

Electronic Supplementary Information

Diethylenetriamine-mediated self-assembly of three-dimensional hierarchical nanoporous CoP nanoflowers/pristine graphene interconnected network as efficient electrocatalysts toward hydrogen evolution

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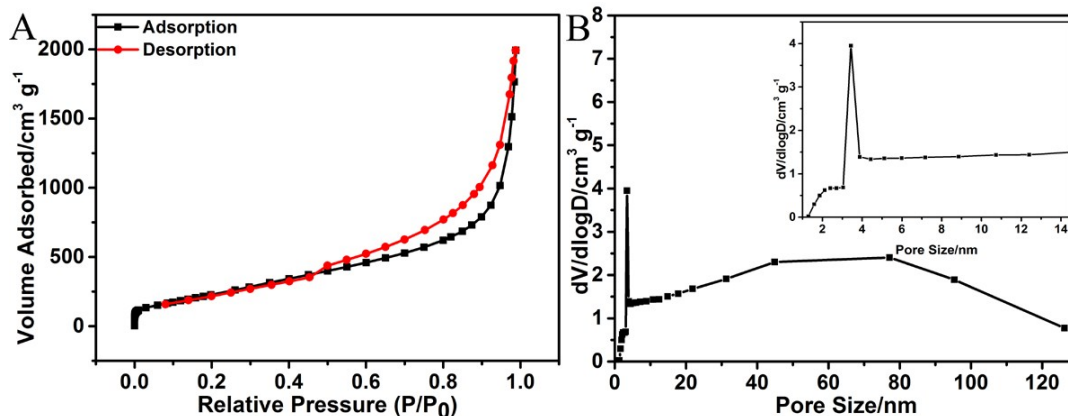


Fig. S1 N_2 adsorption–desorption isotherm (A) and pore size distribution (B) of pristine graphene.

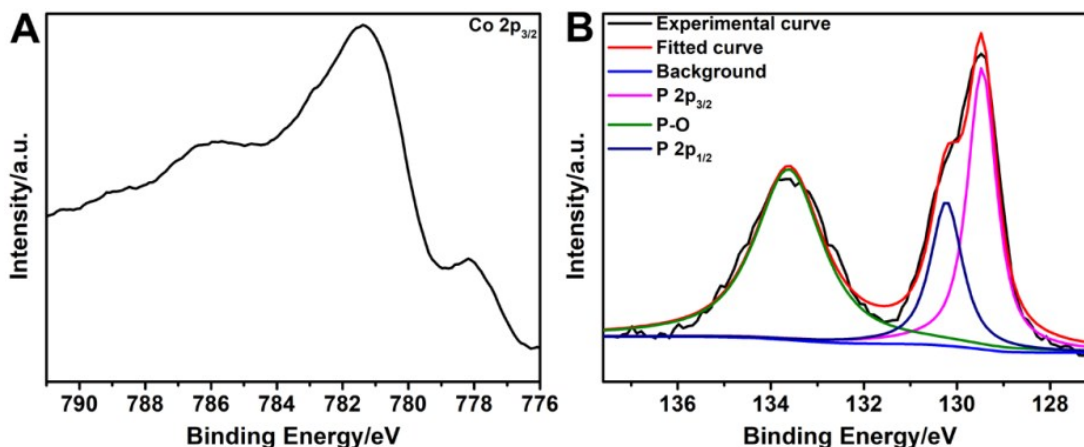


Fig. S2 High-resolution Co $2p_{3/2}$ (A) and P $2p$ (B) XPS spectra of CoP/CoCO₃/G. The high-resolution Co $2p_{3/2}$ spectrum shows three peaks at 778.3, 781.4, and 786.1 eV, whereas the P $2p$ spectrum exhibits three peaks at 129.5 (P $2p_{3/2}$), 130.2 (P $2p_{1/2}$), and 133.6 eV. The peaks at 778.3 and 129.5 eV are close to the binding energies of Co and P in CoP, indicating the formation of CoP. The peaks at 781.4 and 786.1 correspond to oxidized states of Co, which arise from surface oxidation of CoP by the O₂ in air and/or Co²⁺ in CoCO₃. The peak at 133.8 eV corresponds to the oxidized state of P, which is caused by surface oxidation of CoP by the O₂ in air.

