



Highly Efficient CoFeP Nanoparticle Catalysts for Superior Oxygen Evolution Reaction Performance

Abhishek Meena ¹, Abu Talha Aqueel Ahmed ¹, Aditya Narayan Singh ², Vijaya Gopalan Sree ³, Hyunsik Im ¹ and Sangeun Cho ^{1,*}

¹ Division of System Semiconductor, College of AI Convergence, Dongguk University, Seoul 04620, Republic of Korea

² Department of Energy and Materials Engineering, Dongguk University, Seoul 04620, Republic of Korea

³ Department of Physics, Dongguk University, Seoul 04620, Republic of Korea

* Correspondence: sangeun.c@dongguk.edu

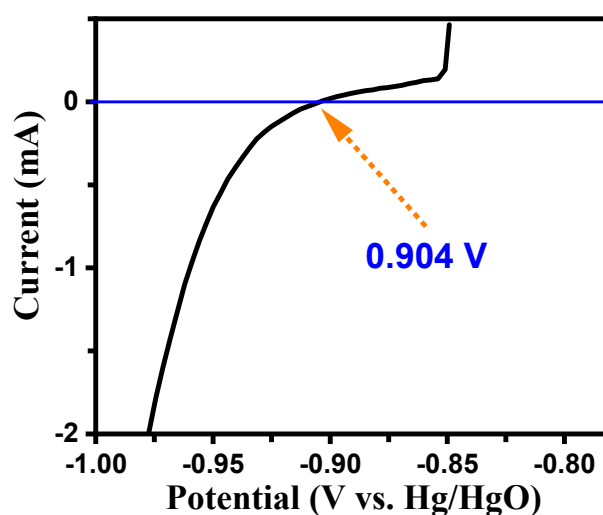


Figure S1. Calibration of the Hg/HgO reference electrode. The calibration of the Hg/HgO reference electrode involved conducting measurements using a high-purity H₂-saturated electrolyte with a Pt wire as the working electrode. Linear sweep voltammetry (LSV) was performed at a scan rate of 1 mV/s, and the potential at zero current was considered the thermodynamic potential for the hydrogen evolution reaction (HER). Consequently, in a 1 M KOH solution, the relationship between the RHE and Hg/HgO electrode is given by $E(\text{RHE}) = E(\text{Hg/HgO}) + 0.904$.

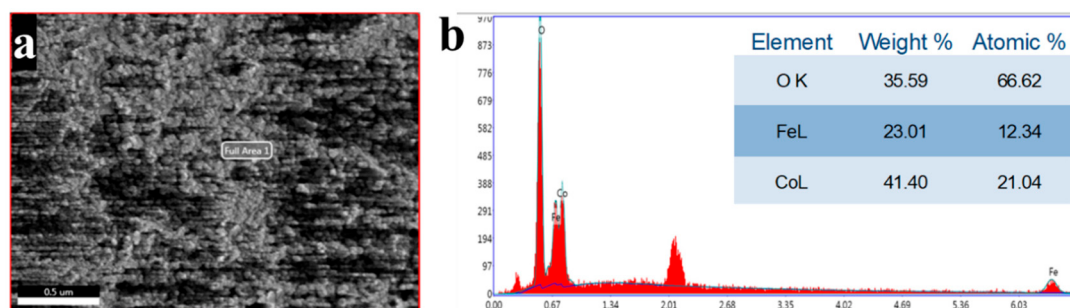


Figure S2. SEM image, atomic and weight percentage acquired by EDS of CFO NPs. (a) SEM image of the regions and (b) EDS results acquired from the area.

