

Supporting Information

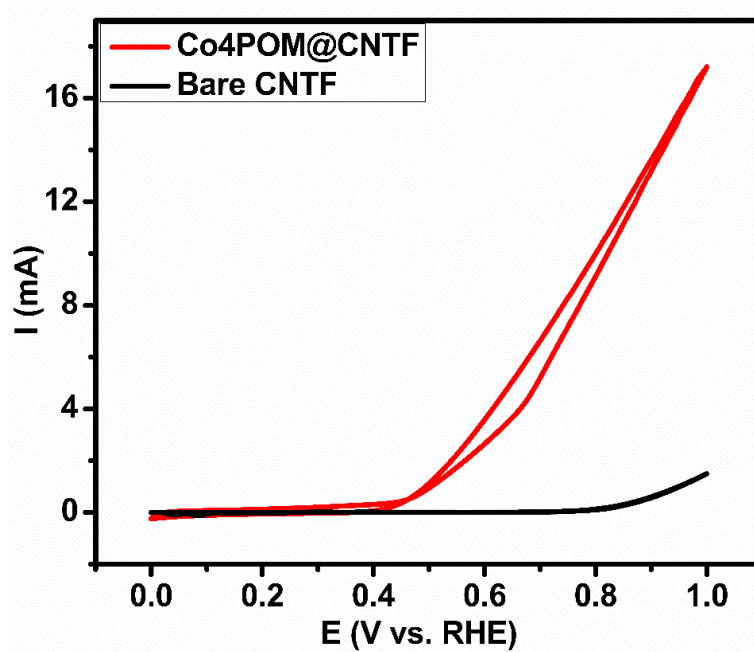


Figure S1. CV curves of bare CNTF and Co₄POM@CNTF in 0.1 M KOH at a scan rate of 10 mV s⁻¹

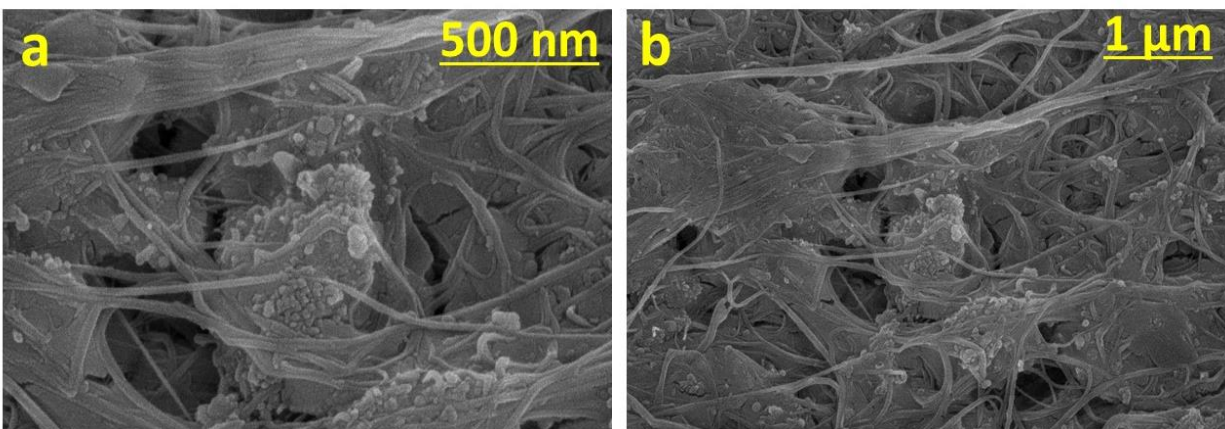


Figure S2. Post catalytic SEM images of Co₄POM@CNTF at a) higher and b) lower magnification.

