Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Supplementary Information

Efficient hydrogen evolution by reconstruction of $NiMoO_4$-CoO via Mo recombination

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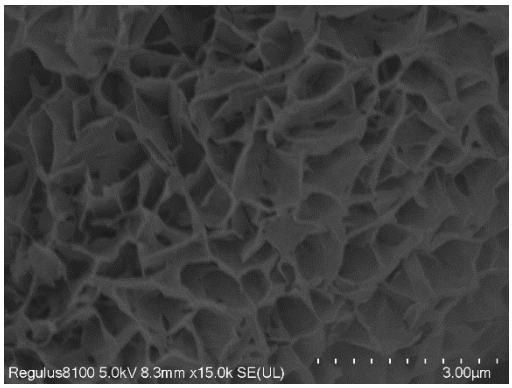

Fig. S1 SEM of NiCoMo-LDH/CC precursor.

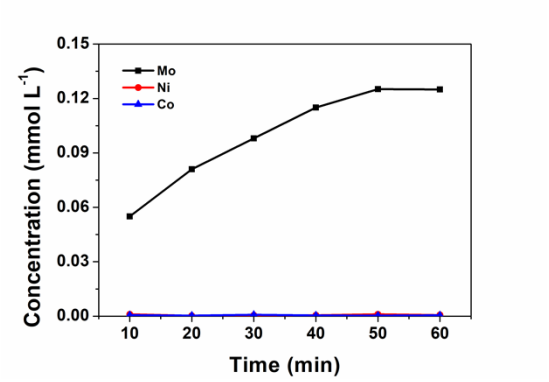

Fig. S2 Time dependent concentration of dissolved Mo, Ni, and Co in the electrolyte of $NiMoO_4$-CoO/CC.

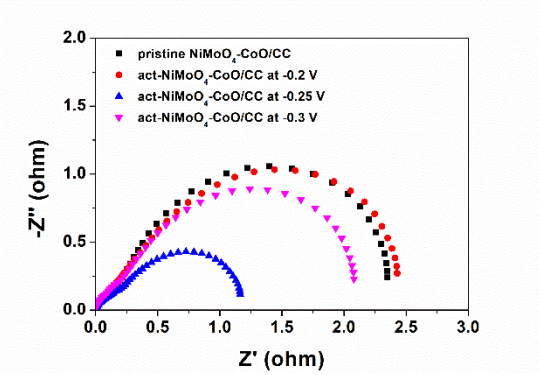

Fig. S3 Nyquist plots of pristine $NiMoO_4$-CoO/CC, act-$NiMoO_4$-CoO/CC at -0.2 V, act-$NiMoO_4$-CoO/CC at -0.25 V, and act-$NiMoO_4$-CoO/CC at -0.3 V.

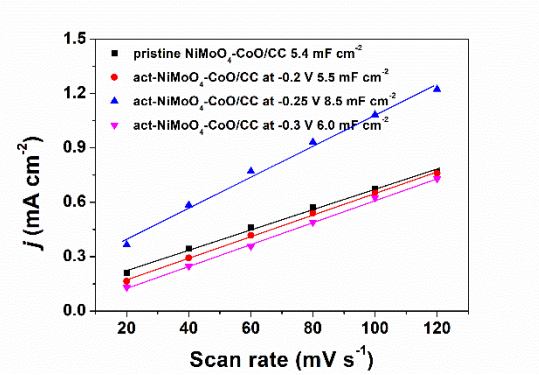

Fig. S4 The capacitive currents as a function of scan rate for pristine $NiMoO_4$-CoO/CC, act-$NiMoO_4$-CoO/CC at -0.2 V, act-$NiMoO_4$-CoO/CC at -0.25 V, and act-$NiMoO_4$-CoO/CC at -0.3 V.

