

## Supplementary Information

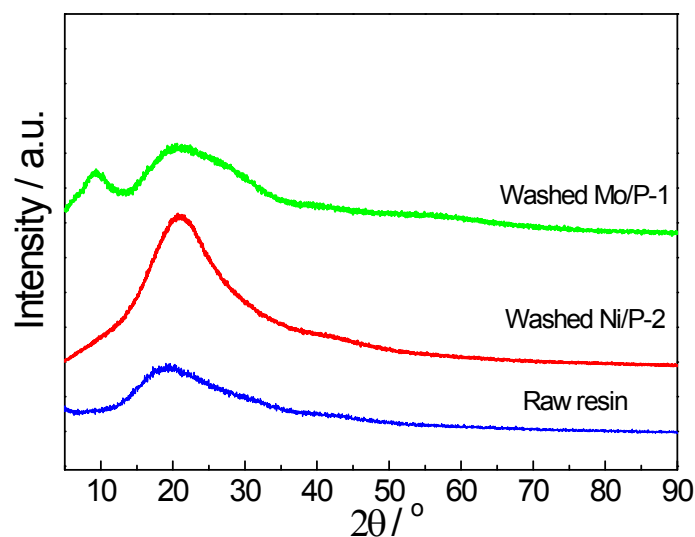


Fig. S1 XRD patterns of the washed (Mo,Ni),P-containing resin precursors as well as raw resin for comparison.

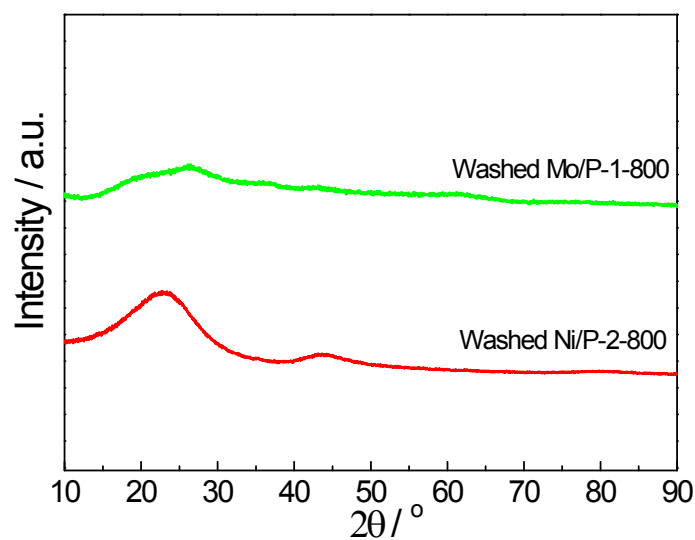


Fig. S2 XRD patterns of the carbonization products of the washed (Mo,Ni),P-containing resin precursors after heating in Ar flow at  $800^\circ\text{C}$ .