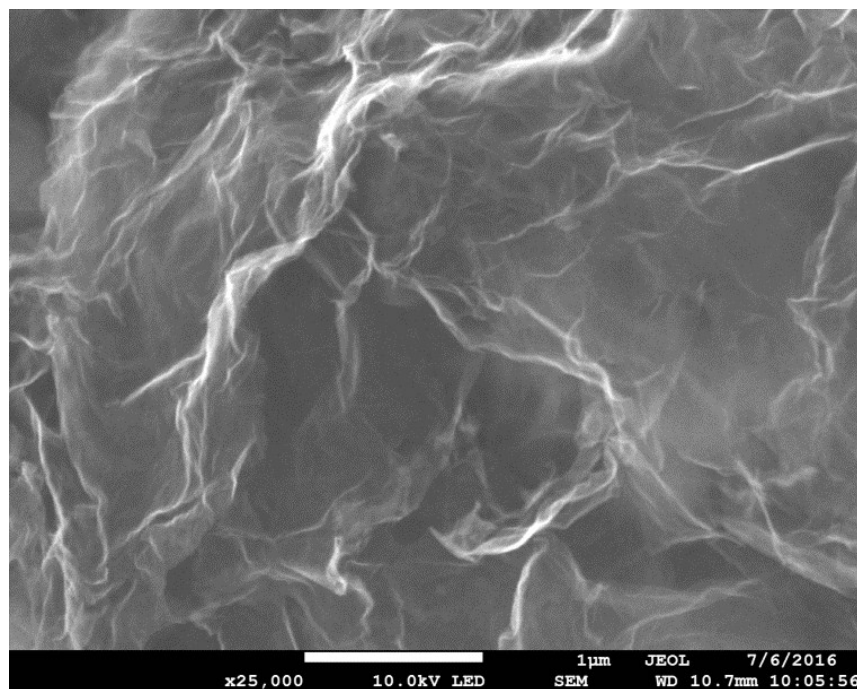


Fig. S3 FESEM image of the sample synthesized with 0.5 g $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

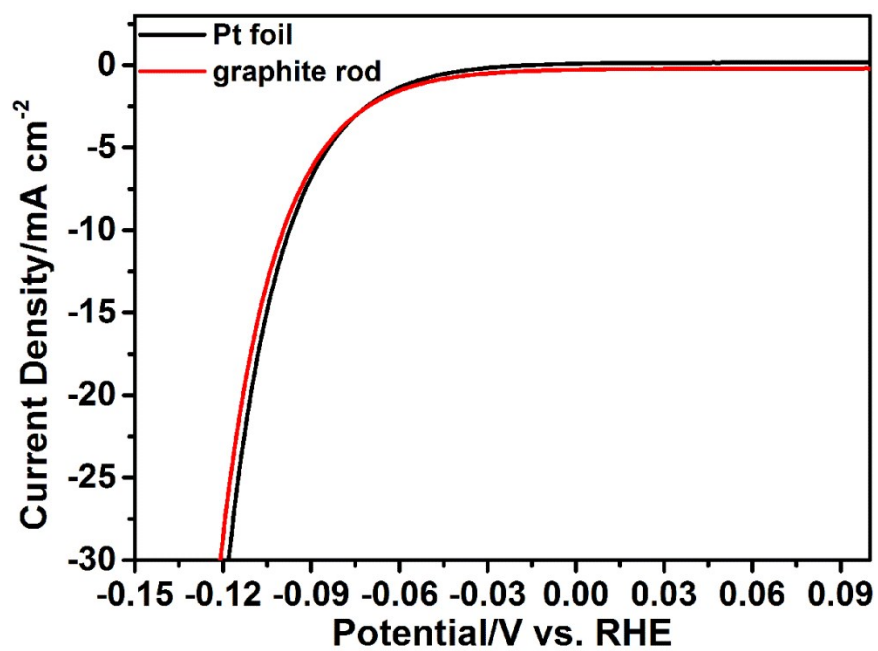


Fig. S4 LSV curves of 3-D H-NP-CoP NF/G IN using a Pt foil and a graphite rod as the counter electrodes.

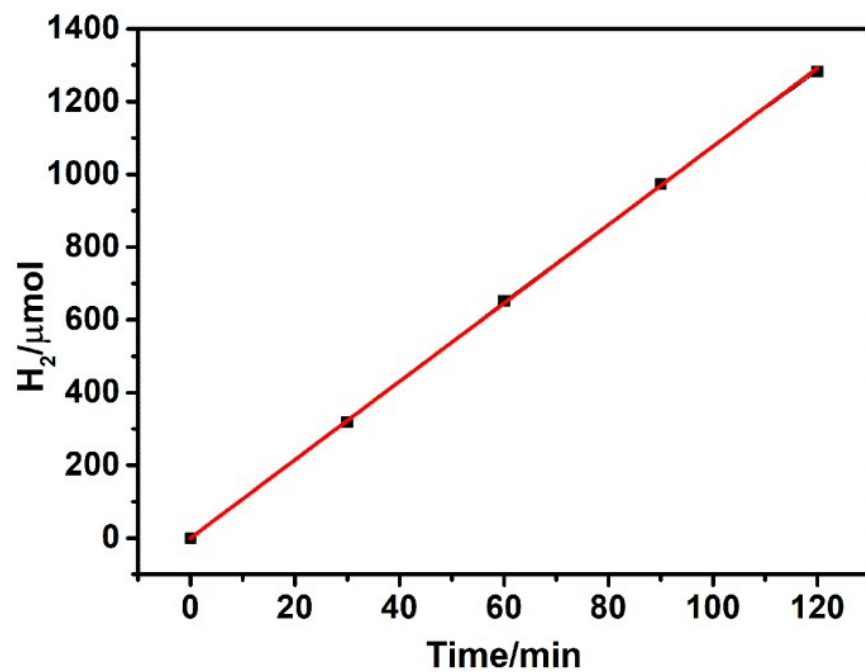


Fig. S5 Calculated (red line) and measured (black dot) amount of hydrogen at different times for CoP/BMHNC at -0.15 V for 120 min in 0.5 M H_2SO_4 .