Electronic Supplementary Information

Polyethylenimine modified nickel phosphide nanosheets: Interfacial proton boosts hydrogen evolution reaction†

Yu Ding,[‡a] Bo-Qiang Miao,[‡b] Yu-Cheng Jiang,*[a] Hong-Chang Yao,[c] Xi-Fei Li,[d] and Yu Chen*[b]

[a] Key Laboratory of Macromolecular Science of Shaanxi Province, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an 710062, PR China

[b] Key Laboratory of Applied Surface and Colloid Chemistry (MOE), Shaanxi Key Laboratory for Advanced Energy Devices, School of Materials Science and Engineering, Shaanxi Normal University, Xi'an 710062, PR China

[c] College of Chemistry and Molecular Engineering, Zhengzhou University, Zhengzhou 450001, PR China

[d] Institute of Advanced Electrochemical Energy, Xi'an University of Technology, Xi'an 710048, P. R. China

† These authors contributed equally to this work.

* Corresponding authors:

E-mail: jyc@snnu.edu.cn (Y. Jiang)

E-mail: ndchenyu@gmail.com (Y. Chen)

Figures

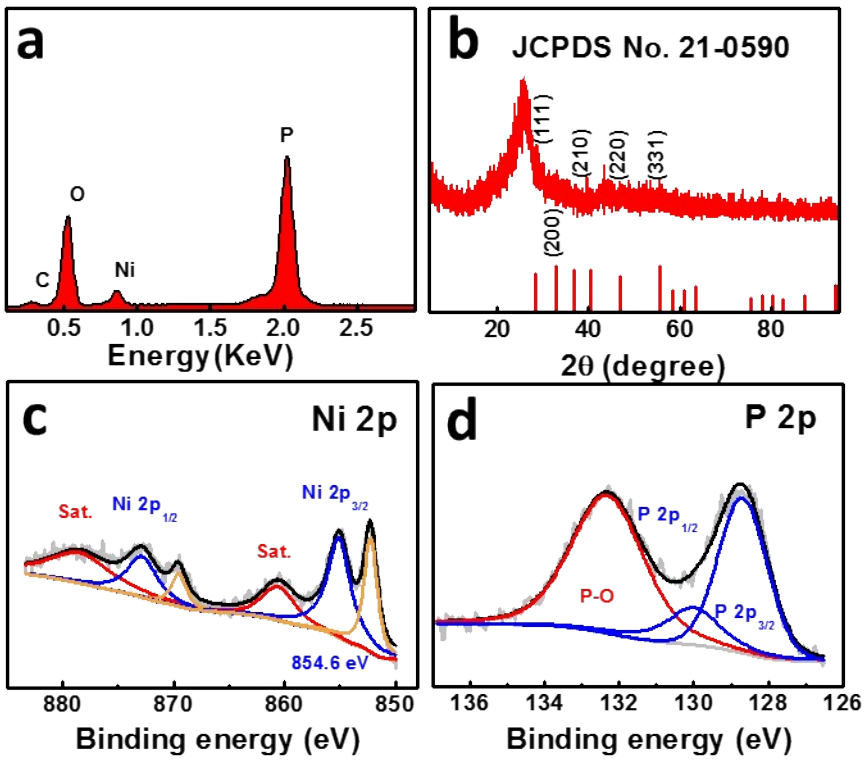

Fig. S1 (a) EDS spectrum, (b) XRD pattern, (c) Ni 2p XPS spectrum, and (d) P 2p XPS spectrum of un-modified NiP_2-CC nanohybrids.

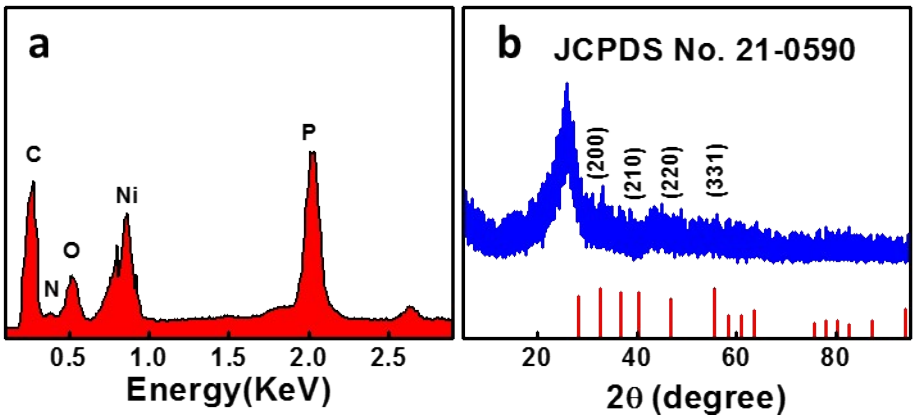

Fig. S2 (a) EDS spectrum, (b) XRD pattern of PEI_{10000}@NiP_2-CC nanohybrids.

