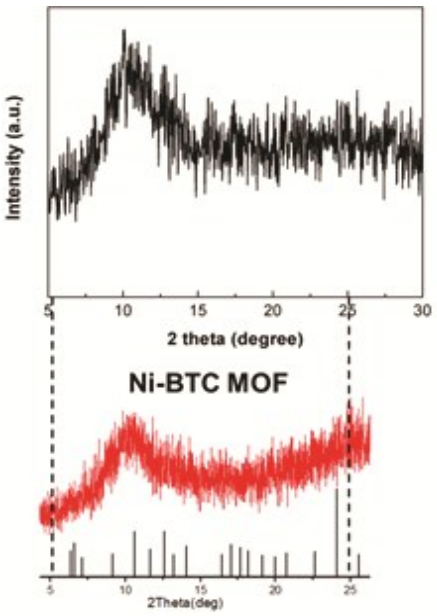
Electronic Supplementary Information (ESI) for

Metal-organic framework-derived nickel phosphides as efficient electrocatalysts toward sustainable hydrogen generation of water splitting

Tian Tian, Lunhong Ai,* and Jing Jiang,*

Chemical Synthesis and Pollution Control Key Laboratory of Sichuan Province, College of Chemistry and Chemical Engineering, China West Normal University, Shida Road 1, Nanchong 637002, P.R. China.

E-mail: ah_aihong@163.com (L. Ai); 0826zjjh@163.com (J. Jiang); Tel/Fax: +86-817-2568081



Chem. Commun., 2014, **50**, 9485-9488

Fig. S1 XRD pattern of Ni-BTC MOF.

