Supporting Information

Bimetallic phosphide hollow nanocubes derived from prussian-blue-analog as high-performance catalysts for the oxygen evolution reaction

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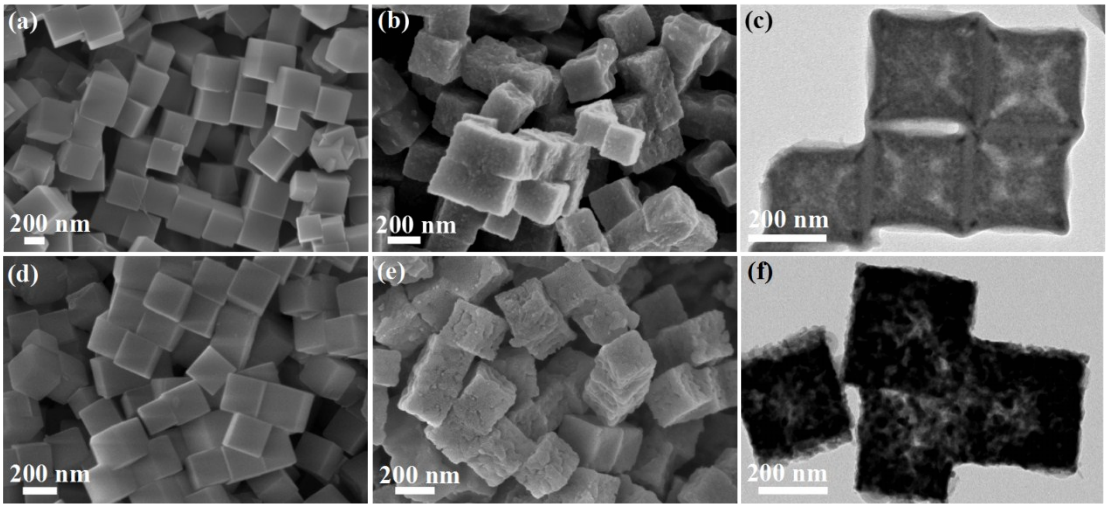

Fig. S1 SEM images of Ni-Fe PBAs-3-1 (a) and Ni-Fe PBAs-3-4 (d). SEM and TEM images of $(Ni_{0.72}Fe_{0.28})_2P$ (b), (c) and $(Ni_{0.35}Fe_{0.65})_2P$ nanocubes (e), (f).

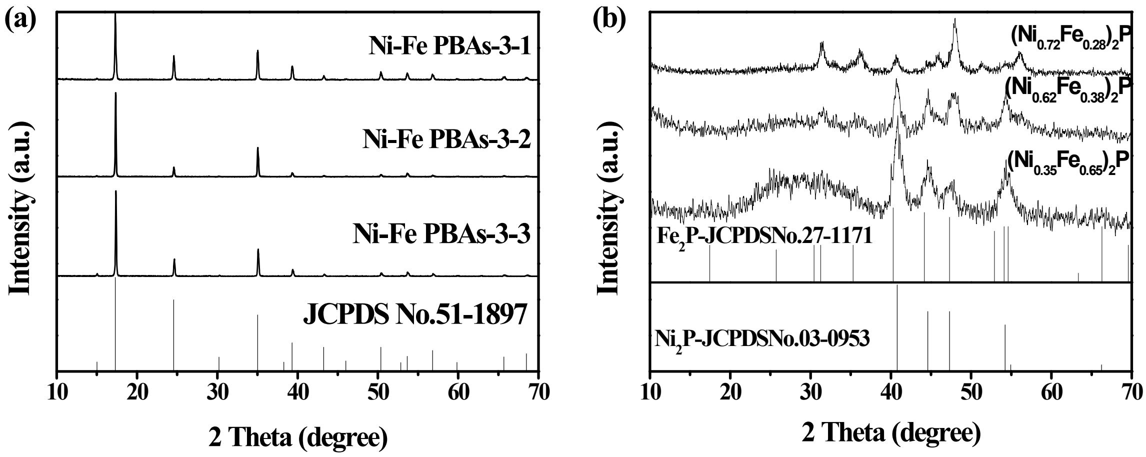

Fig. S2 (a) XRD patterns of the as-synthesized Ni-Fe PBAs-3-1, Ni-Fe PBAs-3-2 and Ni-Fe PBAs-3-4 and standard $KNiFe(CN)_6$ (JCPDS 51-1897). (b) XRD patterns of $(Ni_{0.72}Fe_{0.28})_2P$, $(Ni_{0.62}Fe_{0.38})_2P$ and $(Ni_{0.35}Fe_{0.65})_2P$ and standard Fe_2P (JCPDS 27-1171), Ni_2P (JCPDS 03-0953).