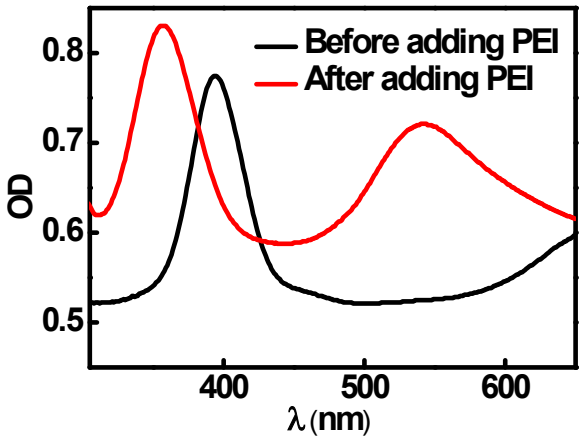

Fig. S3 UV-vis spectra for before and after adding PEI into Ni^{2+} solution.

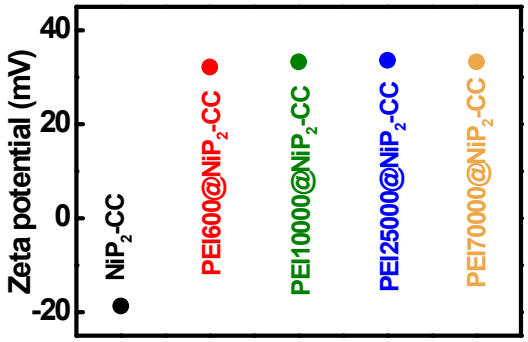

Fig. S4 Zeta potential of un-modified NiP_2-CC nanohybrids and PEI@NiP_2-CC nanohybrids with different molecular weight of PEI.

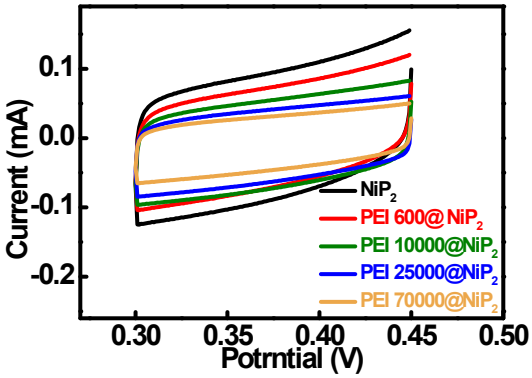

Fig. S5 CV curves of PEI@NiP_2-CC nanohybrids in 1 M PBS solution at 20 mV s^{-1}.

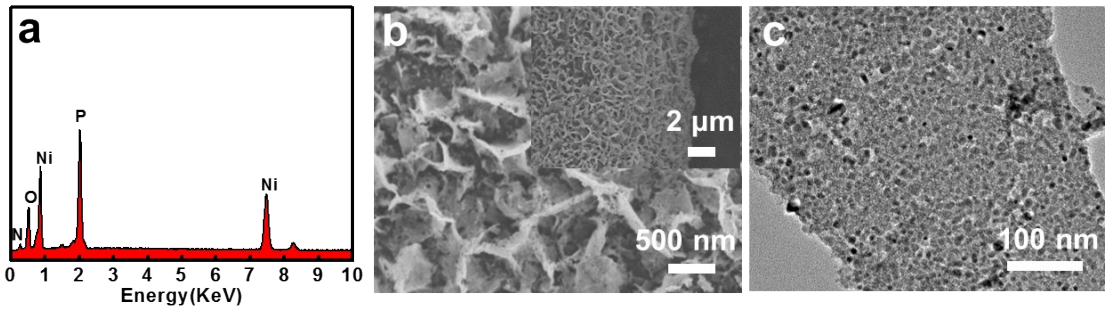

Fig. S6 (a) EDS spectrum, (b) SEM images and (c)TEM image of PEI_{10000}@NiP_2-CC nanohybrids after chronoamperometry test in 0.5 M H_2SO_4 solution。

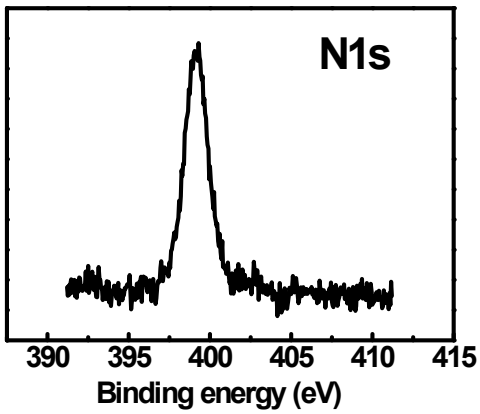

Fig. S7 N1s spectrum of PEI_{10000}@NiP_2-CC nanohybrids after chronoamperometry test in 0.5 M H_2SO_4 solution.

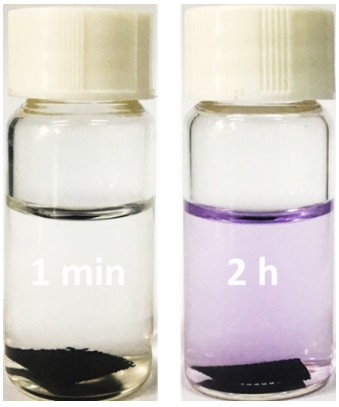

Fig. S8 Digital photos of NiP_2-CC nanohybrids in 0.5 M PEI with 10000 molecular weight solution (pH 12) at 1 min (left) and 2 h (right).