Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Three dimensional NiCoP hollow spheres; efficient electrode material for Hydrogen evolution reaction and Supercapacitor application

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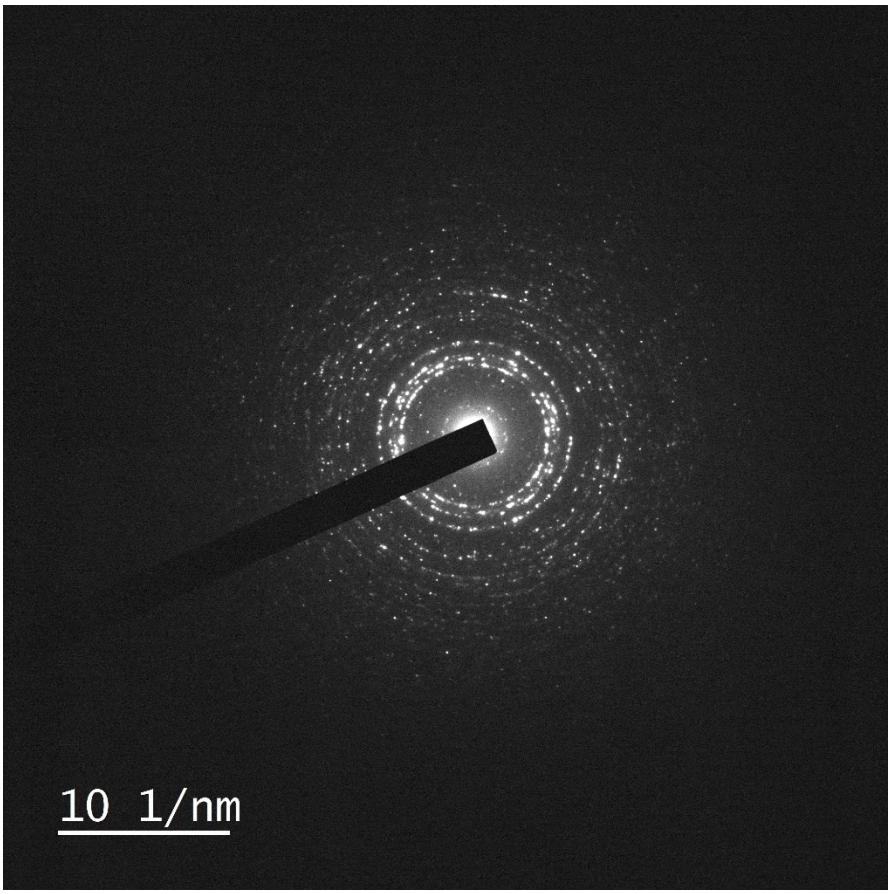

Fig. S 1 Selected area electron diffraction (SAED) pattern for the NiCoP microspheres

