Electronic Supplementary Information for

Phosphorus-triggered activation of PdPb nanoflowers for enhanced oxygen reduction electrocatalysis

Ziqiang Wang, Pengjun Tian, Hugang Zhang, Kai Deng, Hongjie Yu, Xin Wang, You Xu, Hongjing Wang* and Liang Wang*

State Key Laboratory Breeding Base of Green-Chemical Synthesis Technology, College of Chemical Engineering, Zhejiang University of Technology, Hangzhou, 310014, P. R. China.

E-mails: hjw@zjut.edu.cn; wangliang@zjut.edu.cn

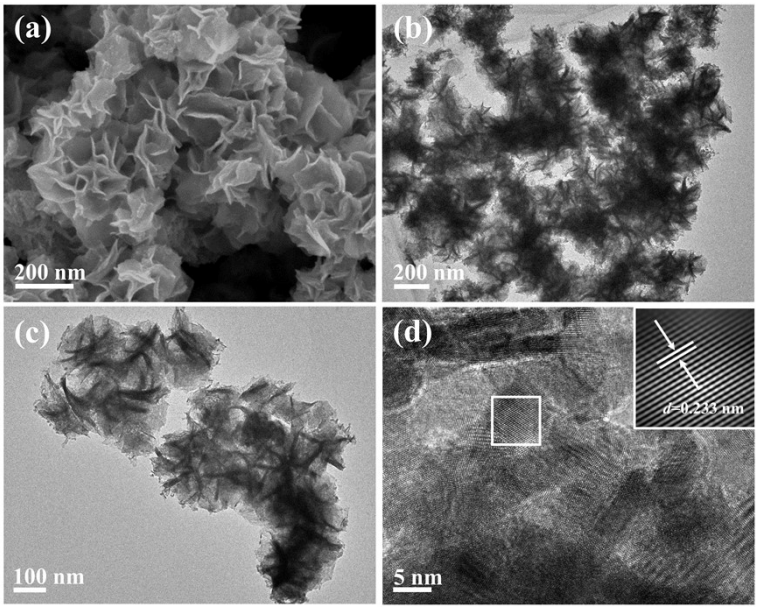

Fig. S1 (a) SEM and (b, c) TEM images of PdPb NFs. (d) HRTEM images of PdPb NFs and corresponding Fourier filtered lattice fringes of the square area.

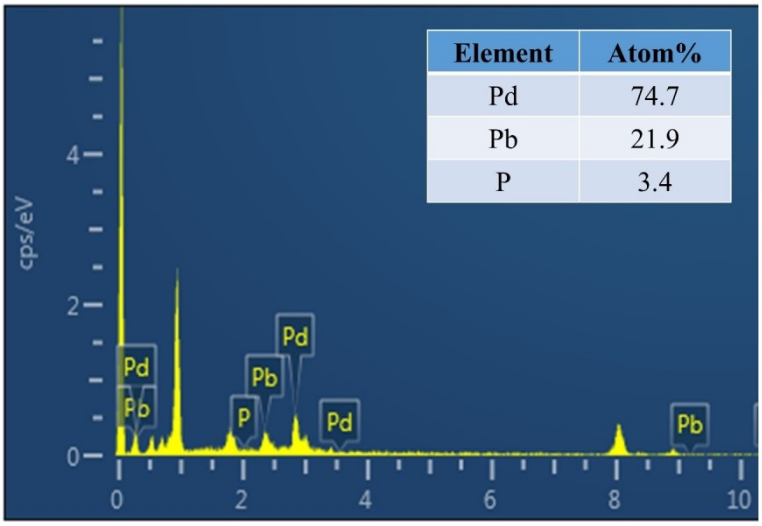

Fig. S2 EDX spectrum and element composition of P-PdPb NFs.