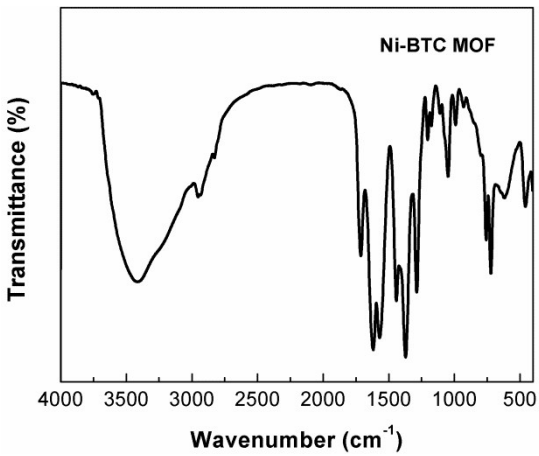


Fig. S2 FTIR spectra of Ni-BTC MOF

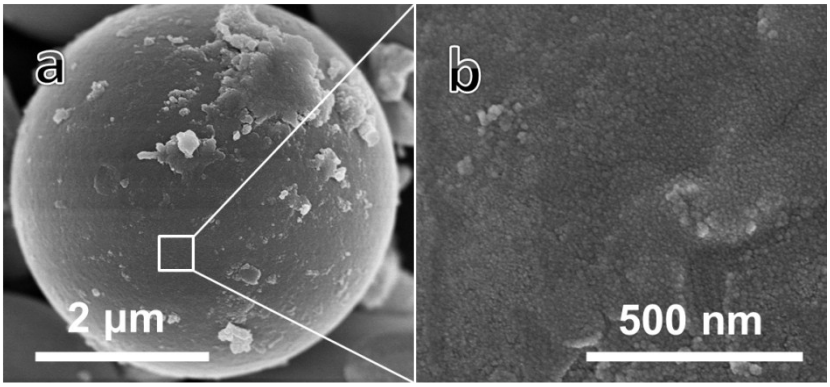


Fig. S3 SEM images of Ni-BTC MOF

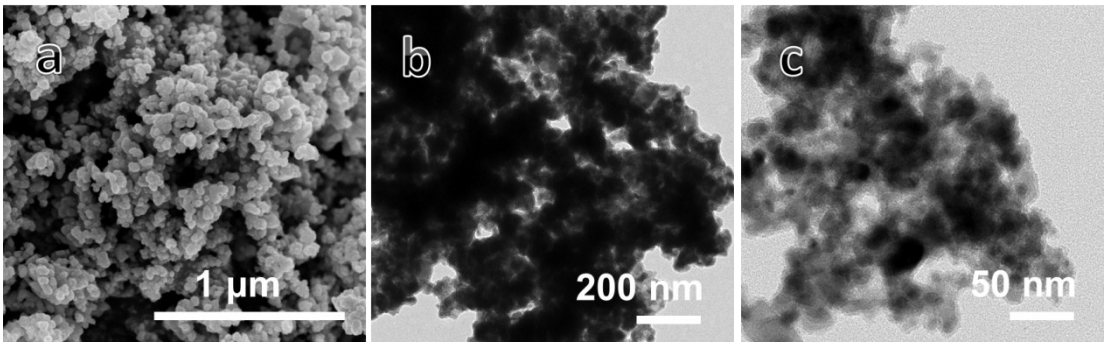


Fig. S4 SEM (a) and TEM images (b,c) of Ni_2P nanoparticles

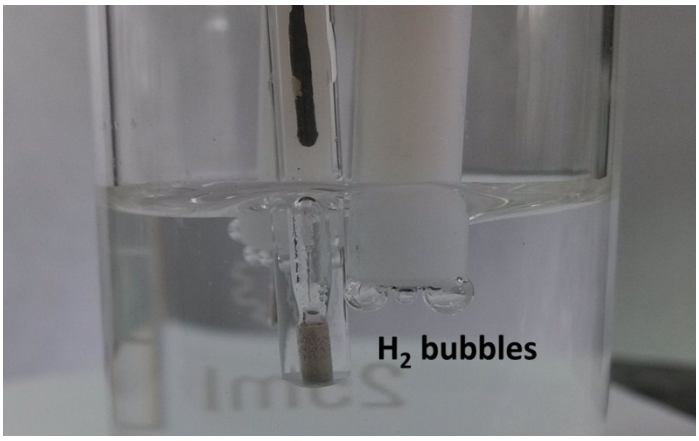


Fig. S5 Optical image of the generated H_2 bubbles on Ni_2P nanoparticles modified GCE

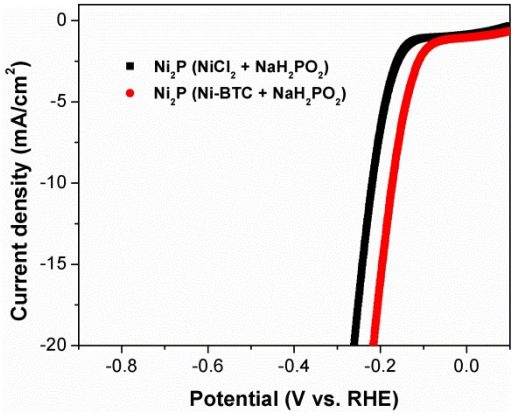


Fig. S6 Polarization curves of the Ni_2P synthesized from different Ni-based precursor with a scan rate of 5 mV s^{-1} in 0.5 M H_2SO_4 solution

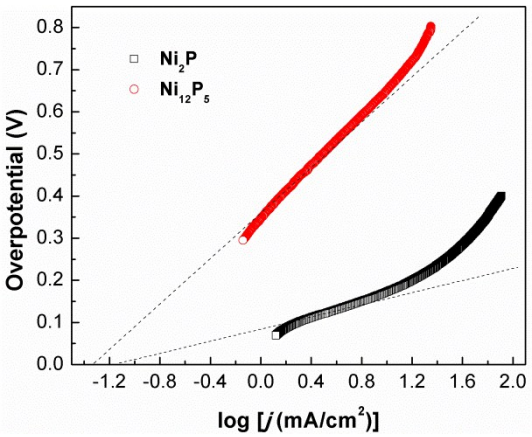


Fig. S7 Calculated exchange current densities of the Ni_2P and $Ni_{12}P_5$ nanoparticles by applying extrapolation method to the Tafel plots

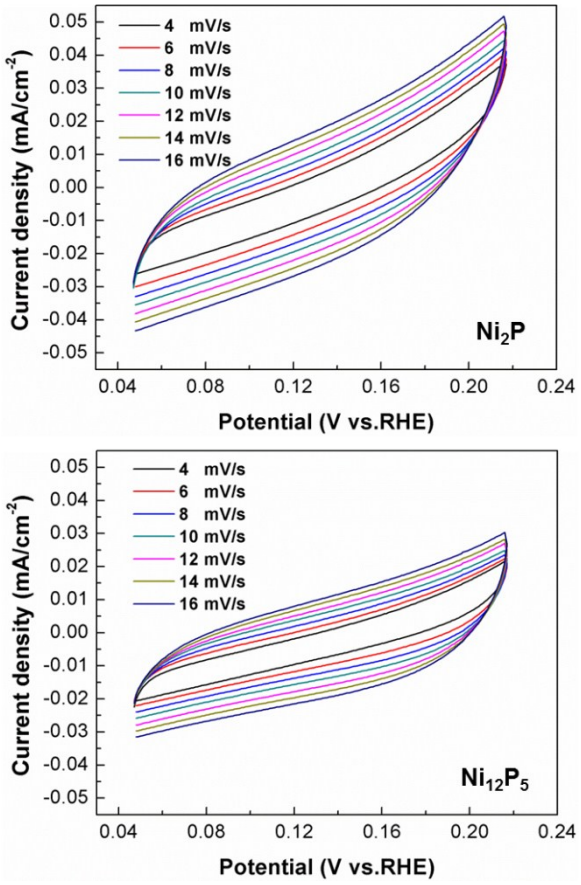


Fig. S8 Cyclic voltammograms (CVs) of Ni_2P and $Ni_{12}P_5$ nanoparticles measured at different scan rates from 4 to 16 mV s^{-1}.

