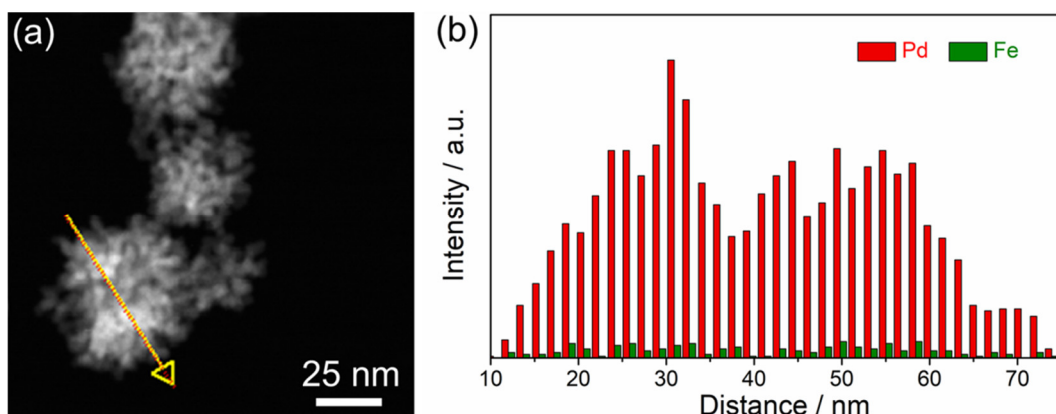


Figure S4. (a) STEM image and (b) EDX line scanning profile of the porous PdFe nanohydrangeas.

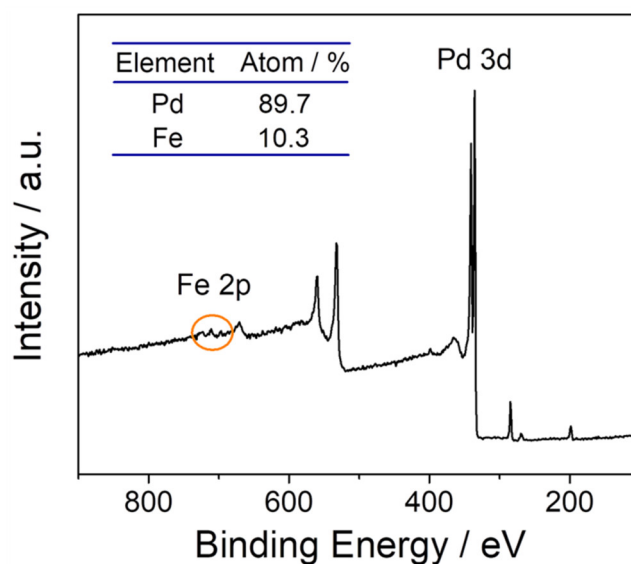


Figure S5. XPS survey scan spectrum of the porous PdFe nanohydrangeas.

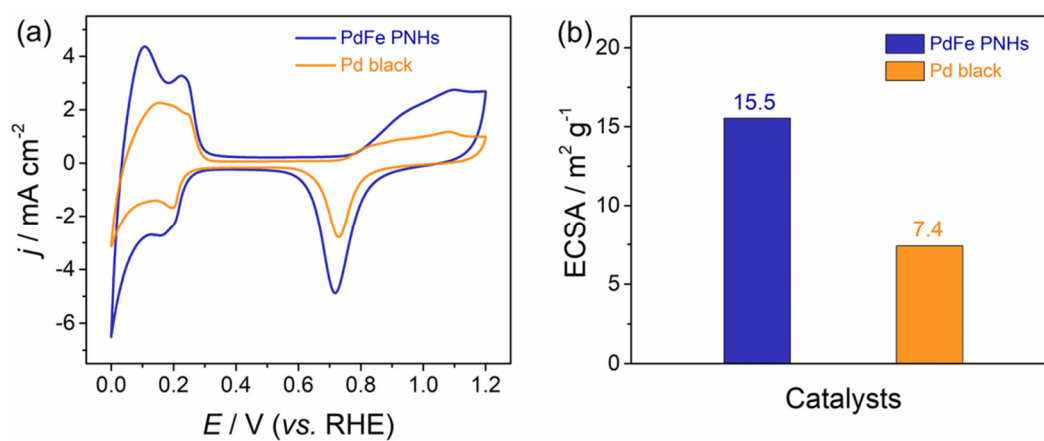


Figure S6. (a) CV curves of the as-synthesized porous PdFe nanohydrangeas and commercial Pd black catalyst recorded in N₂-purged 0.5 M H₂SO₄ solution with a sweep rate of 50 mV s⁻¹ and (b) Graphical comparison of the ECSA of the two catalysts.