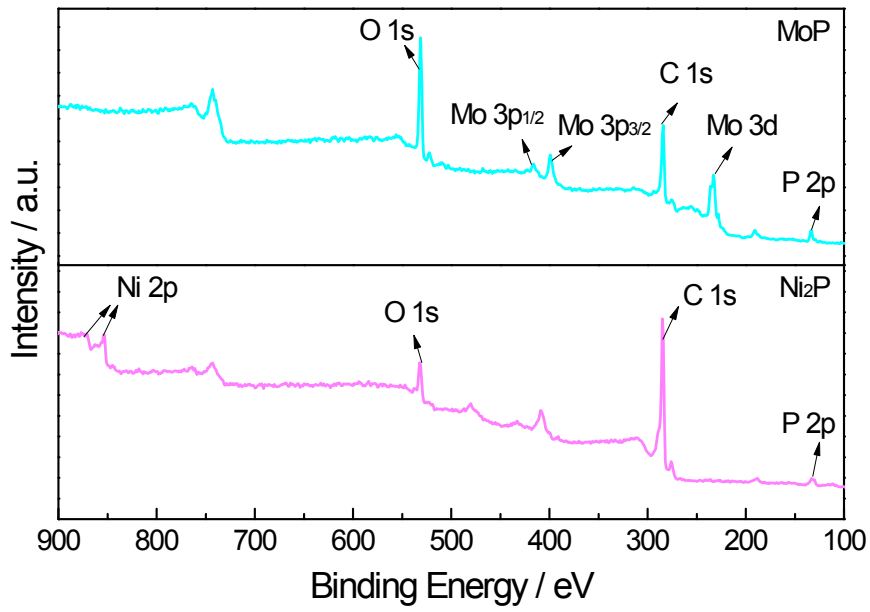


Fig. S3 Full scan width XPS spectra of MoP and Ni<sub>2</sub>P obtained in the study.

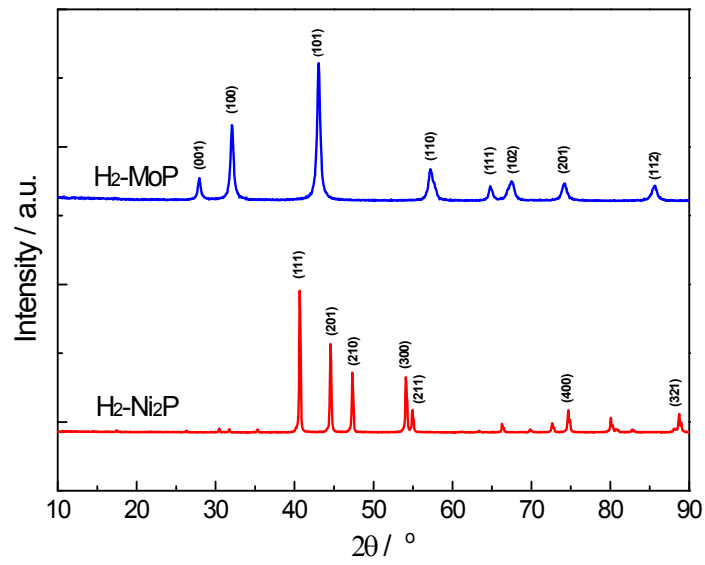


Fig. S4 XRD patterns of H<sub>2</sub>-MoP and H<sub>2</sub>-Ni<sub>2</sub>P samples.

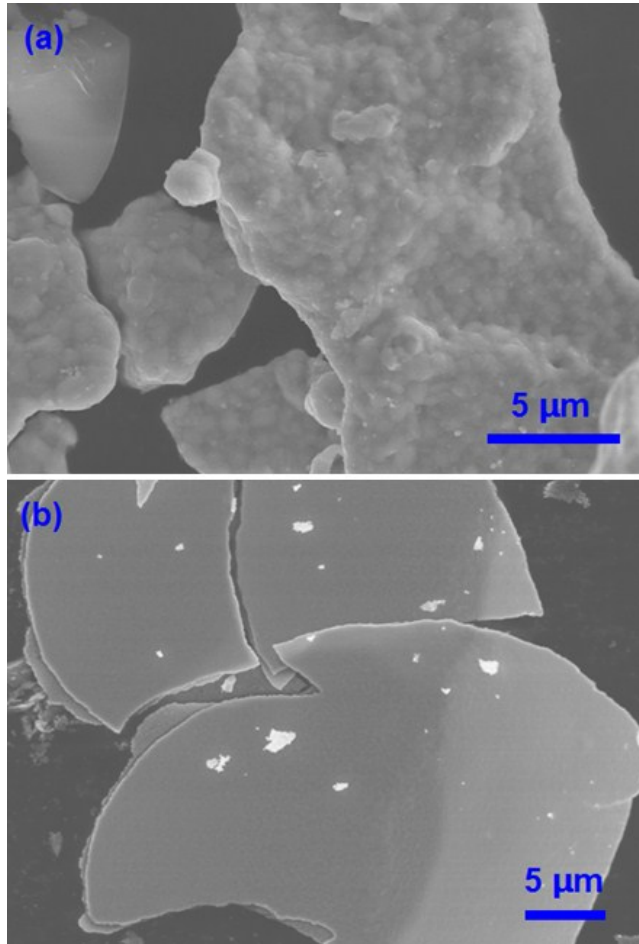


Fig. S5 SEM images of (a) H<sub>2</sub>-Ni<sub>2</sub>P and (b) H<sub>2</sub>-MoP.

