

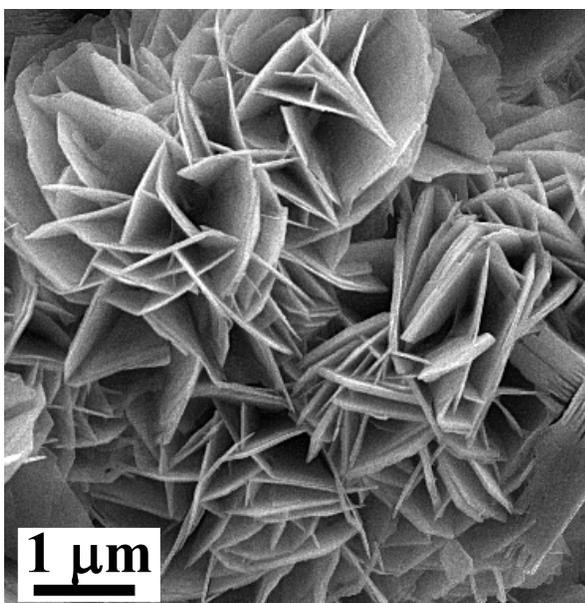
## Supporting Information

### Facile synthesis of Fe-doped CoP nanosheet arrays wrapped by graphene for overall water splitting

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**Fig. S1** FE-SEM image of the precursor.

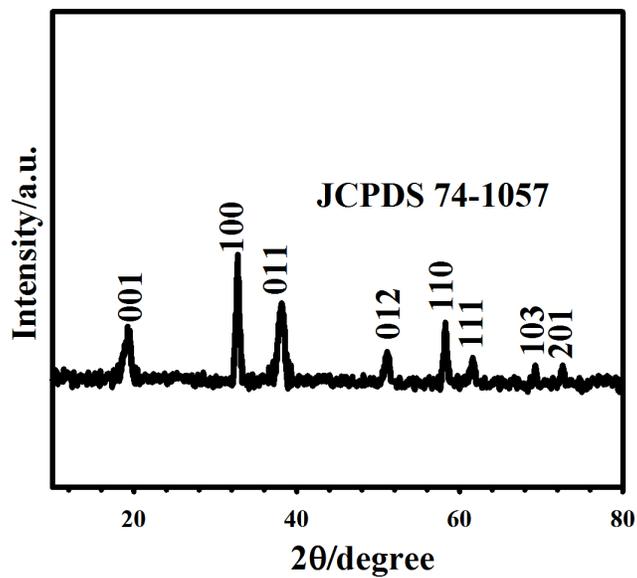


Fig. S2 XRD pattern of the FCOH sample.

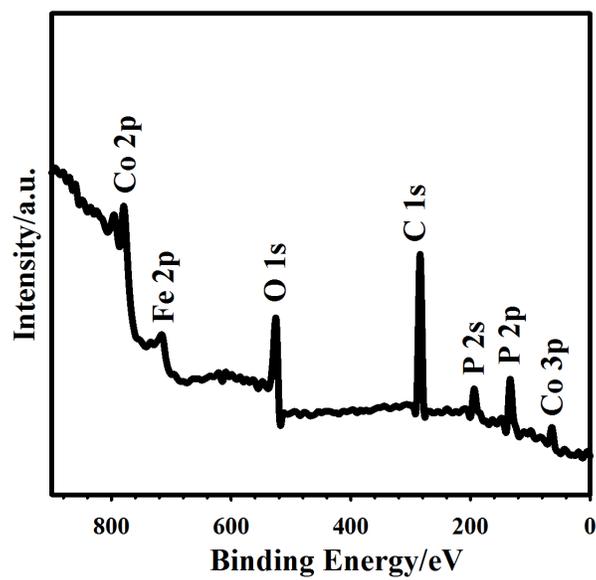


Fig. S3 Survey spectrum of the F<sub>0.25</sub>CP-G sample.