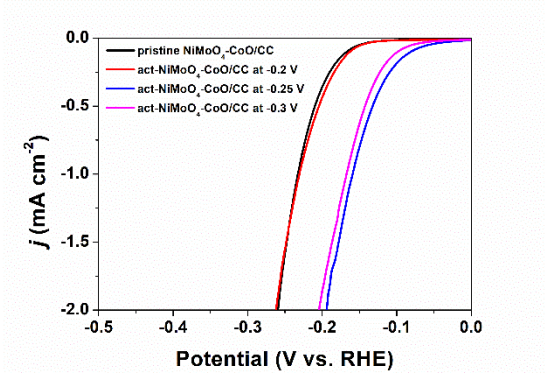

Fig. S5 ECSA normalized HER activities of pristine $NiMoO_4$-CoO/CC, act-$NiMoO_4$-CoO/CC at -0.2 V, act-$NiMoO_4$-CoO/CC at -0.25 V, and act-$NiMoO_4$-CoO/CC at -0.3 V.

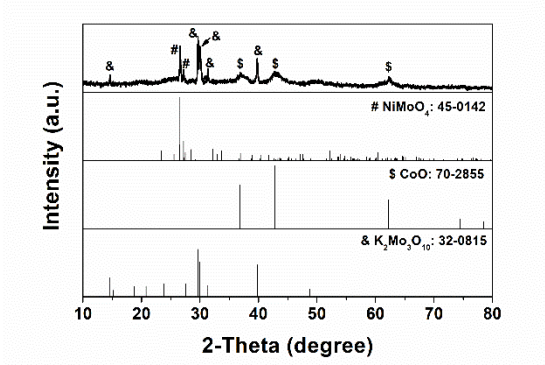

Fig. S6 XRD pattern of act-$NiMoO_4$-CoO/CC at -0.25 V.

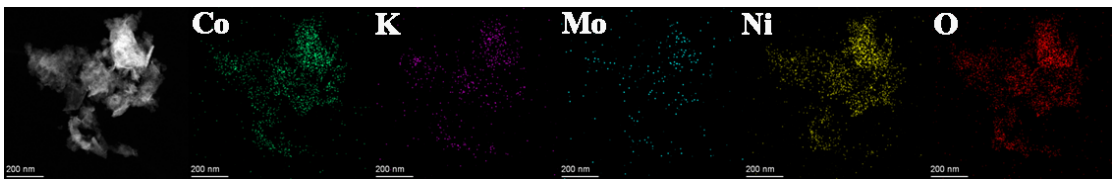

Fig. S7 EDX elemental mapping of Co, K, Mo, Ni, and O elements for act-$NiMoO_4$-CoO/CC at -0.25 V.

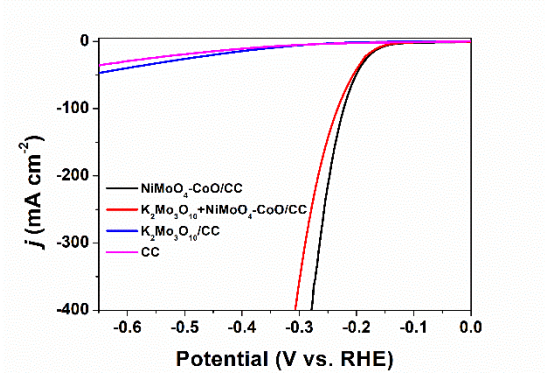

Fig. S8 LSV curves of $NiMoO_4$-CoO/CC, $K_2Mo_3O_{10}$+$NiMoO_4$-CoO/CC, $K_2Mo_3O_{10}$/CC, and CC.

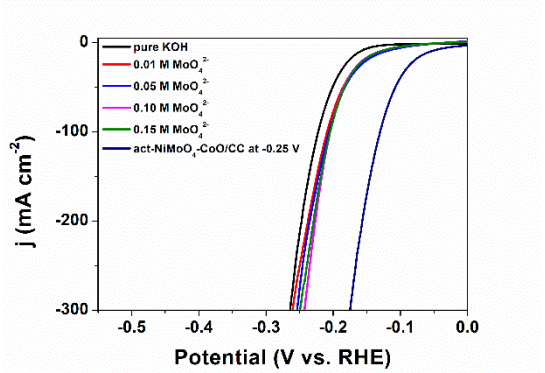

Fig. S9 LSV curves of $NiMoO_4$-CoO/CC in 1 M pure KOH, and 1 M KOH with the addition of 0.01, 0.05, 0.10, and 0.15 M MoO_4^{2-}, as well as the LSV curve of act-$NiMoO_4$-CoO/CC at -0.25 V.