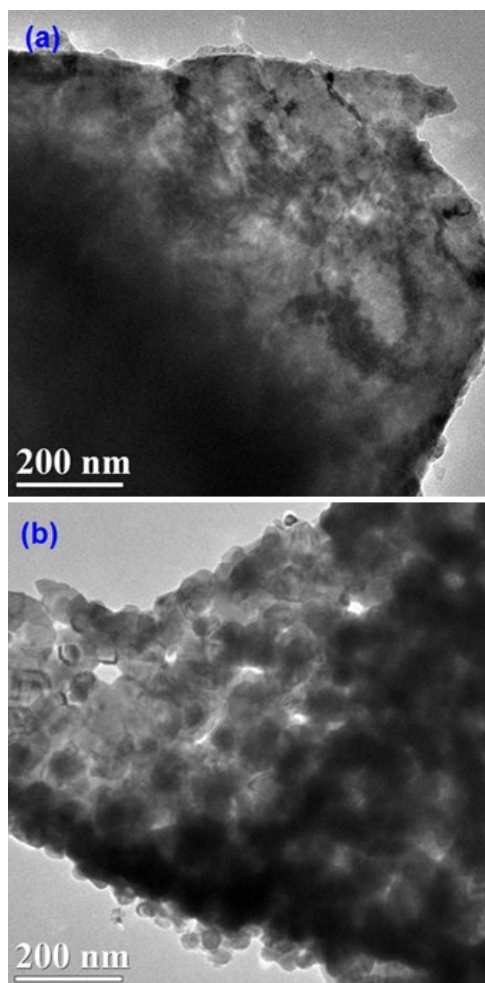


Fig. S6 TEM images of (a)  $H_2$ - $Ni_2P$  and (b)  $H_2$ - $MoP$ .

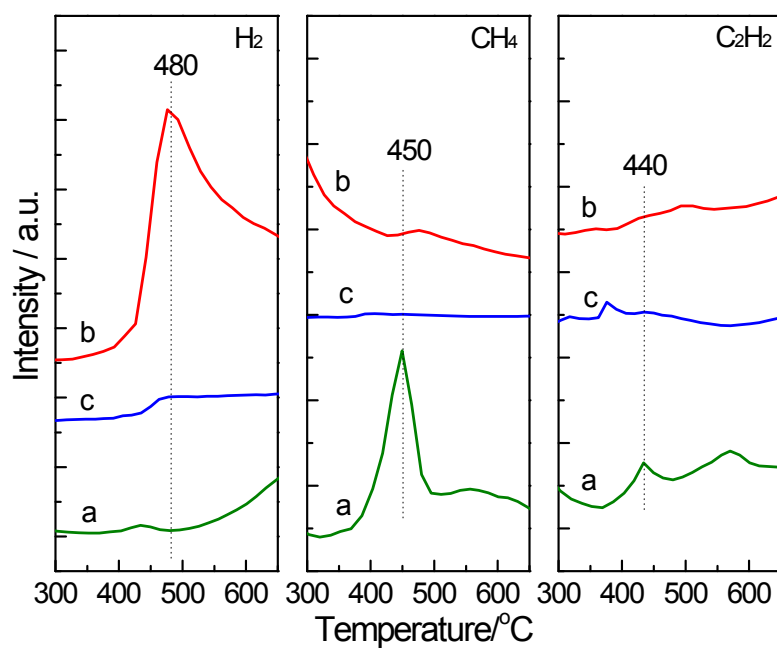


Fig. S7 Low-temperature MS profiles of carbonization of (a) raw resin, (b) Mo,P-containing resin (Mo:P=1:1) and (c) Ni,P-containing resin (Ni:P=1.5:1).