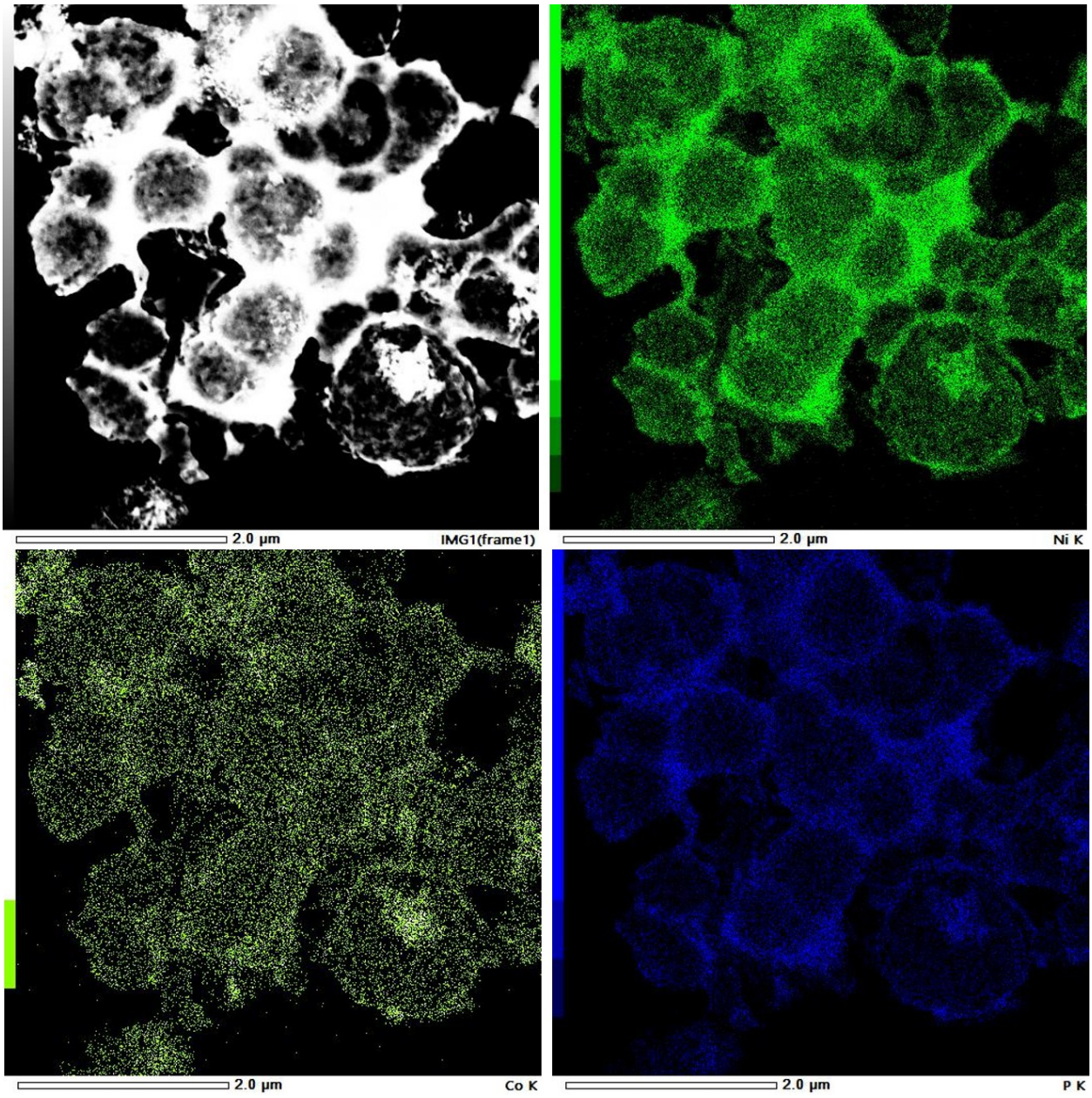

Fig. S 2 EDS mapping of NiCoP microspheres

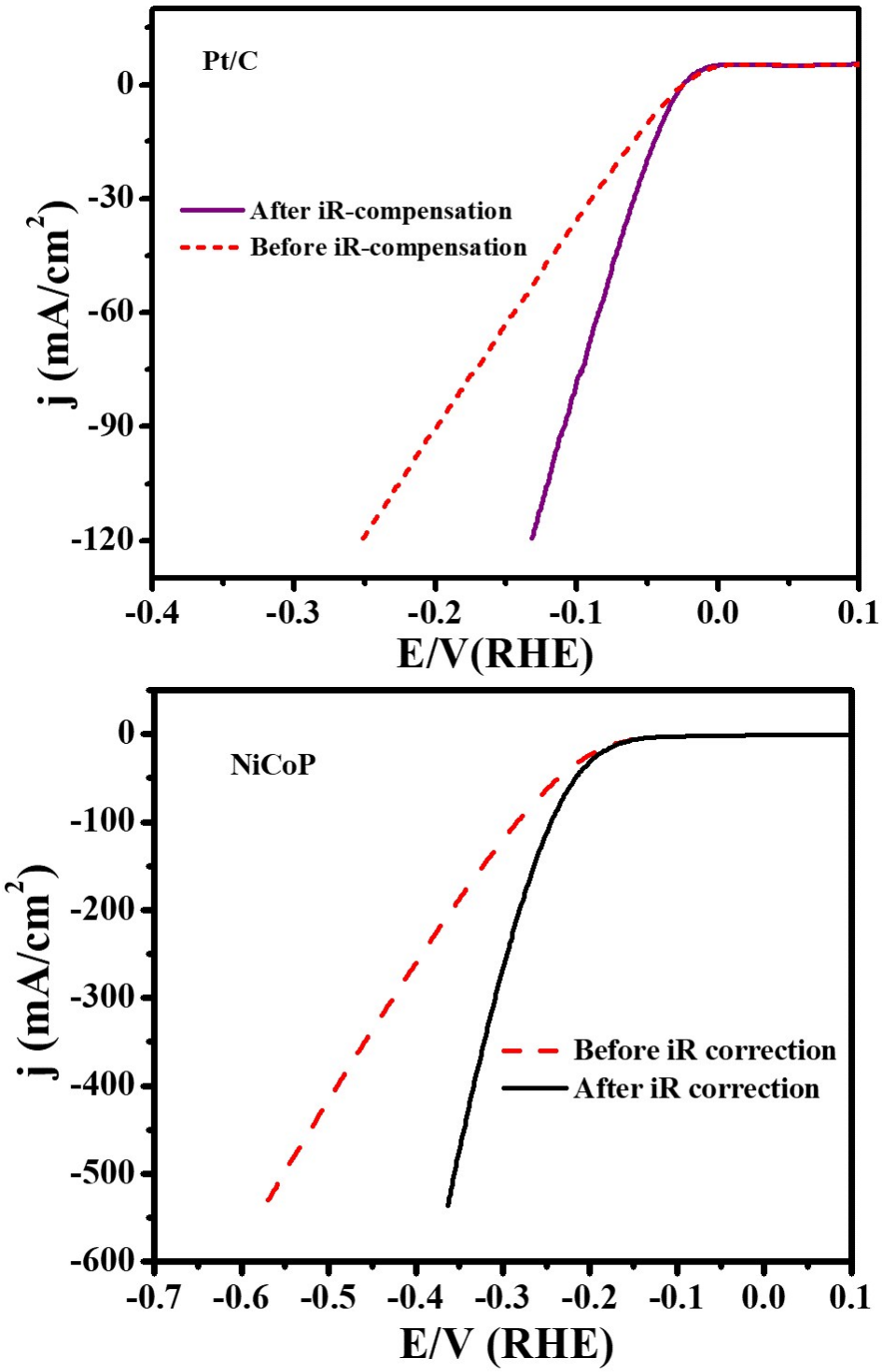

Fig. S 3 Linear sweep voltammograms of commercial Pt/C and NiCoP microsphere before and after iR correction