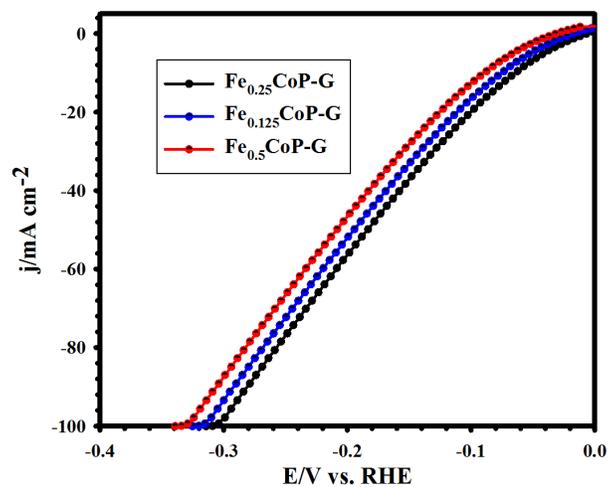


Fig. S4 HER polarization plots of the  $F_{0.125}CP-G$ ,  $F_{0.25}CP-G$ , and  $F_{0.5}CP-G$  in KOH.

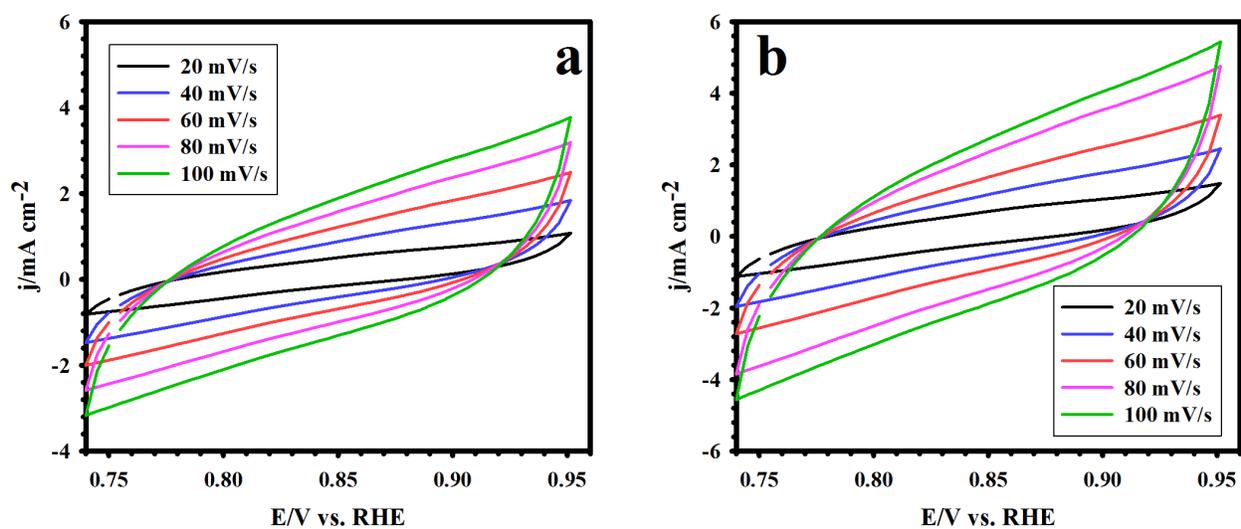
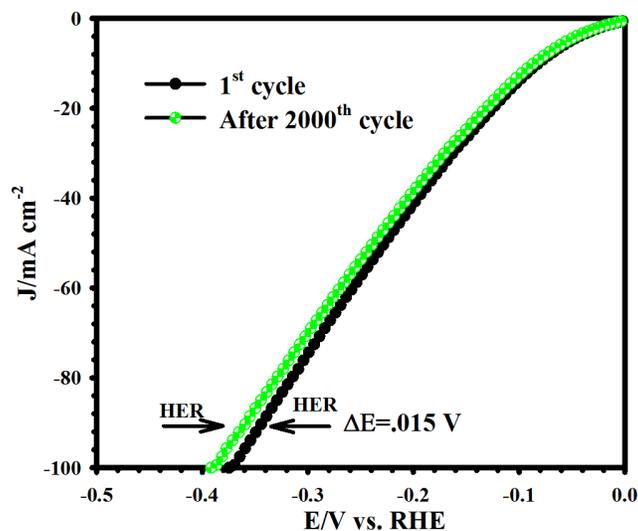
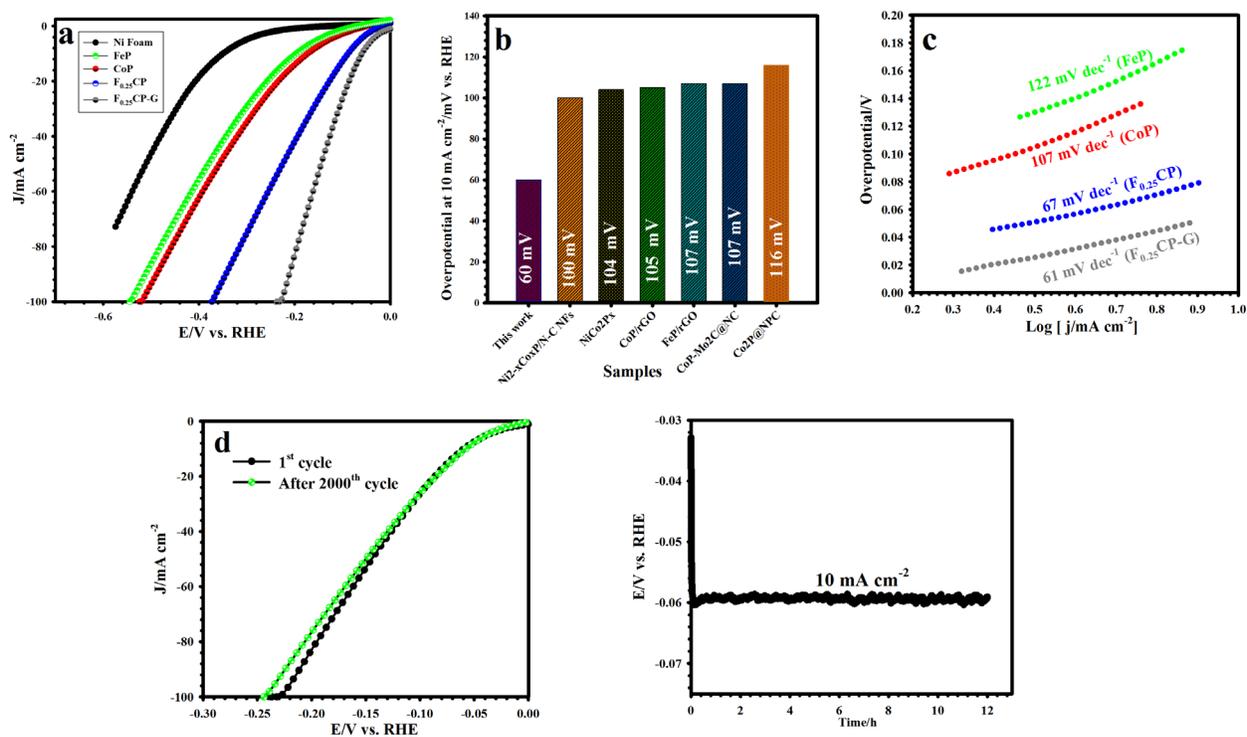