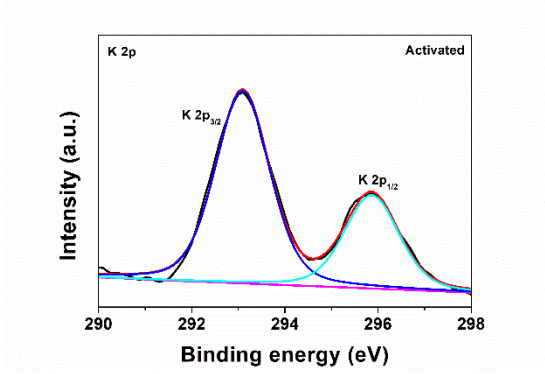

Fig. S10 High-resolution K 2p spectrum of act-$NiMoO_4$-CoO/CC at -0.25 V.

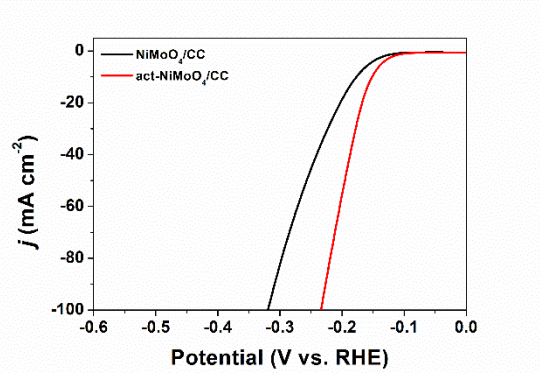

Fig. S11 LSV curves of initial $NiMoO_4$/CC and act-$NiMoO_4$/CC.

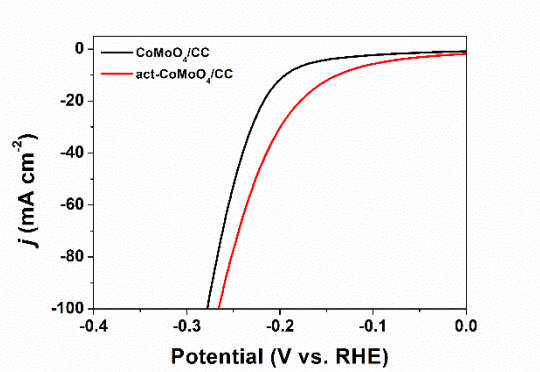

Fig. S12 LSV curves of initial $CoMoO_4$/CC and act-$CoMoO_4$/CC.

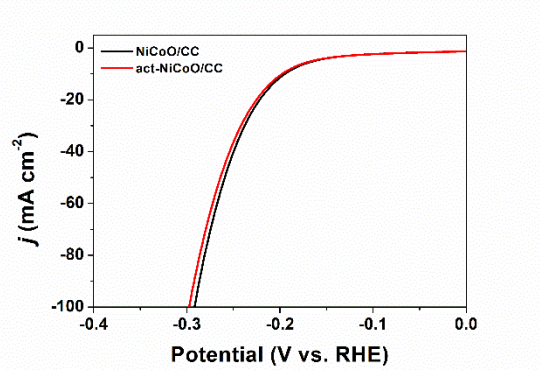

Fig. S13 LSV curves of initial NiCoO/CC and act-NiCoO/CC.

Table S1. The atomic ratios of various elements on the surface of prepared $NiMoO_4$-CoO/CC and act-$NiMoO_4$-CoO/CC at -0.25 V obtained from EDX

Element	$NiMoO_4$-CoO/CC (%)	act-$NiMoO_4$-CoO/CC at -0.25 V (%)
Ni	12.46	12.87
Co	12.72	12.17
Mo	7.83	3.31
K	N/A	3.22