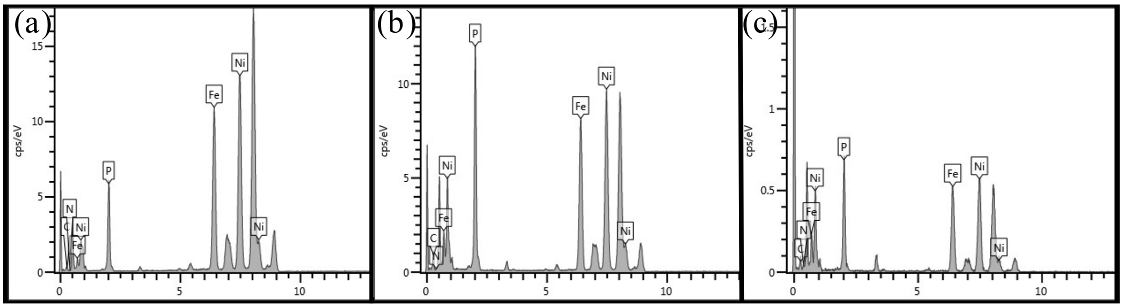

Fig. S3 EDS analysis of $(Ni_{0.72}Fe_{0.28})_2P$ (a) , $(Ni_{0.62}Fe_{0.38})_2P$ (c) and $(Ni_{0.35}Fe_{0.65})_2P$ (d).

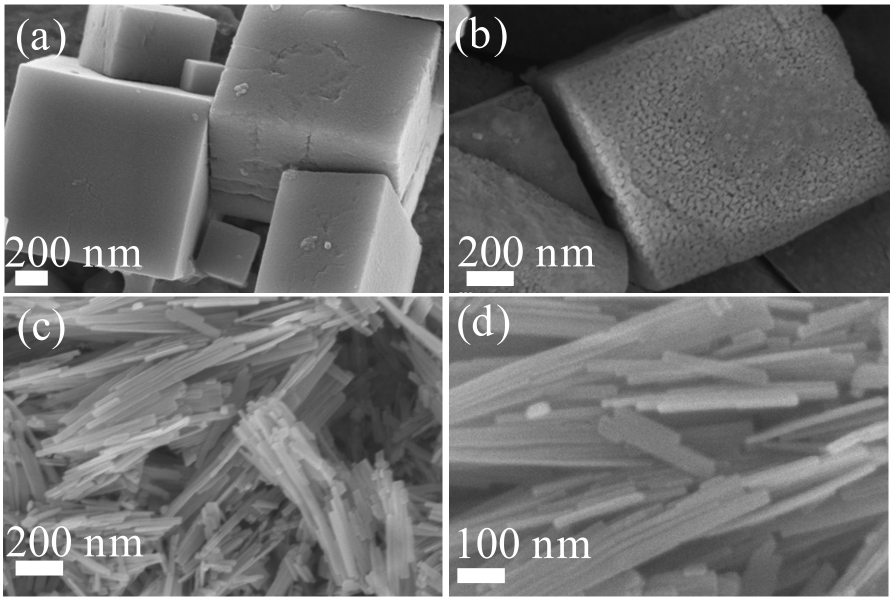

Fig. S4 SEM images of Fe PBAs (a) and Ni PBAs (c). SEM images of Fe-P (b) and Ni-P (d).