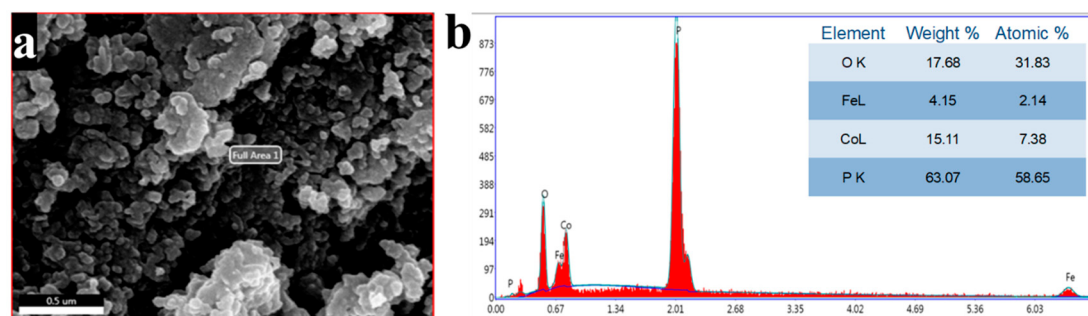


Figure S3. SEM image and atomic and weight percentage acquired by EDS of CFP NPs. **(a)** SEM image of the regions and **(b)** EDS results acquired from the area.

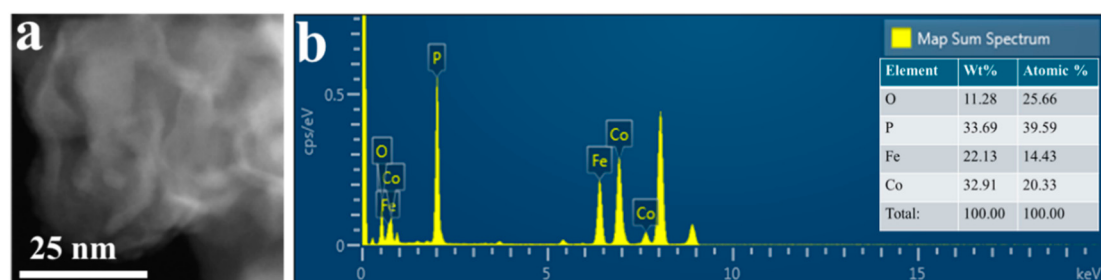


Figure S4. TEM image and atomic and weight percentage acquired by EDS of CFP NPs. **(a)** TEM image of the regions and **(b)** EDS results acquired from the area.

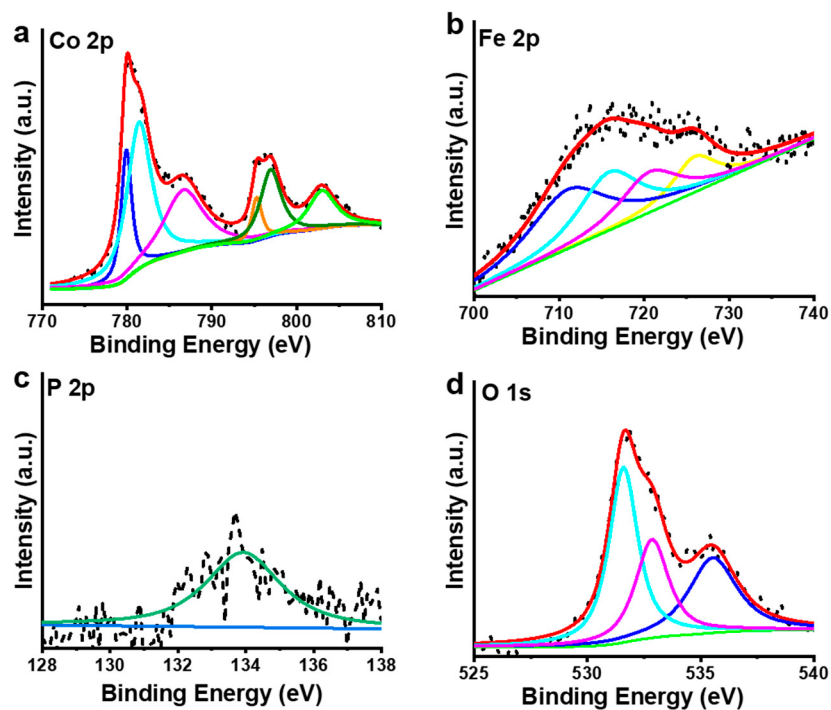


Figure S5. XPS spectra of the as-prepared CFP NPs catalyst subjected to OER electrolysis at a constant current density of 100 mA cm^{-2} for 70 h. **(a)** Co 2p, **(b)** Fe 2p, **(c)** P 2p and **(d)** O 1s.