

Supplementary information

Phosphatized NiCo LDHs 1D Dendritic Electrode for High Energy Asymmetric Supercapacitor

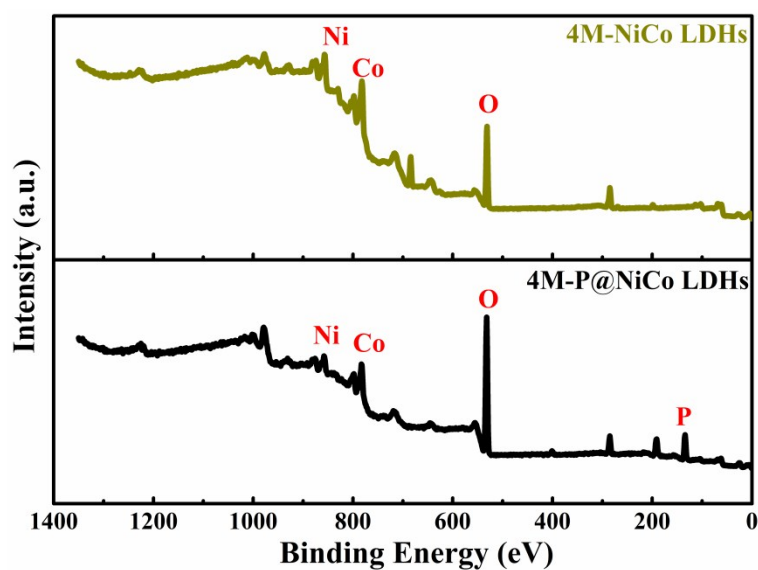


Fig. S1. The full XPS spectra of the 4M-NiCo LDHs and 4M-P@NiCo LDHs.

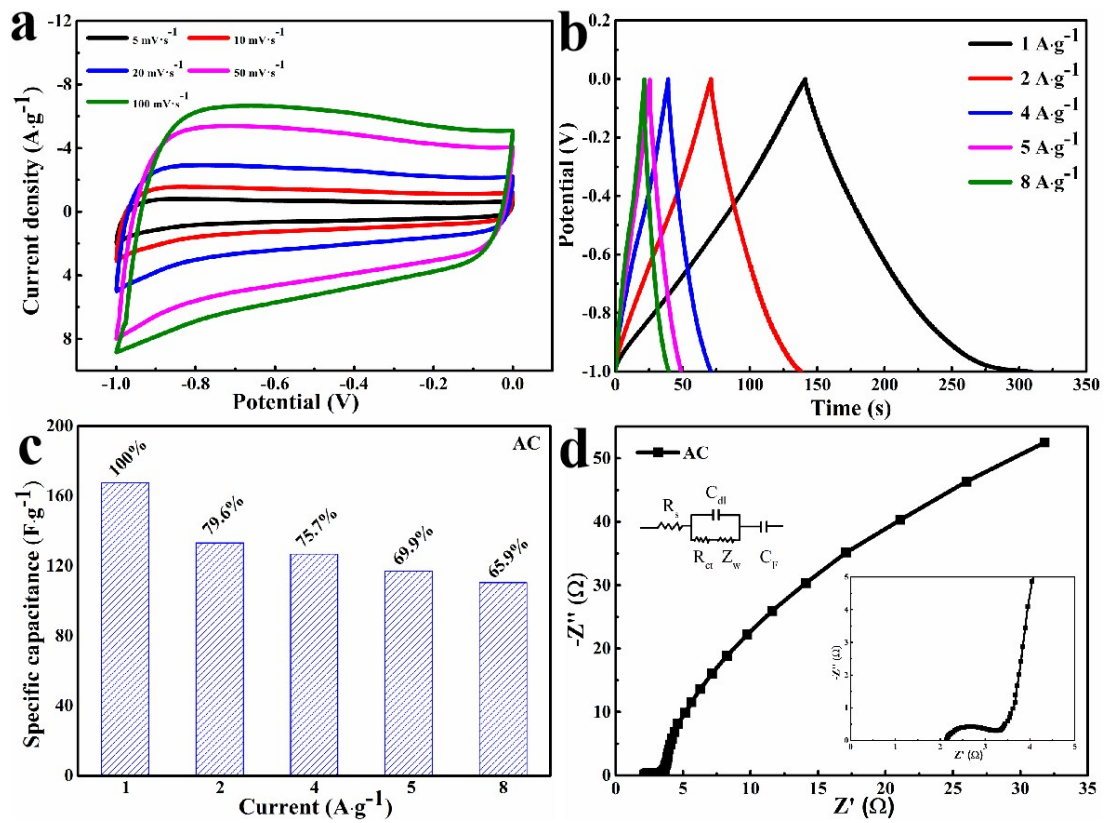


Fig. S2. Electrochemical properties of activated carbon (AC) under three electrode system: (a) CV curves at different scan rates; (b) GCD curves at different current densities; (c) Calculated specific capacitances of AC as a function of current density; (d) Nyquist plots.

