Electronic Supplementary Material (ESI) for CrystEngComm.

Supplementary information

Fig. S1 SEM image of Co_3O_4@NF before calcination.

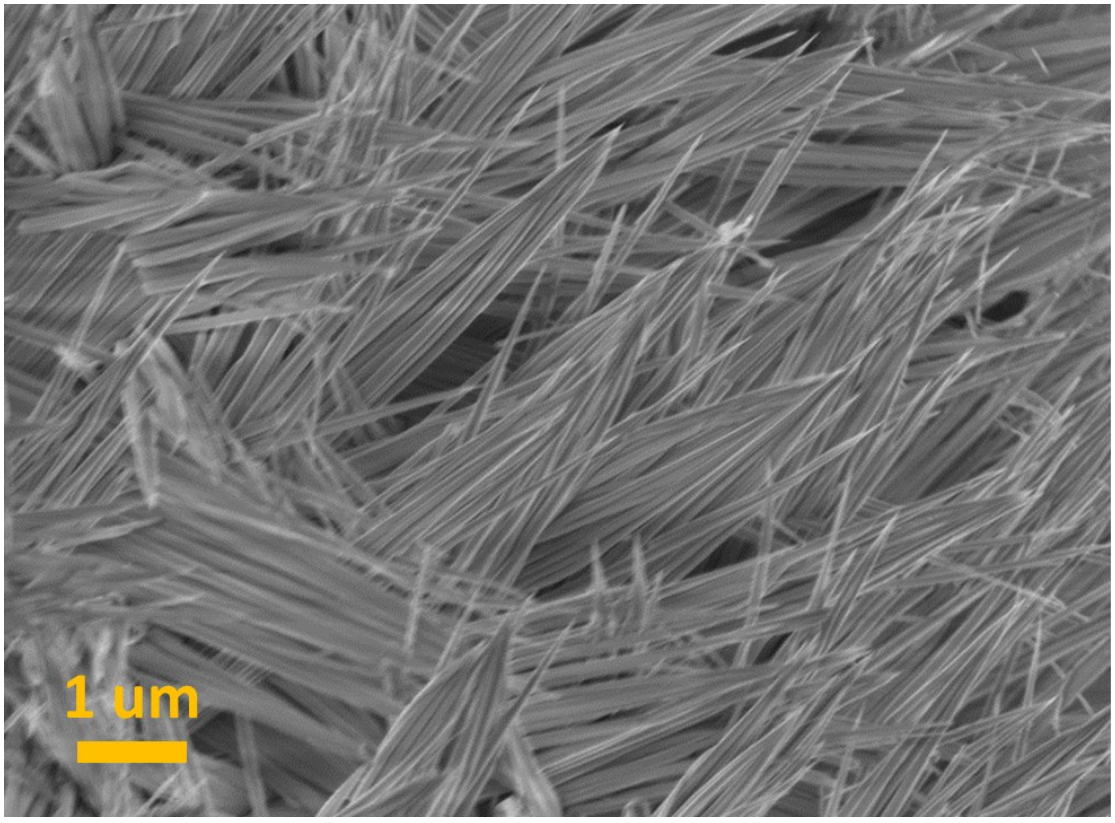

Fig. S2 SEM image of powder $Ni_3Mn_1LDH@Co_3O_4$ obtained from the same preparation process without Ni foam.