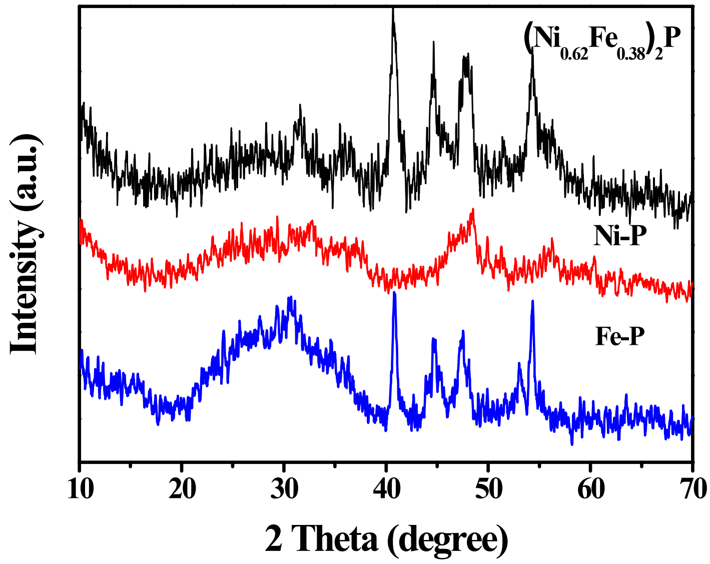

Fig. S5 XRD patterns of the obtained Fe-P and Ni-P.

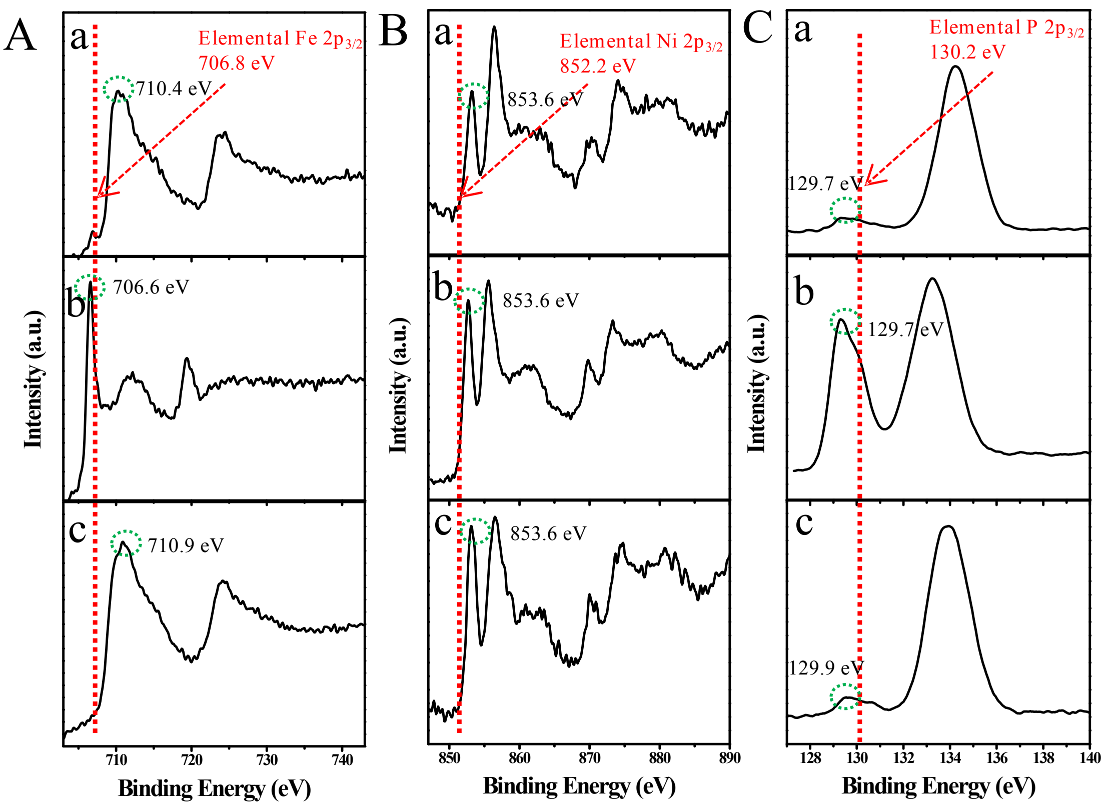

Fig. S6 Fe 2p (A), Ni 2p (B), and P 2p (C) XPS spectrum of $(Ni_{0.72}Fe_{0.28})_2P$ (a), $(Ni_{0.62}Fe_{0.38})_2P$ (b), and $(Ni_{0.35}Fe_{0.65})_2P$ nanocubes (c).