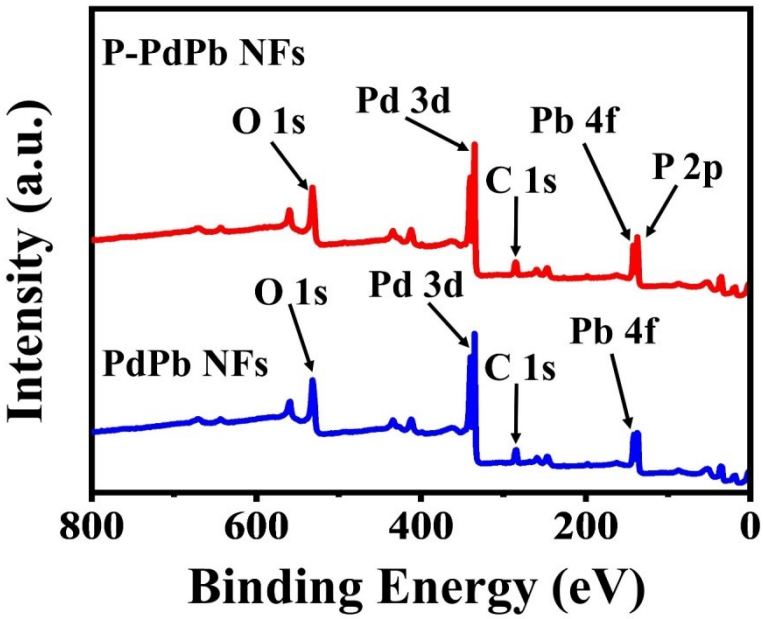

Fig. S3 XPS survey spectra of P-PdPb NFs and PdPb NFs.

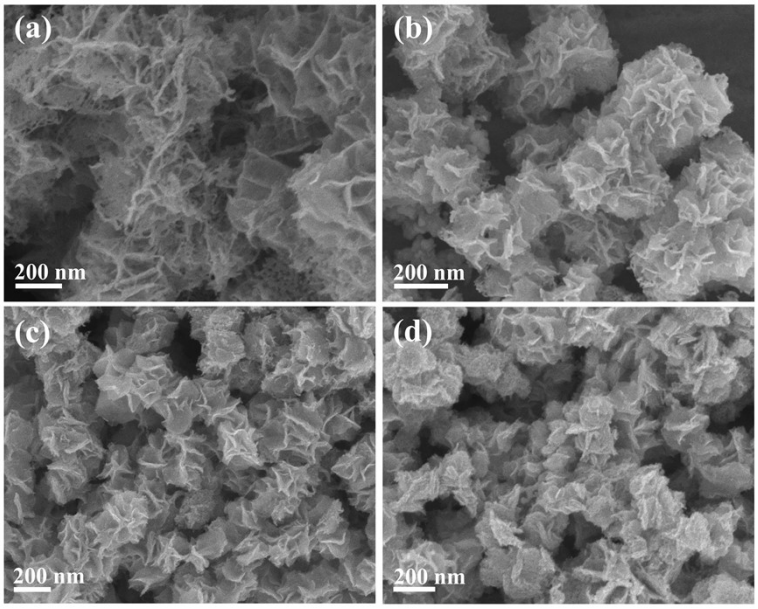

Fig. S4 SEM images of the P-PdPb NFs samples prepared with different contents of $W(CO)_6$ under the identical synthesis conditions: (a) 5 mg, (b) 30 mg, (c) 60 mg, and (d) 100 mg.

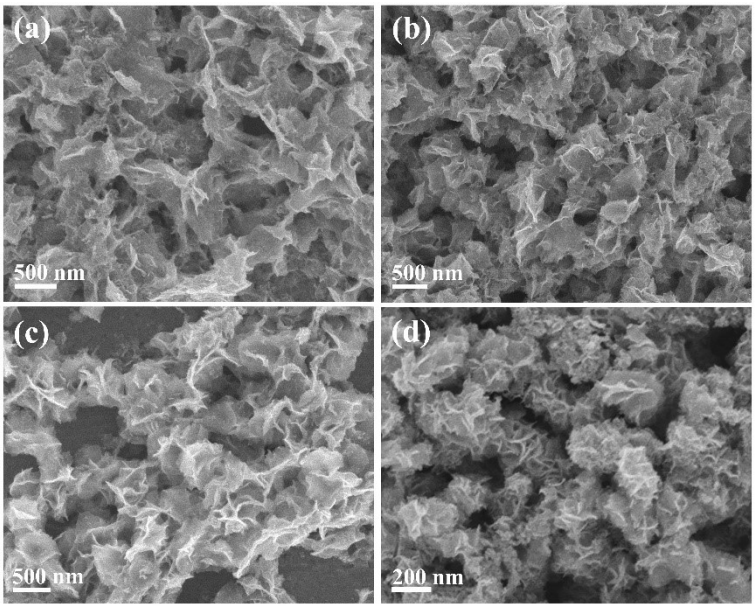

Fig. S5 SEM images of P-PdPb NFs synthesized at different reaction times: (a) 5 min, (b) 30 min, (c) 1 h, and (d) 2 h.

