Supplementary Information

Hierarchical $NiCo_2O_4$/NiFe/Pt Heterostructures Supported on Nickel Foam as Bifunctional Electrocatalysts for Efficient Oxygen/Hydrogen Production

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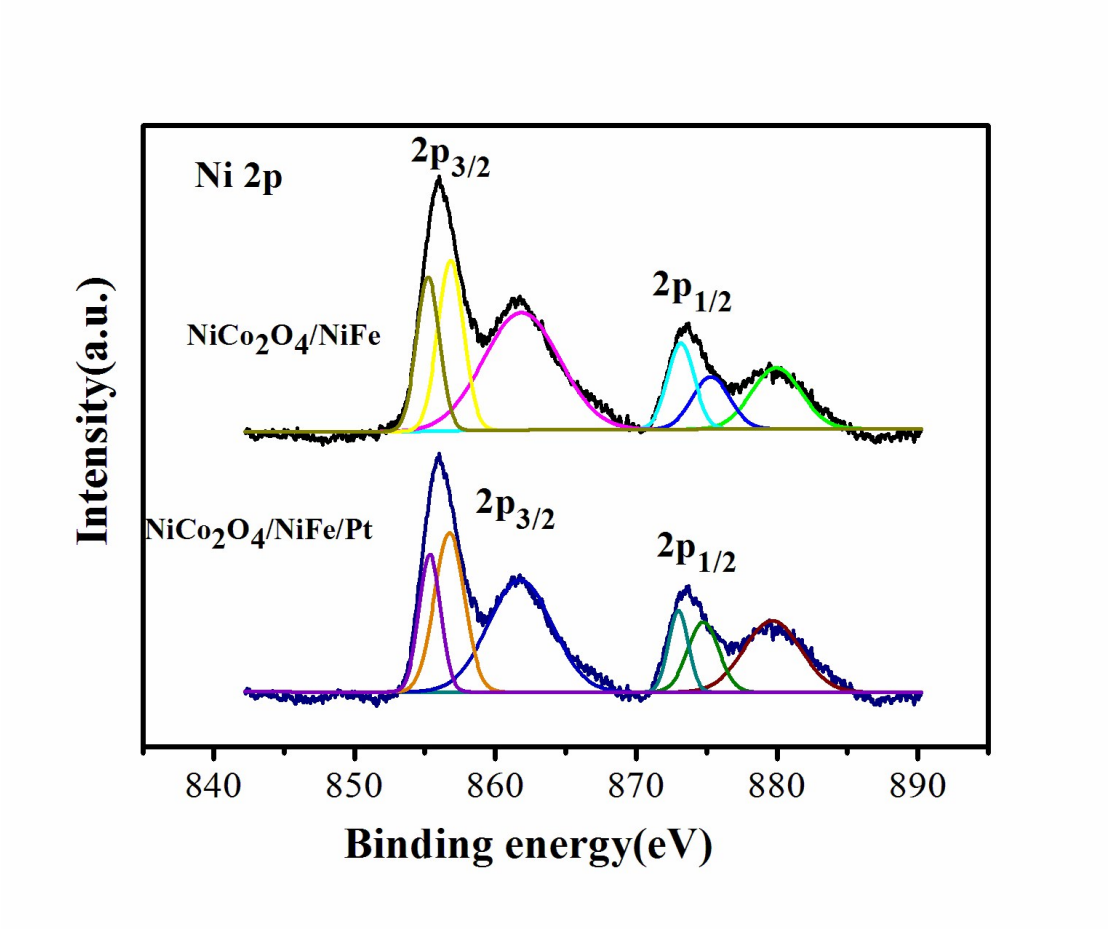
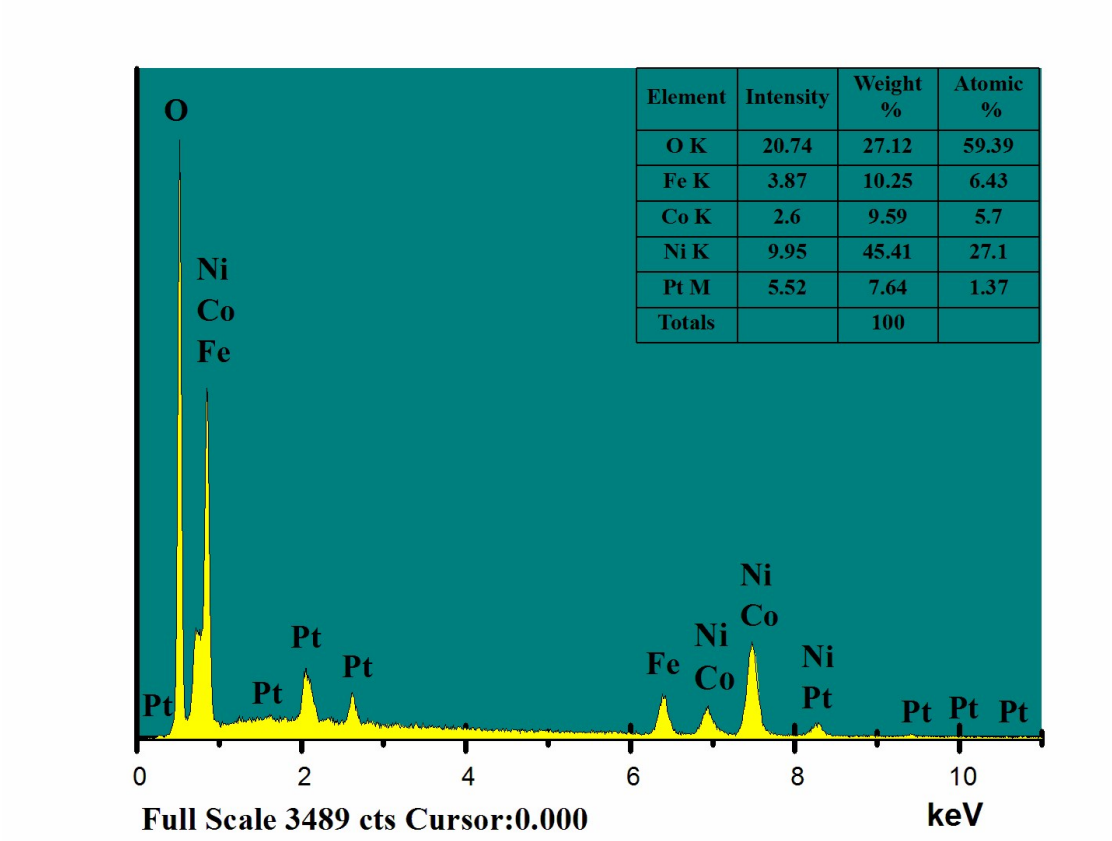


Fig. S1 High-resolution XPS spectra for Ni 2p.



Element	Intensity	Weight %	Atomic %
O K	20.74	27.12	59.39
Fe K	3.87	10.25	6.43
Co K	2.6	9.59	5.7
Ni K	9.95	45.41	27.1
Pt M	5.52	7.64	1.37
Totals		100	

Fig. S2. EDS spectra of (a) the $NiCo_2O_4$/NiFe/Pt arrays (inset showing atomic percentage).

The energy dispersive X-ray spectra (EDS) for $NiCo_2O_4$/NiFe/Pt arrays are shown in Fig. S2, demonstrates that the arrays are mainly constituted by O, Fe, Co, Ni, and Pt elements. The EDS results confirmed the formation of Pt nanoparticles and attachment on $NiCo_2O_4$/NiFe with a weight fraction of about 7.64%.