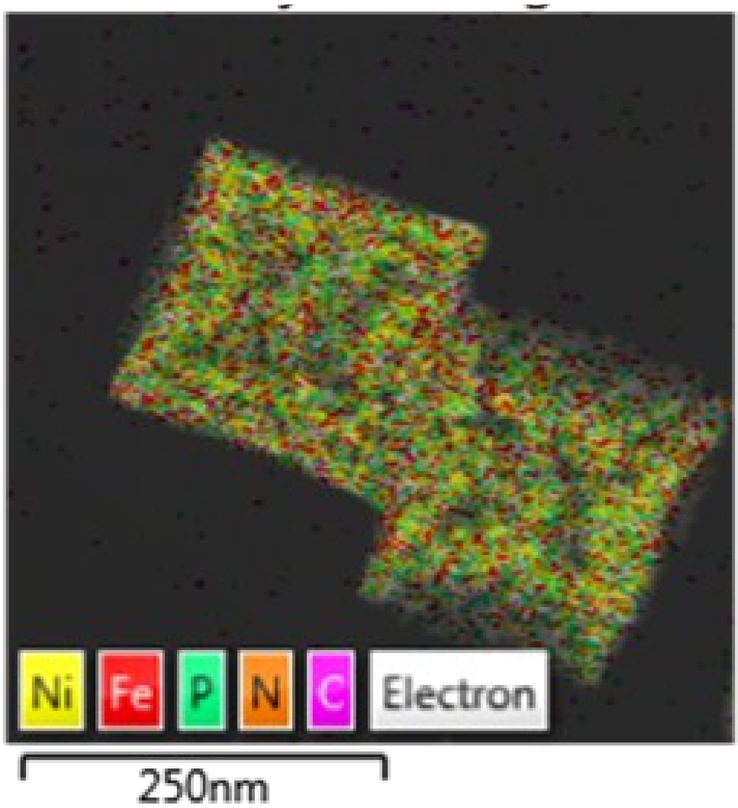

Fig. S7 EDS layered image of the obtained $(Ni_{0.62}Fe_{0.38})_2P$ sample.

Table S1 Elemental compositions of $(Ni_{0.62}Fe_{0.38})_2P$ sample determined by XPS.

sample	**C atom %**	**N atom %**	**P atom %**	**Fe atom %**	**Ni atom %**
$(Ni_{0.62}Fe_{0.38})_2P$	45.79	9.63	25.75	6.34	12.39

Table S2 Comparison of OER activity with different catalysts.

Material	**Overpotential at 10 mA cm^{-2} (mV *vs.* RHE)**	**Current Density (mA cm^{-2})**	**Electrolyte concentration (pH)**	**Loading (mg cm^{-2})**	**Tafel slope (mV·dec^{-1})**	**Ref.**
Ni-P	460	10	14	0.3	112	This work
Ni_2P nanowires	290	10	14	0.14		1
Ni_2P NWs	400	10	~13.6	0.1	60	2

Ni-P	300	10	14		64	3
Fe-P	390	10	14	0.3	72	This work
$(Ni_{0.62}Fe_{0.38})_2P$	290	10	14	0.3	44	This work
$(Ni_{0.72}Fe_{0.28})_2P$	340	10	14	0.3		This work
$(Ni_{0.35}Fe_{0.65})_2P$	350	10	14	0.3		This work
Ni–Co PBA cages	380	10	14		50	4
Ni–Fe PBA cubes	430	10	14	0.3	76.3	This work
$Ni_{0.69}Co_{0.31}$–P	266	10	14	3.5	81	5
$Ni_{0.78}Co_{0.22}$–P	301	10	14	3.5	85	5
$Ni_{0.54}Co_{0.46}$–P	303	10	14	3.5	81	5
C-$(Co_{0.54}Fe_{0.46})_2P$	370	10	14	0.2		6
NiFe-P film/Ni foam	220	20	14	5	88	7
NiFe-LDH NP film	~230	10	14	0.2	50	8

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