

Supplemental document

Precursors and dosing time	Recipe scheme	Sample
A CoCp ₂ for 2 s	(A B) ₆₀₀	Co ₃ O ₄
B O ₂ plasma for 5 s	(A B C D) ₆₀₀	CoPi-1.4
C TMP for 0.6 s	{(A B C D) ₂₃ (A B) ₁ } ₂₅	CoPi-1.6
D O ₂ plasma for 2s	{(A B C D) ₁₁ (A B) ₁ } ₅₀	CoPi-1.7
	{(A B C D) ₅ (A B) ₁ } ₁₀₀	CoPi-1.9

FIG. 1. Schematic illustration of CoPi (with different Co-to-P ratios) and Co₃O₄ ALD processing.

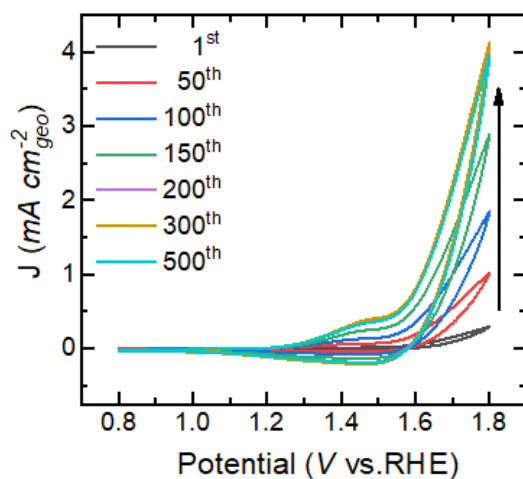


FIG. 2. Evolution of cyclic voltammograms with increasing number of cycles for the CoPi film with Co-to-P ratio of 1.6 at pH=8. The non-catalytic wave also increases, indicating the progressive activation of Co²⁺ to Co³⁺.

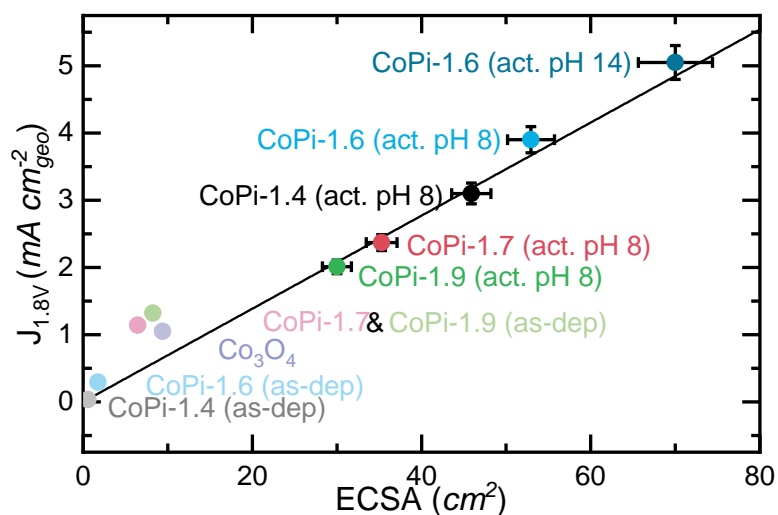


Figure 3: Relationship between the ECSA and the OER current density for ALD CoPi films with different initial Co-to-P ratios, after just one CV cycle (as-dep) and upon activation (act.) of 500 CV cycles, at two different pH values.