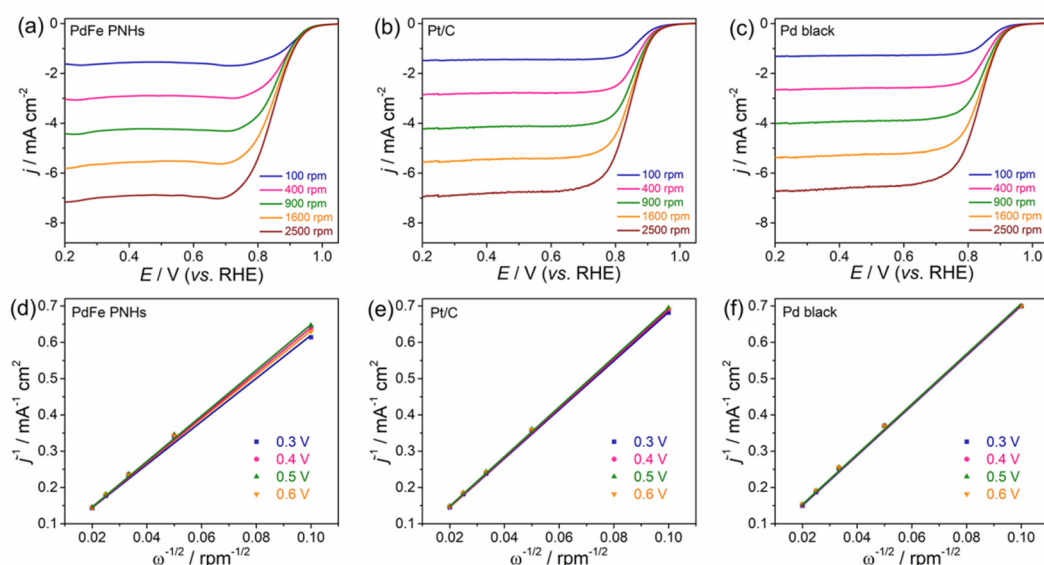


Figure S7. ORR polarization curves of the three catalysts obtained in O₂-saturated 0.1 M KOH solution with a sweep rate of 5 mV s⁻¹ and different rotation speeds. (a) PdFe PNHs; (b) Commercial Pt/C; (c) Commercial Pd black. The relevant Koutecky-Levich plots at different potentials of the three catalysts. (d) PdFe PNHs; (e) Commercial Pt/C; (f) Commercial Pd black.

Table S1. Comparison of the ORR activity of the porous PdFe nanohydrangeas with other electrocatalysts previously reported.

Catalyst	E_0 / V	$E_{1/2}$ / V	Electrolyte	Ref
PdFe PNHs	0.988	0.861	0.1 M KOH	this work
Pt/C	0.976	0.858	0.1 M KOH	this work
Pd black	0.964	0.844	0.1 M KOH	this work
Pd NPAs	0.926	0.837	0.1 M KOH	[1]
Pt ₂ Pd/NPG	0.97	0.84	0.1 M KOH	[2]
Pd ₃ Ni/C	0.96	0.85	0.1 M KOH	[3]
Pd ₃ Cu/C	0.875	0.785	0.1 M KOH	[4]
PdZn	0.98	0.82	0.1 M KOH	[5]
NiPd NPs/N-GR	0.961	0.82	0.1 M KOH	[6]
PdCu NTs	0.941	0.824	0.1 M KOH	[7]
MnPd ₃ /C	0.953	0.80	0.1 M KOH	[8]
Pd ₂ NiAg	0.923	0.842	0.1 M KOH	[9]
PdCo/NPC	0.928	0.843	0.1 M KOH	[10]

References

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