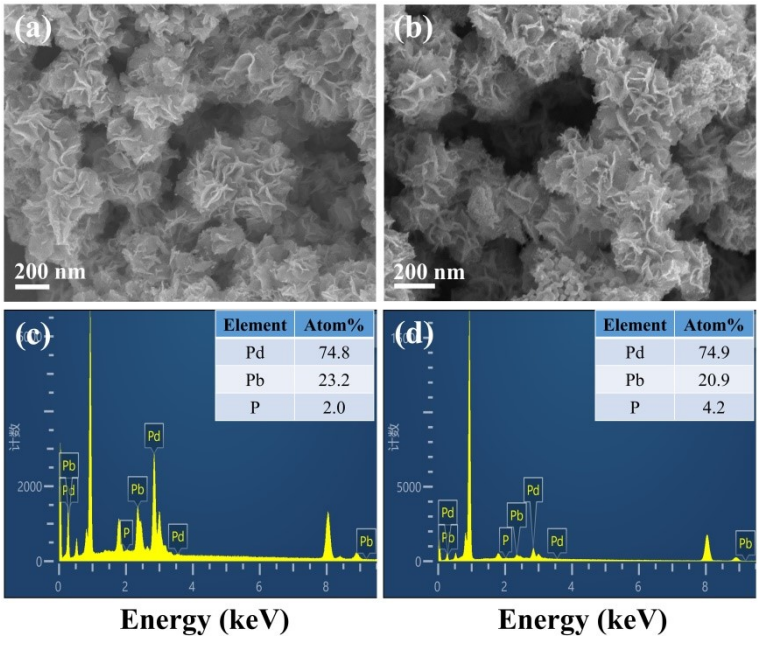

Fig. S6 SEM images of (a) $P_{0.5}$-PdPb NFs and (b) $P_{2.0}$-PdPb NFs, and corresponding (c, d) EDX spectra and element composition.

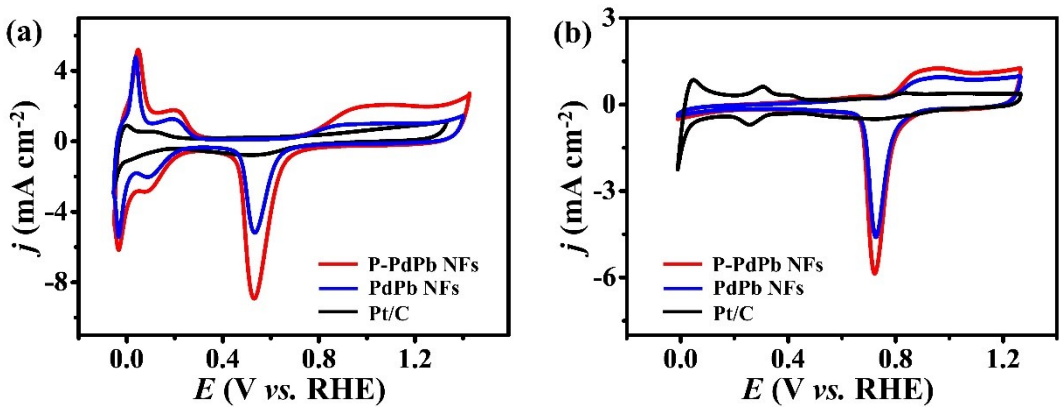

Fig. S7 CV curves of three catalysts in (a) 0.1 M $HClO_4$ and (b) 0.1 M KOH.

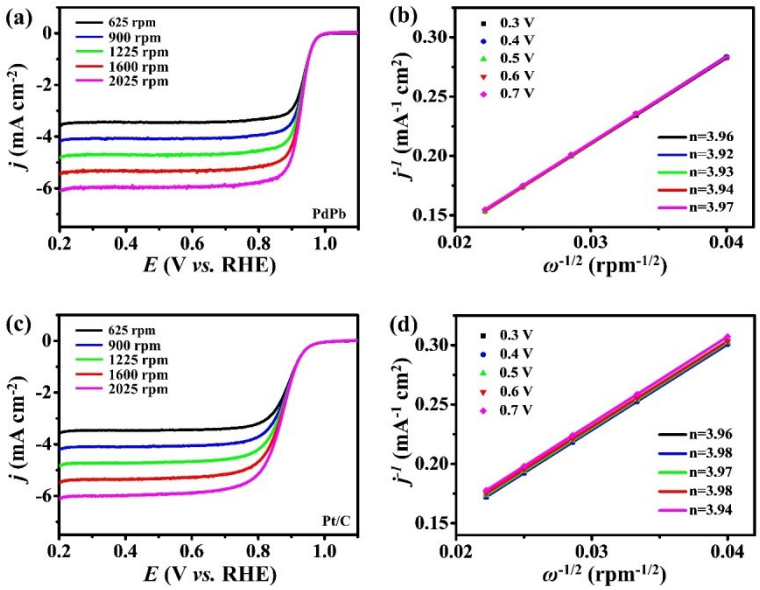

Fig. S8 ORR polarization curves at different rotating speeds for (a) PdPb NFs and (c) Pt/C. The electron transfer numbers at different potentials for (b) PdPb NFs and (d) Pt/C.