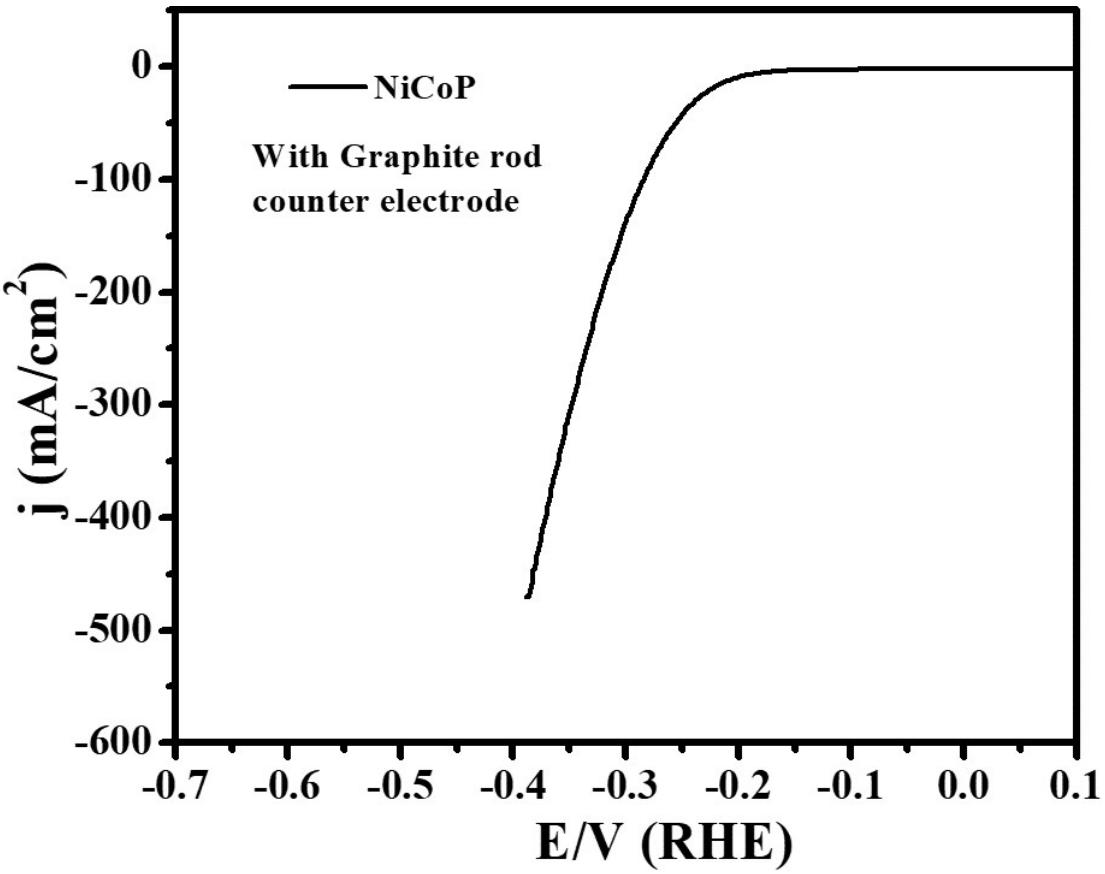

Fig. S 4 Linear sweep voltammograms of NiCoP modified glassy carbon electrode for HER at a sweep rate of 5 mV/s. Here Graphite rod has been used as the counter electrode.

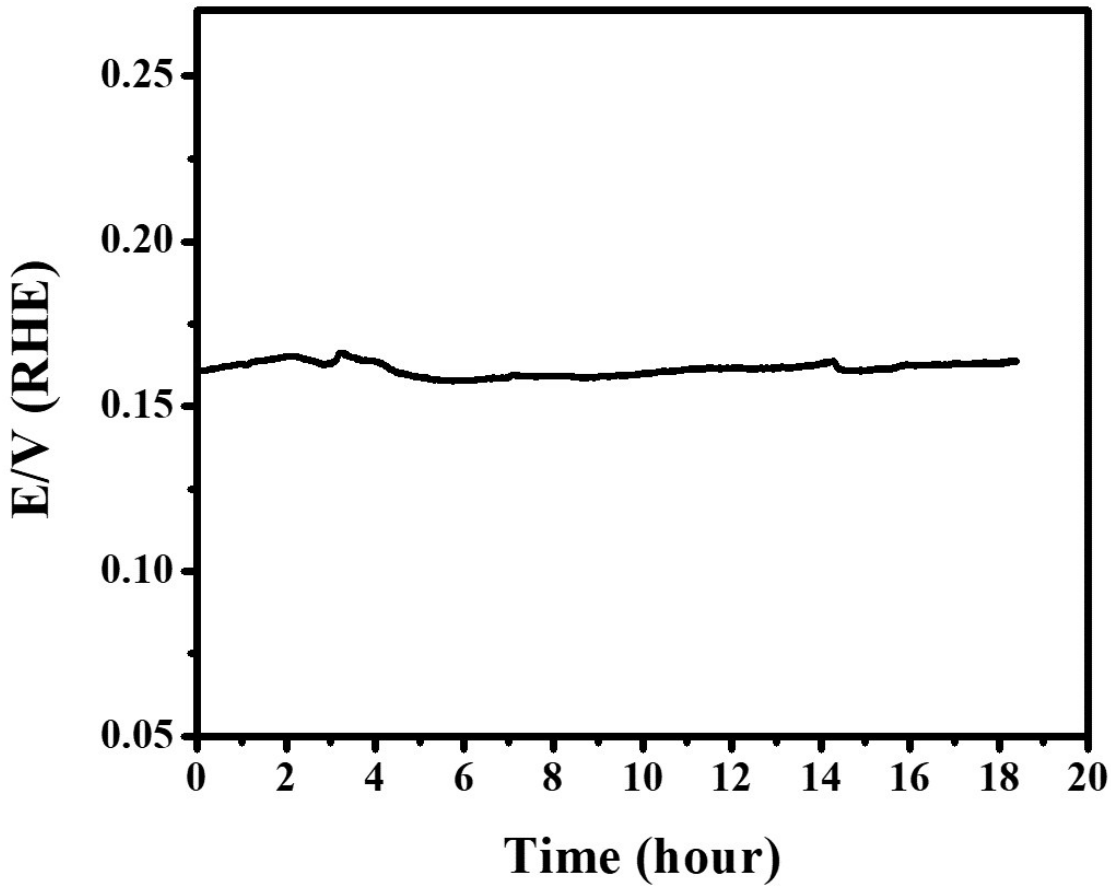

Fig. S 5 long term stability test for HER at 10 mA/cm^2 current density in 0.5 M H_2SO_4 with Ag/AgCl reference and graphite rod as counter electrode.