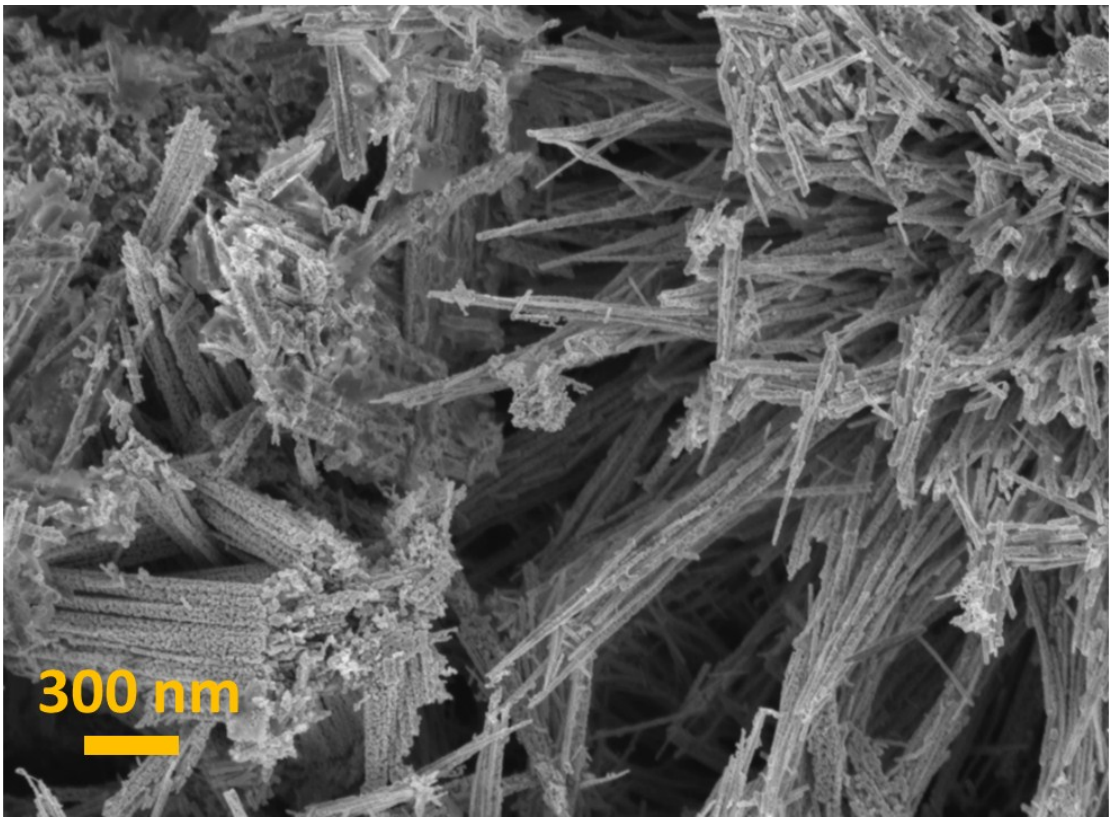

Fig. S3 CV curves at different scan rates and GCD curves at different current densities for (a-b) $Ni_1Mn_1LDH@Co_3O_4$, (c-d) $Ni_1Mn_3LDH@Co_3O_4$ and (e-f) Co_3O_4 grown on nickel foam.

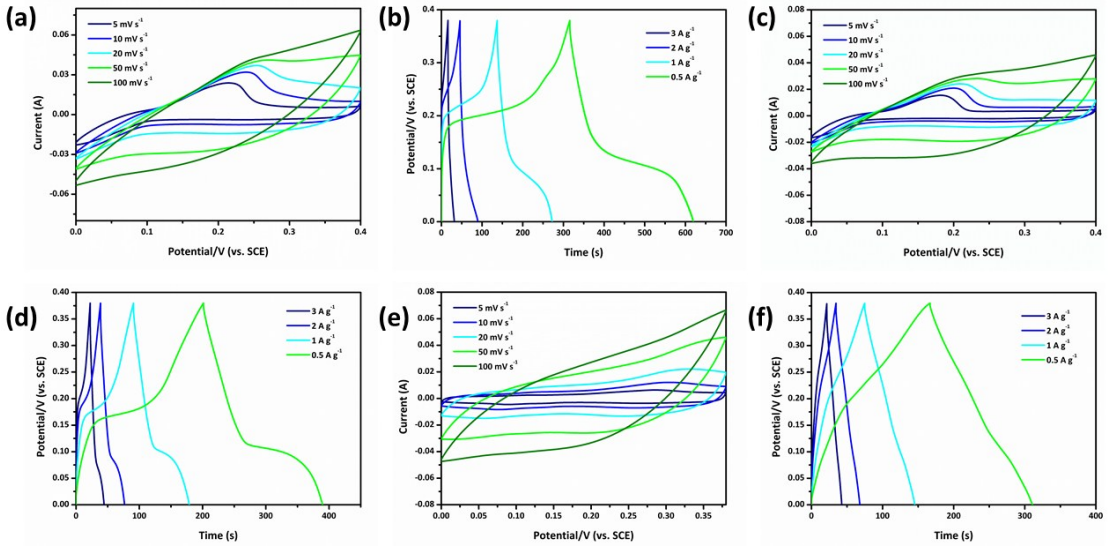

Fig. S4 Representative SEM image of $Ni_3Mn_1LDH@Co_3O_4$ electrode after circulation.