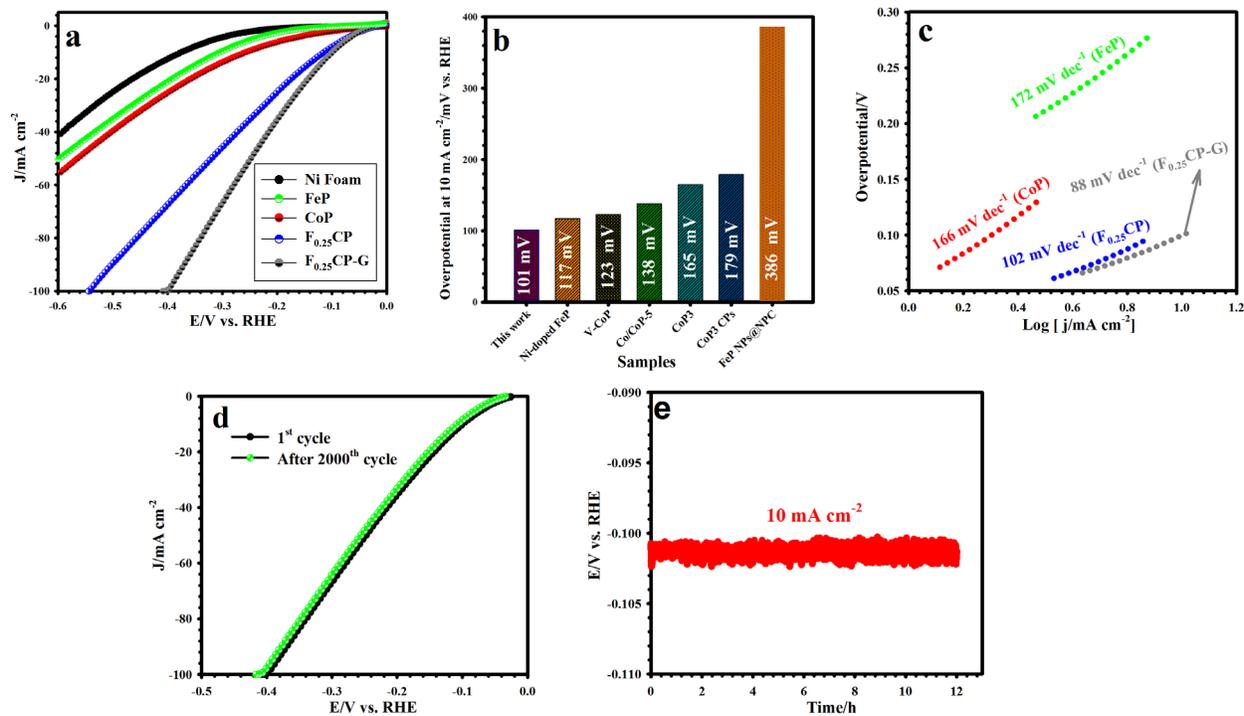
Fig. S5 (a) CV curves of the  $F_{0.25}CP$  at various scan rates. (b) CV curves of the  $F_{0.25}CP-G$  at various scan rates.