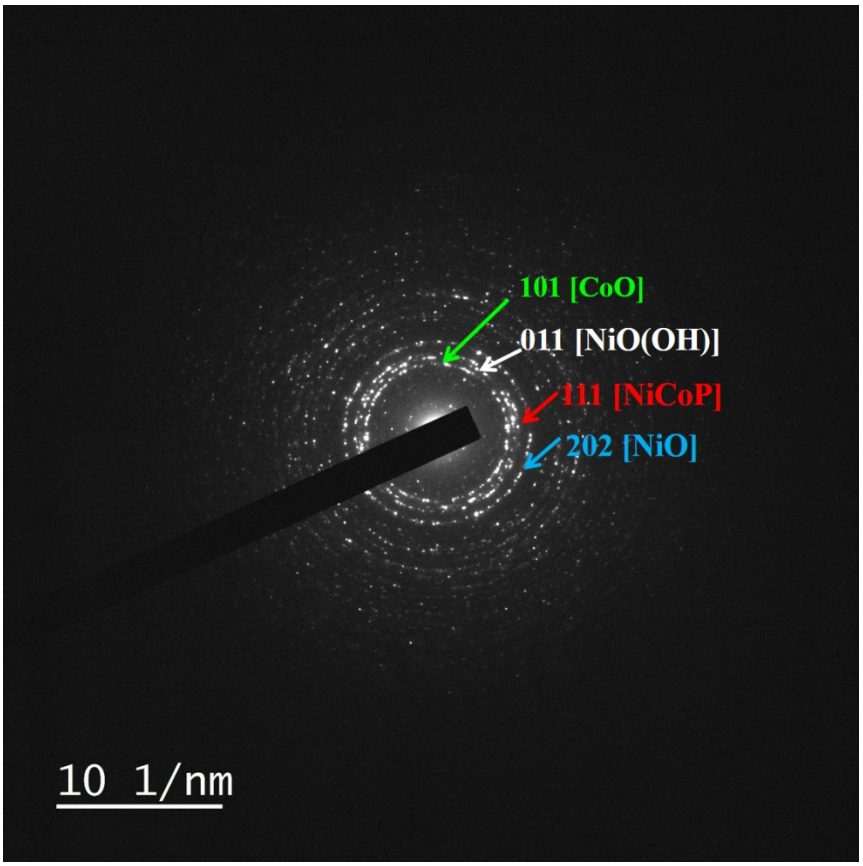

Fig. S 6 SAED pattern of NiCoP modifies electrode after 10000 repeated cycles in 5M KOH electrolyte.

Sl No.	Sample	Electrolyte H_2SO_4 (M)	Over potential 10mA/cm^2 (mV)	Tafel slope (mV/dec)	Reference
1	Co-NRCNTs	0.5	260	69	1
2	Ni–Co–P Ni–Co–P/C_{60}	0.5	97	58 48	2
3	RGO/WS_2	0.5	229	73	3
4	Freeze-dried WS_2/rGO after annealing	0.5	265	58	4
5	NiCoP@FePx	1M KOH 0.5	82.5 96	69.1 50.16	5
6	Metallic MoS_2 nanosheets	0.5	195	54	6
7	NiCoP/NF	1M KOH	85	46	7
8	Annealed WS_2/CC	0.5	225	105	8
9	Ni–Co–P-300	1M KOH	150	60.6	9
10	$Ni_{12}P_5$ Spherical Nano Particles $Ni_{12}P_5$ nanoplates	0.5	175 128	69.9 60.6	10
11	FeP nanosheets	0.5	240	67	11
12	NiCoP	0.5	160	70	This Work

Table S 1 The HER performance of different electrocatalysts

Sl no	Sample	Potential window	Specific capacitance (F/g)	Reference
1	Co_2P nanoflowers	0-0.5V	416	12
2	Ni_2P nanorods	0- 0.475 V	799.2	13
3	Ni_2P particles	0-0.4V	823.25	14
4	$Ni_{12}P_5$ hollow nanocapsules	0-0.55V	949	15
6	NiCoP nanoparticles	0.1-0.58V	646	16
7	Ni-P microspheres@MnO_2	0–0.35 V	1130	17
10	Ni_5P_4 particles	0-0.4V	801.5	14
11	NiCoP hollow sphere	0-0.5V	960	This work

Table S 2. The Supercapacitor performance of different Transition metal based phosphides

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