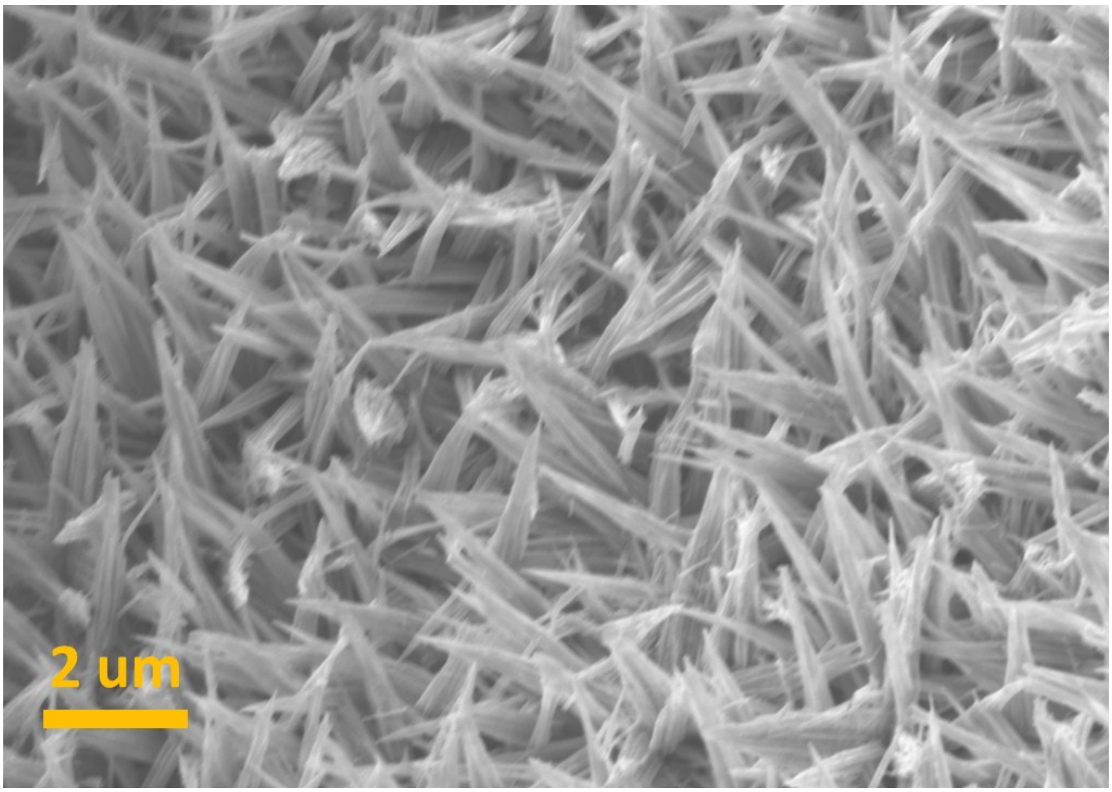

Fig. S5 EIS measurements of NiMnLDH@Co_3O_4//AG before and after 5000 cycles. The inset shows the enlarged nyquist plots.