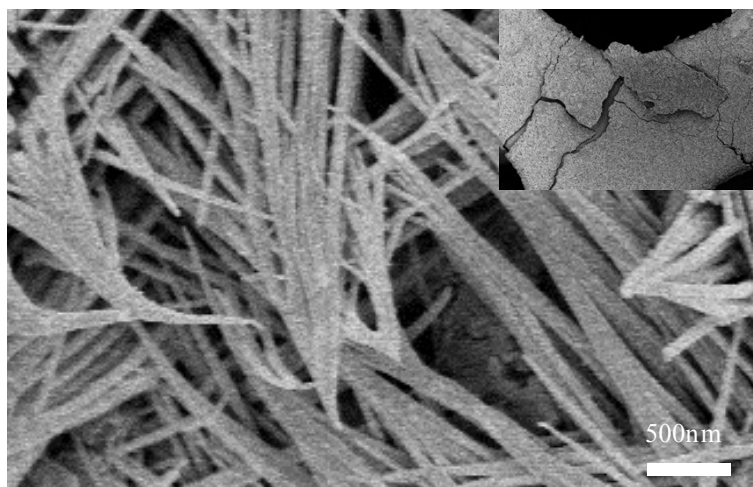


Fig. S3. FESEM images of 4M-P@NiCo LDHs after 5000 charge-discharge cycles.

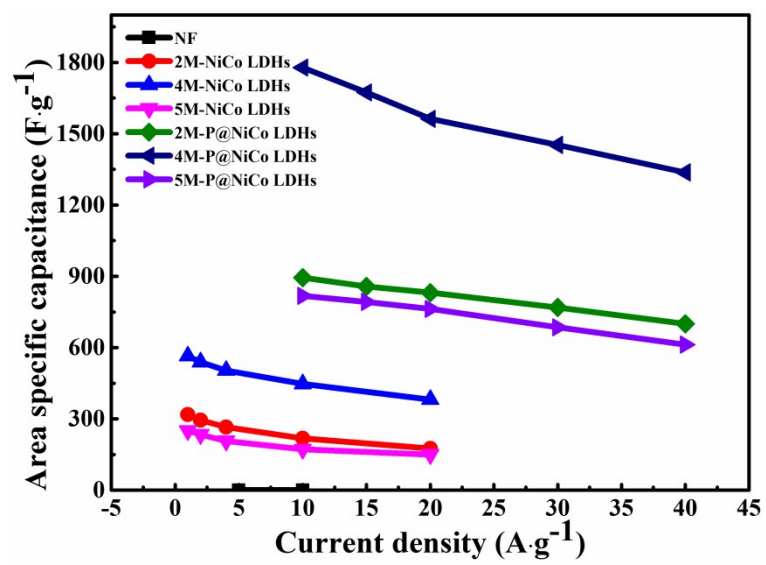


Fig. S4. calculated mass specific capacitance of different obtained electrodes at various current densities.

Table. S1. Structural parameters obtained from N₂ adsorption isotherms analysis.

samples	SBET(m²g⁻¹)^{a)}	Pore volume(cm³g⁻¹)^{b)}	Average pore size(nm)^{b)}
NiCo LDHs	3.93	0.00464	4.96
4M-P@NiCo LDHs	10.27	0.00861	3.53

a)Obtained from BET method;

b)Total pore volume taken from the N₂ adsorption volume at a relative pressure (P/P₀) of 0.99.

Table. S2. element components of electrode material before and after phosphatized treatment obtained by XPS detection (At %)

element	4M-NiCo LDHs	4M-P@NiCo LDHs
sample		
Ni	15.7	3.77
Co	24.9	7.23
O	59.34	41.27
P	-	47.73
Phosphatized rate	About 18% (measured by the decrease of oxygen element	

Table. S3. Comparison of areal capacitances of LDHs based electrodes in references.

electrode materials	electrolyte	Areal capacitance (F cm ⁻²)	reference
Ni(OH) ₂ /NiCo ₂ O ₄ / carbon fiber paper	1 M KOH	5.2 (2 mA cm ⁻²)	1
NiCo-CO ₃ LDH grown on Ni foam	2 M KOH	6.2 (2 mA cm ⁻²)	2
Ni-P@NiCo LDH Decorated Ni Foam	6 M KOH	6.4 (100 mA cm ⁻²)	3
NiCo ₂ S ₄ nanotube NiMn-LDH arrays 3D graphene sponge	6 M KOH	1.26 (10 mA cm ⁻²)	4
Ni-Co-LDH/graphene composites	6 M KOH	0.16 (16 mA cm ⁻²)	5
NiP@CoAl-LDH nanotube arrays	2 M KOH	1 (20 mA cm ⁻²)	6
Ni - Co LDH/3D Graphene Nickel Foam	6 M KOH	1.25 (50 mA cm ⁻²)	7
CoAl-LDH/NiCo ₂ S ₄ sheets	2 M KOH	2.4 (10 mA cm ⁻²)	8
Ni(OH) ₂ and Cu grown on Ni foam	2 M KOH	5.2 (50 mA cm ⁻²)	9

4M-P@NiCo LDHs grown on Ni foam	6 M KOH	7 (50 mA cm ⁻²)	This works
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