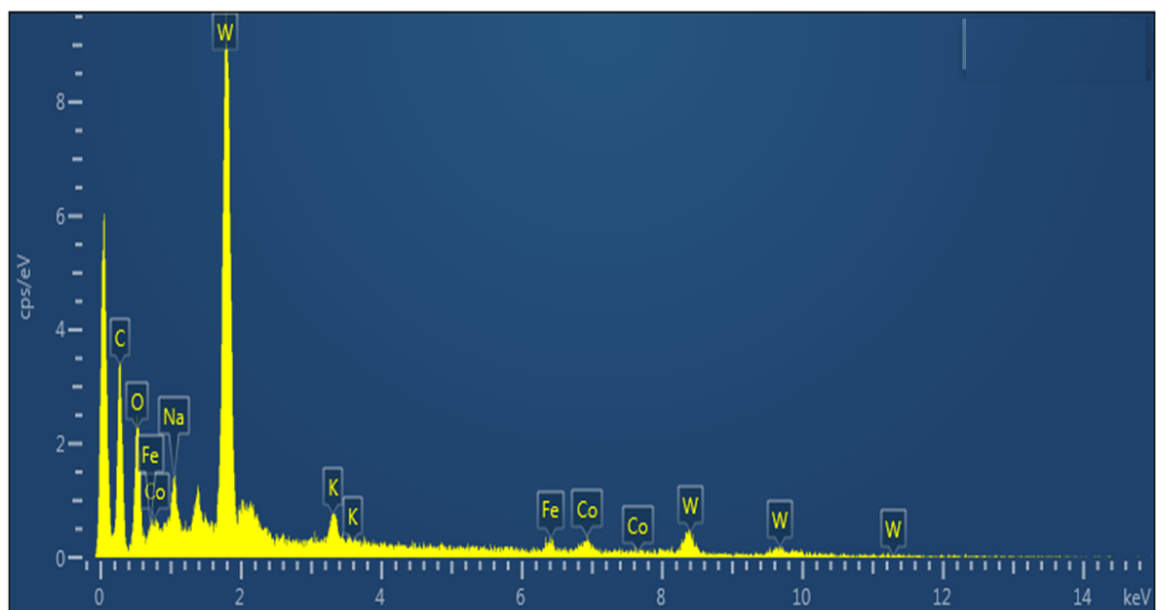


Figure S3. EDX spectrum of CO₄POM@CNTF after chronoamperometric stability test.

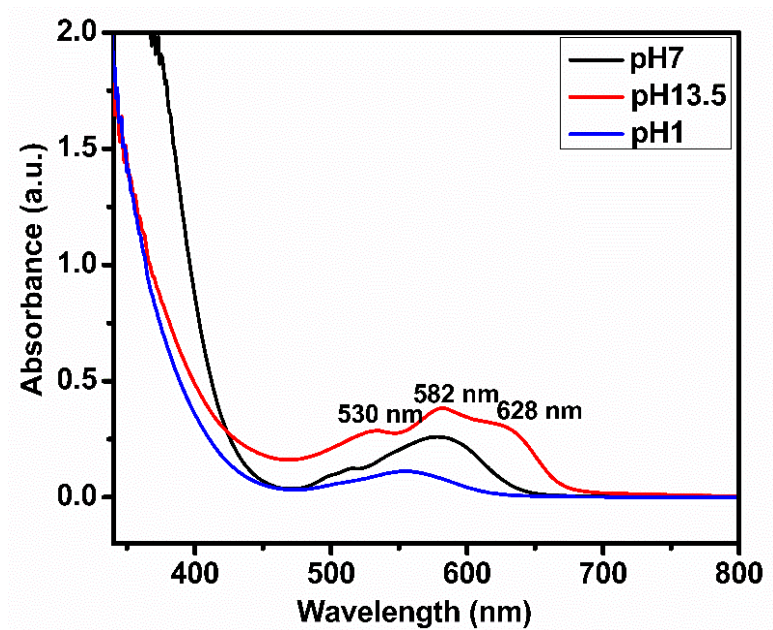


Figure S4. UV-Vis spectra of Co₄POM in different pH aqueous solutions.

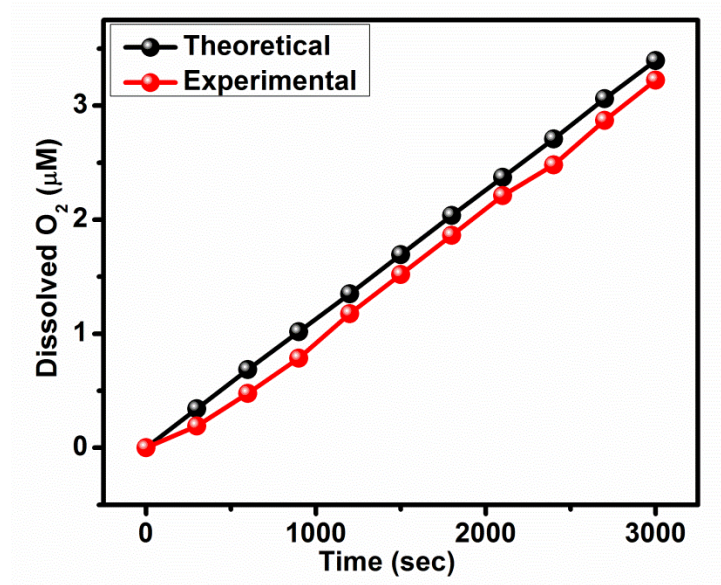


Figure S5. The Faradic efficiency of Co₄POM@CNTF in 0.1M KOH at 1.55 V against RHE