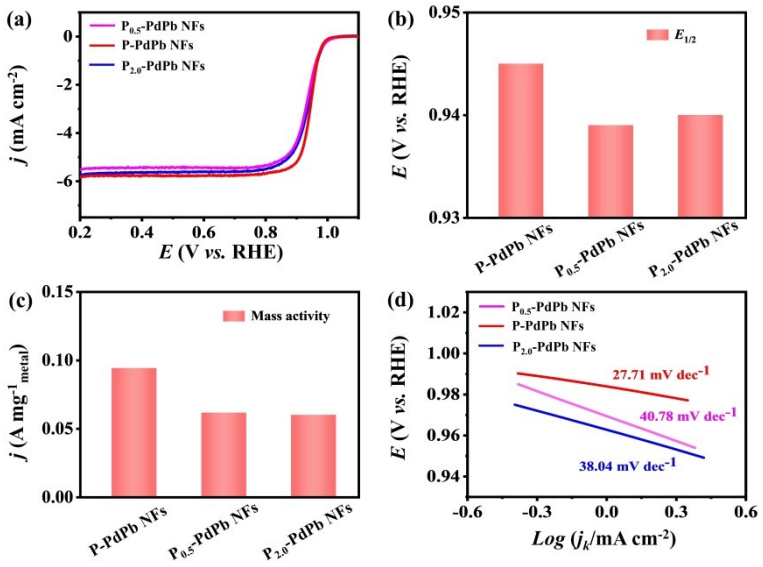

Fig. S9 (a) ORR polarization curves of samples, and corresponding (b) $E_{1/2}$, (c) mass activity at 0.95 V and (d) Tafel plots.

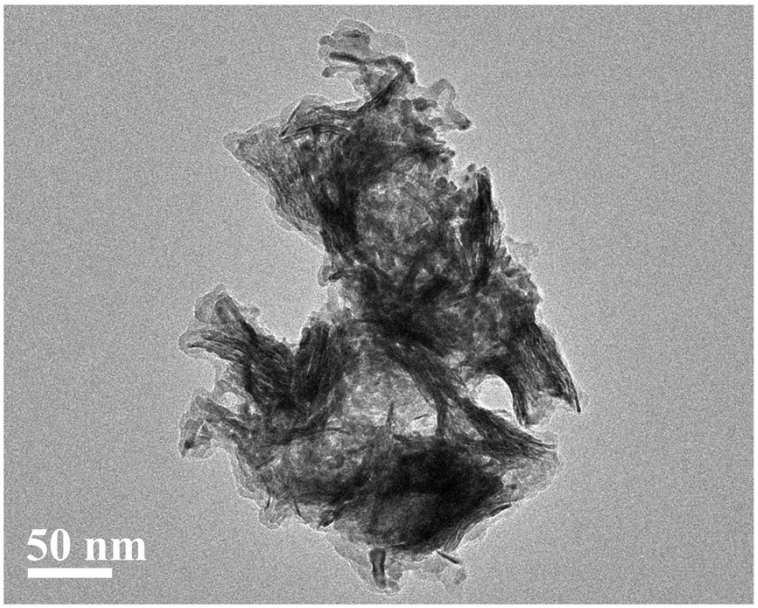

Fig. S10 TEM image of P-PdPb NFs after stability test.

Table S1. The comparison of ORR performance of P-PdPb NFs with some reported Pd-based electrocatalysts under alkaline conditions.

Catalyst	Electrolyte	E_{onset}	$E_{1/2}$	Ref
P-PdPb NFs	**0.1 M KOH**	**1.06**	**0.95**	**This work**
AuPd@TA LCs	0.1 M KOH	1.01	0.90	1
PdCu MNs	0.1 M KOH	0.94	0.89	2
Pd Metallene	0.1 M KOH	1.02	0.90	3
$Pd_{50}Ru_{50}$/CNs	0.1 M KOH	0.90	0.80	4
PdNi nanocorals	0.1 M KOH	0.95	0.85	5
Pd_3Pb SNP	0.1 M KOH	/	0.89	6
Pd_2N NCs	0.1 M KOH	/	0.92	7
Pd@Pt NCs	0.1 M KOH	0.88	/	8
Pd/PNCNF	0.1 M KOH	0.92	/	9

References

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