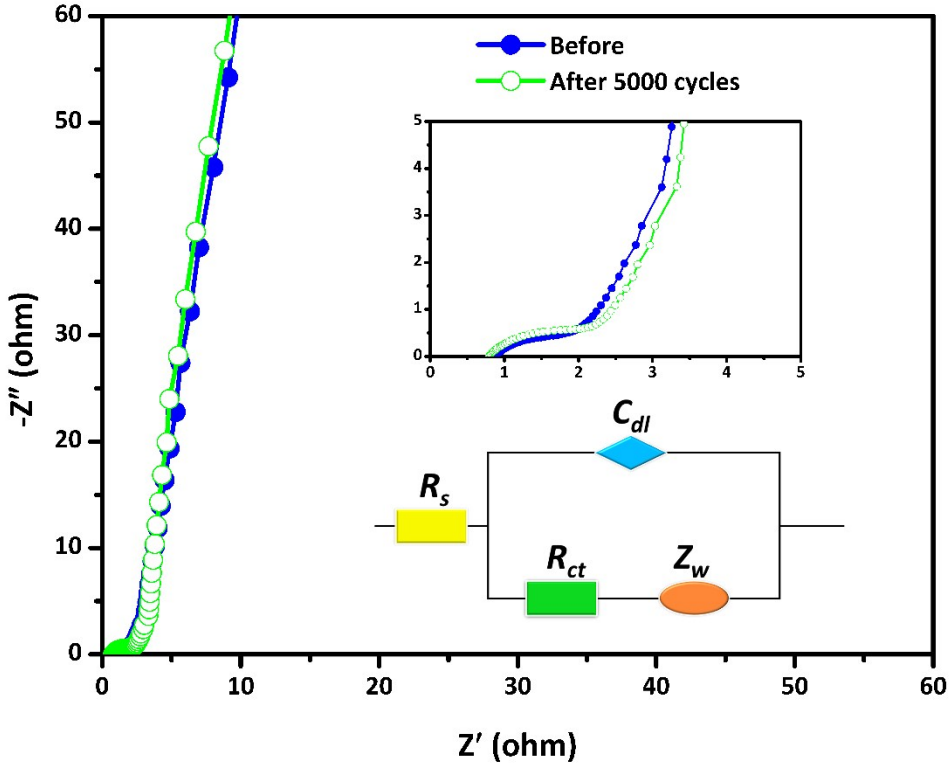

Table S1 Comparisons of the electrochemical performance (based on active materials) with various reported similar electrode materials for supercapacitors utilizing alkaline aqueous electrolytes in three-electrode system.

Electrode materials	Electrolytes	Specific capacitance	Rate capability	Cyclic stability (cycling numbers)	Ref.
Co_3O_4 nanowires	6 M KOH	250 F g^{-1} (at 20 A g^{-1})	69.4% (at 20 A g^{-1})	-	[1]
NiO nanowire arrays @Ni foam	2 M KOH	178 F g^{-1} (at 2 A g^{-1})	66% (at 40 A g^{-1})	56.7% (5000)	[2]
Ni/Co oxide thin films	2 M KOH	169 F g^{-1} (at 10 mV s^{-1})	17.9% (at 200 mV s^{-1})	97% (200)	[3]
$NiCo_2O_4$@Ni substrate	1 M KOH	217 F g^{-1} (at 1 mA cm^{-2})	86.6% (at 20 mA cm^{-2})	96.3% (600)	[4]
$NiCo_2O_4$ nanowires@carbon cloth	1 M KOH	123 F g^{-1} (at 1 A g^{-1})	78% (at 10 A g^{-1})	95% (1000)	[5]
$NiCo_2O_4$ nanosheets@carbon cloth		245 F g^{-1} (at 1 A g^{-1})	73% (at 10 A g^{-1})	116% (1000)	
NiMn LDH	1 M KOH	150 F g^{-1} (at 30 A g^{-1})	25% (at 30 A g^{-1})	68% (5000)	[6]
NiMn LDH/graphene		162.6 mF cm^{-2} (at 16 mA cm^{-2})	75% (at 16 mA cm^{-2})	80% (10000)	
NiMnLDH@Co_3O_4 on Ni foam	6 M KOH	607.9 F g^{-1} (at 0.5 A g^{-1})	77.14% (at 3 A g^{-1})	99.9% (1000)	**This work**

References

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Table S2 The combinational resistance (R_s) and charge-transfer resistance (R_{ct}) before and after cycling of these samples.

Samples	Before cycling		After cycling	
	R_s (Ω cm^2)	R_{ct} (Ω cm^2)	R_s (Ω cm^2)	R_{ct} (Ω cm^2)
Ni_1Mn_3 LDH@Co_3O_4	0.90	1.20	0.73	1.87
Ni_1Mn_1 LDH@Co_3O_4	0.86	1.04	0.75	1.51
Ni_3Mn1 LDH@Co_3O_4	0.95	0.74	0.90	1.01