Supplementary Information

Synergistic effect of MoS_2 decorated in situ NiFe nanoalloys/NiFe-LDH with super hydrophilicity for electrocatalytic overall water splitting

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1. Materials and reagents

Nickel sulfate hexahydrate ($NiSO_4 \cdot 6H_2O$), thiourea, urea (CH_4N_2O), ammonium fluoride (NH_4F) and KOH were provided by Sinopharm Chemical Reagent Co., Ltd. Iron sulfate heptahydrate ($FeSO_4 \cdot 7H_2O$), sodium molybdate dihydrate ($Na_2MoO_4 \cdot 2H_2O$) was purchased by Tianjin BASF Chemical Co., Ltd. These above reagents are AR grade and can be used directly in this experiment without additional purification.

2. Characterizations

X-ray photoelectron spectroscopy (XPS, PHI 5300 ESCA system) were collected to explore the surface chemical state and the valence state. The microscopic morphology and element distribution of the MoS_2/NF/NFL/CC were analyzed by transmission electron microscopy (TEM, FEI Quanta 200F) and scanning electron microscopy (SEM, Regulus EU8100). The crystal structure of the MoS_2/NF/NFL/CC were revealed by the X-ray diffraction (XRD, Philips) with Cu- Kα radiation.

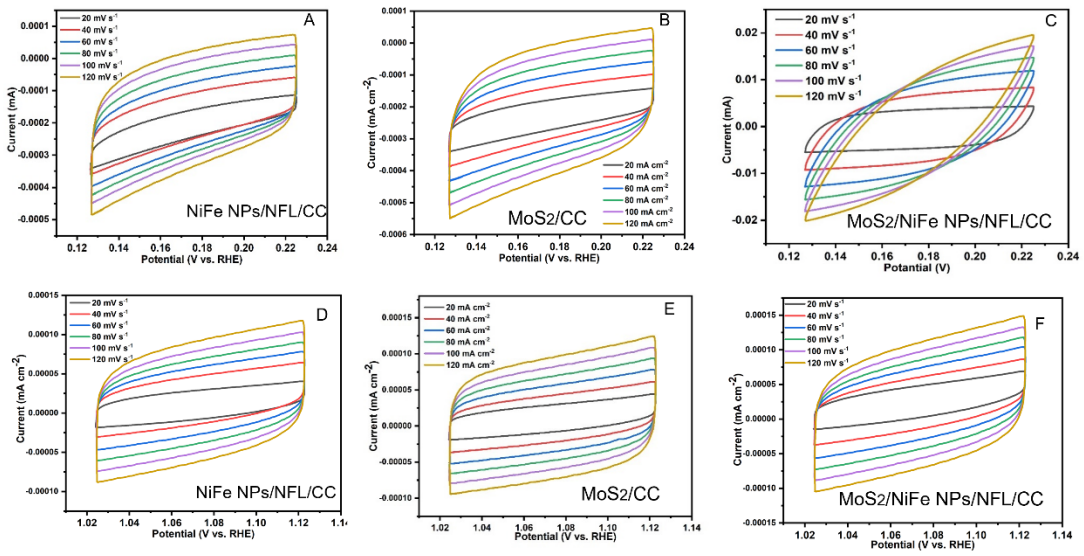

Fig. S1 (A-F) CV curves of the NiFe NPs/NFL/CC, MoS_2/CC and MoS_2/ NiFe NPs /NFL/CC at varied scan rate and potential range.