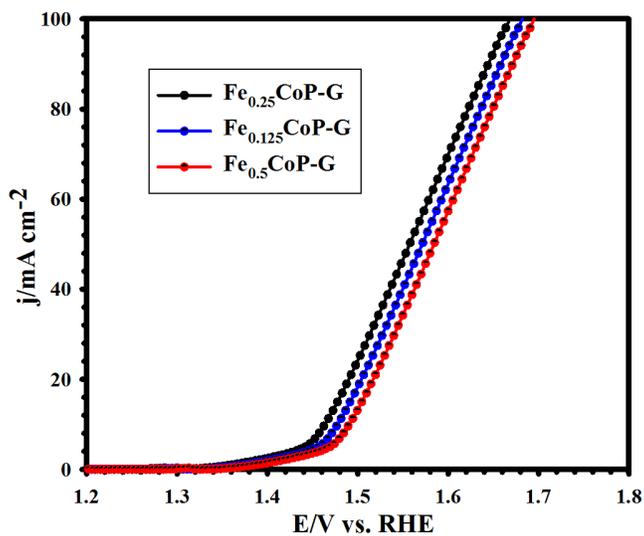
**Fig. S6** Polarization curves for the  $F_{0.25}CP$  before and after 2000th CV cycles for HER in 1 M KOH.