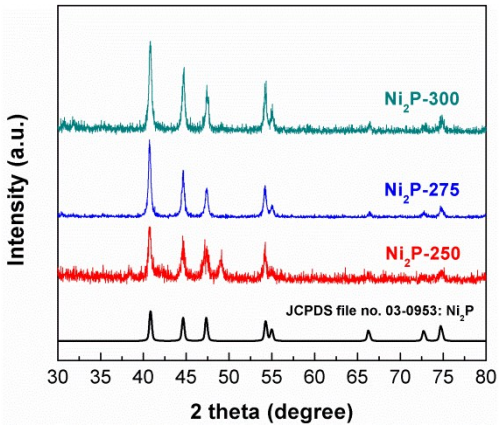


Fig. S9 XRD patterns of Ni_2P-250, Ni_2P-275, and Ni_2P-300

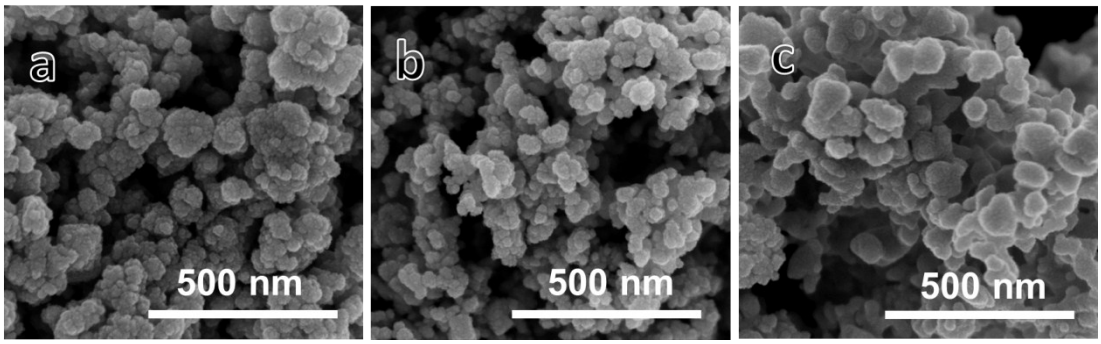


Fig. S10 SEM images of Ni_2P-250 (a), Ni_2P-275 (b), Ni_2P-300 (c)

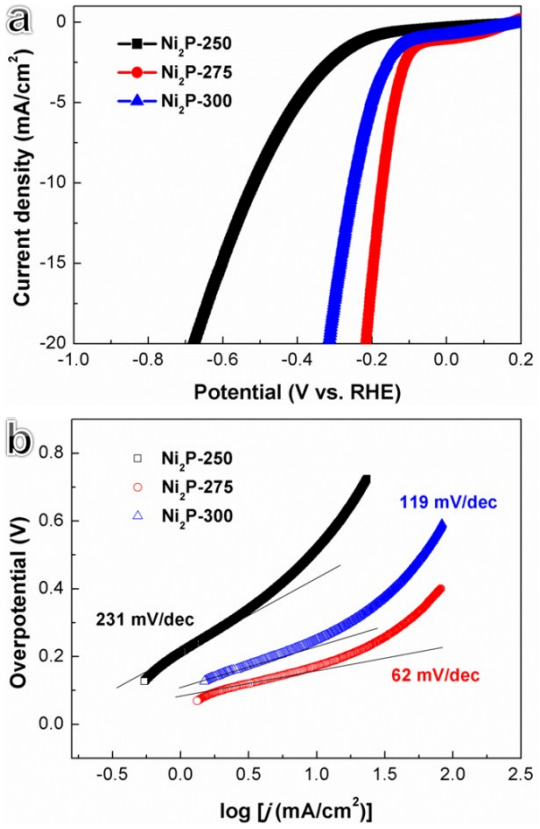


Fig. S11 Polarization curves of the Ni_2P-250, Ni_2P-275, and Ni_2P-300 with a scan rate of 5 mV s^{-1} in 0.5 M H_2SO_4. (b) Tafel plots of the Ni_2P-250, Ni_2P-275, and Ni_2P-300.