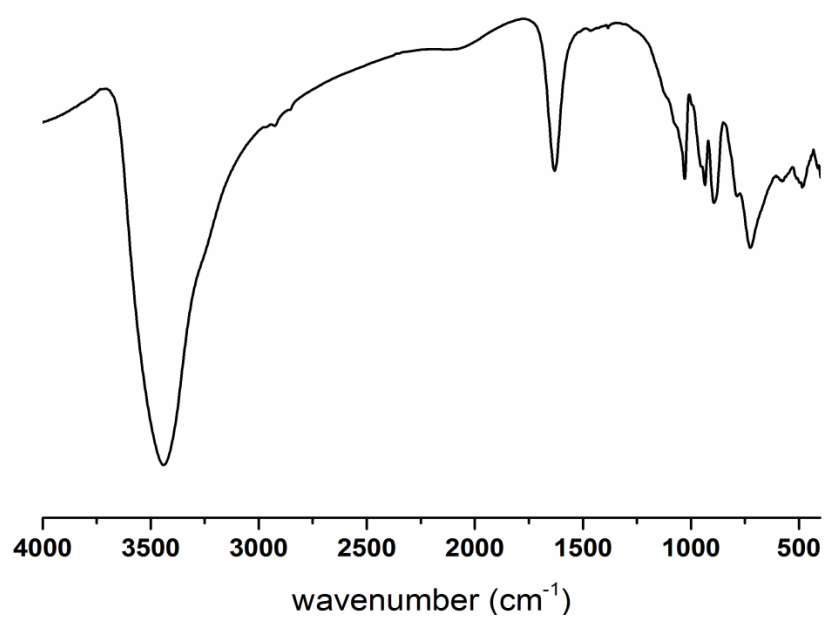


Figure S6. FT-IR spectrum of synthesized Co₄POM.

Table S1. Comparative OER performance of Co-based heterogeneous electrocatalysts in basic media

Catalyst	Support	Overpotential (mV) @ 10 mA.cm ⁻²	Tafel slope (mV dec ⁻¹)	References
Mesoporous Co ₂ O ₃	Glassy Carbon	526	-	[1]
NiCo ₂ S ₄ NW/NF	Ni Foam	260	40	[2]
NiCo-POM@NiF	Ni Foam	360	126	[3]
W-CoMoO ₄	FTO	680	106	[4]
Co ₂ P@Co ₂ P/CoPOM@NiF	Ni Foam	336@50	57@200	[5]
ZIF-8@ZIF-67@POM	Glassy carbon	490	88	[6]
yolk/shell ZIF-67@POM	Glassy carbon	287	58	[7]
PBA@POM	Ni Foam	440	23.45	[8]
(Co _x Mn _{3-x})O ₄	Glassy Carbon	450	35.8	[9]
activated Co ₄ POM@TiO ₂ @PEI	Carbon paper	490	60	[10]
Co ₁₆ -GeW ₉ @NiF	Ni Foam	370	84	[11]
Co₄POM@CNTF	CNTF	323	69	Our work

Calculations of surface area of CNTF and RF

SEM image of fiber show that diameter of fiber is 90 μm .

Surface area of CNTF= $2 \pi r h$

Where, r is the radius and h is the length of the fiber.

$$r = d/2$$

$$= 90/2 \mu\text{m}$$

$$r = 45 \mu\text{m} = 0.0045 \text{ cm}$$

$$h = 2$$

By putting the value of 'r' and 'h' in above equation

$$= 2 \times 3.14 \times 0.0045 \times 2$$

$$\text{Surface area of CNTF} = 0.056 \text{ cm}^2$$

Moreover,

$$\text{RF} = \text{ECSA/surface area of CNTF}$$

References

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