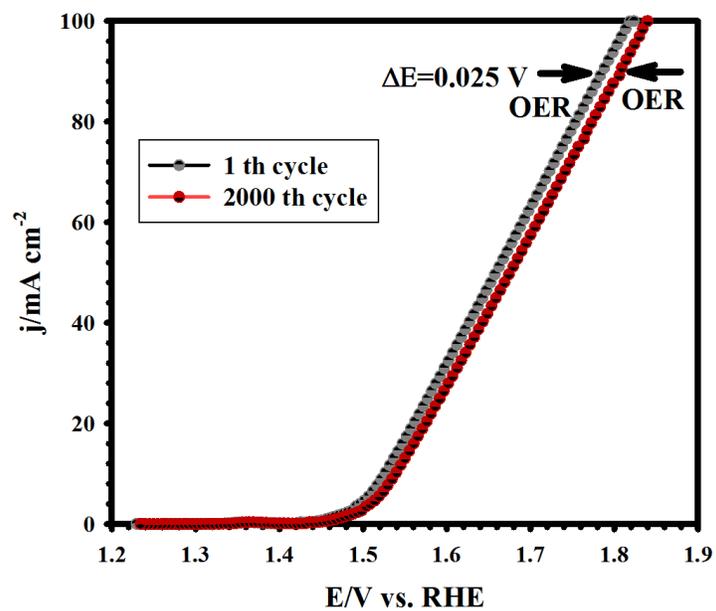
**Fig. S7** (a) HER polarization plots of the FeP, CoP,  $F_{0.25}CP$ ,  $F_{0.25}CP-G$ , and bare Ni foam in 0.5 M  $H_2SO_4$  electrolyte. (b) Comparison of  $\eta$  at 10 mA/cm<sup>2</sup> between  $F_{0.25}CP-G$  and previous reports in acidic medium. (c) Related Tafel slopes for FeP, CoP,  $F_{0.25}CP$ , and  $F_{0.25}CP-G$ . (d) The polarization curves for the  $F_{0.25}CP-G$  before and after 2000th CV cycles in 0.5 M  $H_2SO_4$ . (e) chronopotentiometric measurement of the  $F_{0.25}CP-G$  toward HER at 10 mA/cm<sup>2</sup> for 12 h in 0.5 M  $H_2SO_4$ .



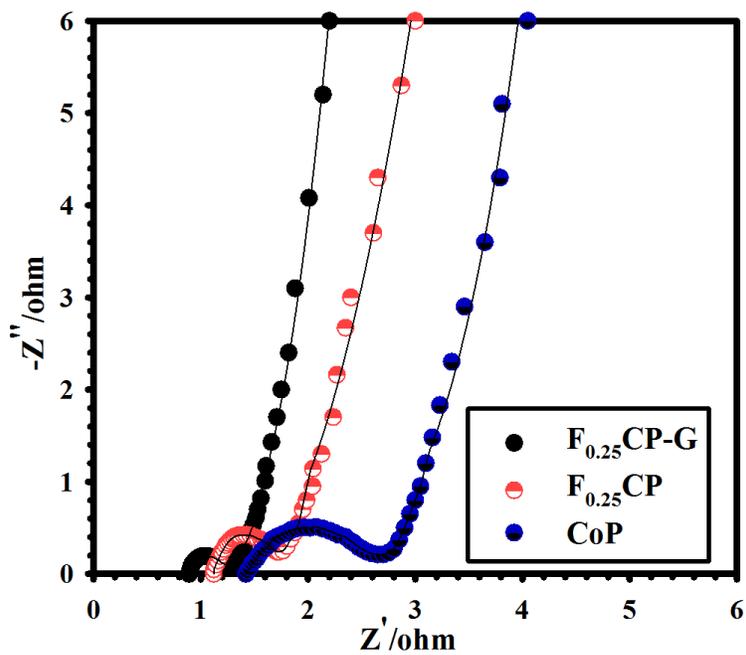
**Fig. S8** (a) HER polarization plots of the FeP, CoP,  $F_{0.25}CP$ ,  $F_{0.25}CP-G$ , and bare Ni foam in 1 M PBS electrolyte. (b) Comparison of  $\eta$  at  $10\ mA/cm^2$  between  $F_{0.25}CP-G$  and previous reports in 1 M PBS. (c) Related Tafel slopes for FeP, CoP,  $F_{0.25}CP$ , and  $F_{0.25}CP-G$ . (d) The polarization curves for the  $F_{0.25}CP-G$  before and after 2000th CV cycles in 1 M PBS. (e) chronopotentiometric measurement of the  $F_{0.25}CP-G$  toward HER at  $10\ mA/cm^2$  for 12 h in 1 M PBS.



**Fig. S9** OER polarization plots of the  $F_{0.125}CP-G$ ,  $F_{0.25}CP-G$ , and  $F_{0.5}CP-G$  in KOH.



**Fig. S10** Polarization curves for the  $F_{0.25}CP$  before and after 2000th CV cycles for OER in 1 M KOH.



**Fig. S11** EIS measurements of the CoP,  $F_{0.25}CP$ , and  $F_{0.25}CP-G$  electrodes.