Electronic Supplementary Material (ESI) for Dalton Transactions.
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Supporting information

Hierarchical porous $NiCo_2O_4$ nanosheet arrays directly grown on carbon cloth with superior lithium storage performance

Table S1. The synthetic conditions for all the compared samples.

Samples	Molar concentration of Co^{2+}:Ni^{2+} in the reaction solution (mmol:mmol)	Solvothermal temperature (^oC)
NCO-PSA/CC	4:2	180
NCO-PSA/CC-1	2:1	180
NCO-PSA/CC-2	6:3	180
NCO-PSA/CC-160	4:2	160
NCO-PSA/CC-200	4:2	200
Co_3O_4/CC	4:0	180
NiO/CC	0:2	180

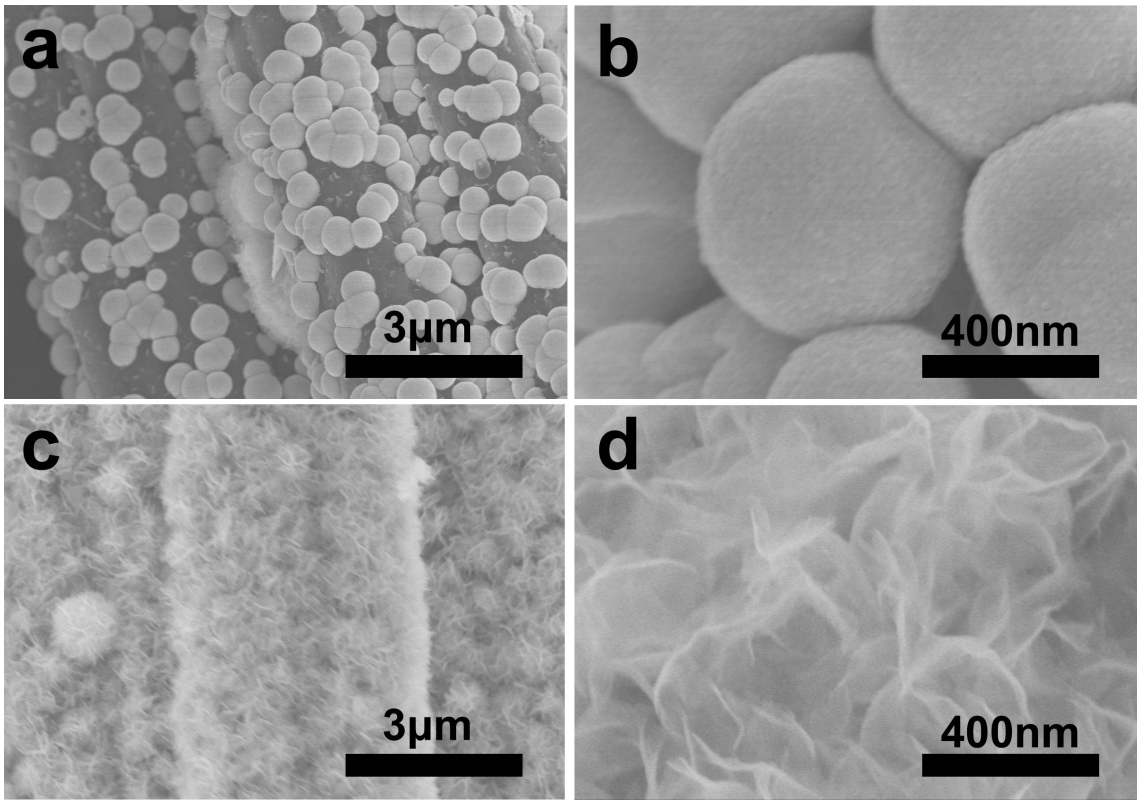

Fig. S1 SEM images of (a, b) Co_3O_4/CC and (c, d) NiO/CC composites under different magnifications.

Table S2. The comparison of electrochemical properties with other mixed transition metal oxide nanostructures.

Electrode material	Reversible capacity (mA h g^{-1})	Current density (mA g^{-1})	Ref.
Multiporous $MnCo_2O_4$ hollow spheres	964	200	S1
Multiporous $CoMn_2O_4$ hollow spheres	910	200	S1
The rGO/$NiCo_2O_4$ nanocomposite	954	200	S2
$ZnCo_2O_4$ nanosheets	1106.8	200	S3
Carbon-coated $CuCo_2O_4$ polyhedra	740	1000	S4
Porous $NiCo_2O_4$ nanosheet arrays on carbon cloth	1687.6	500	**This work**

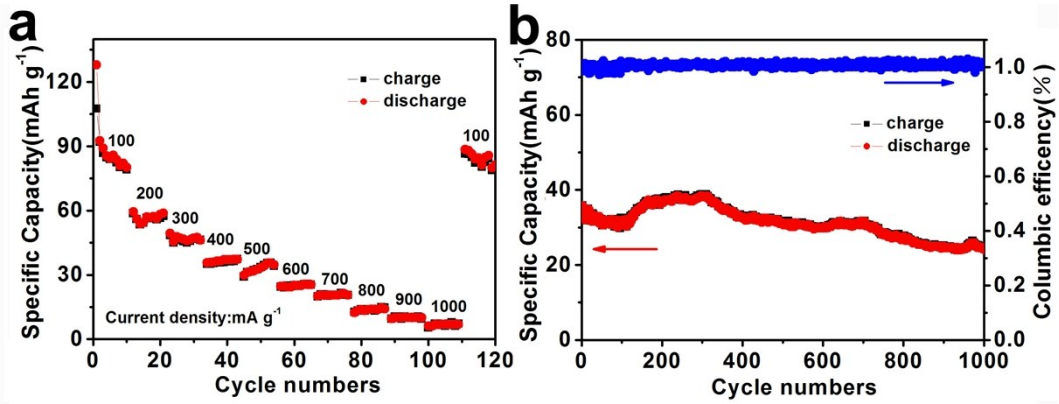

Fig. S2 Electrochemical performance of carbon cloth: (a) The rate capabilities of carbon cloth at current density from 100 to 1000 mA g^{-1}. (b) Cyclic performance of carbon cloth at a constant current density of 500 mA g^{-1} for 1000 cycles.

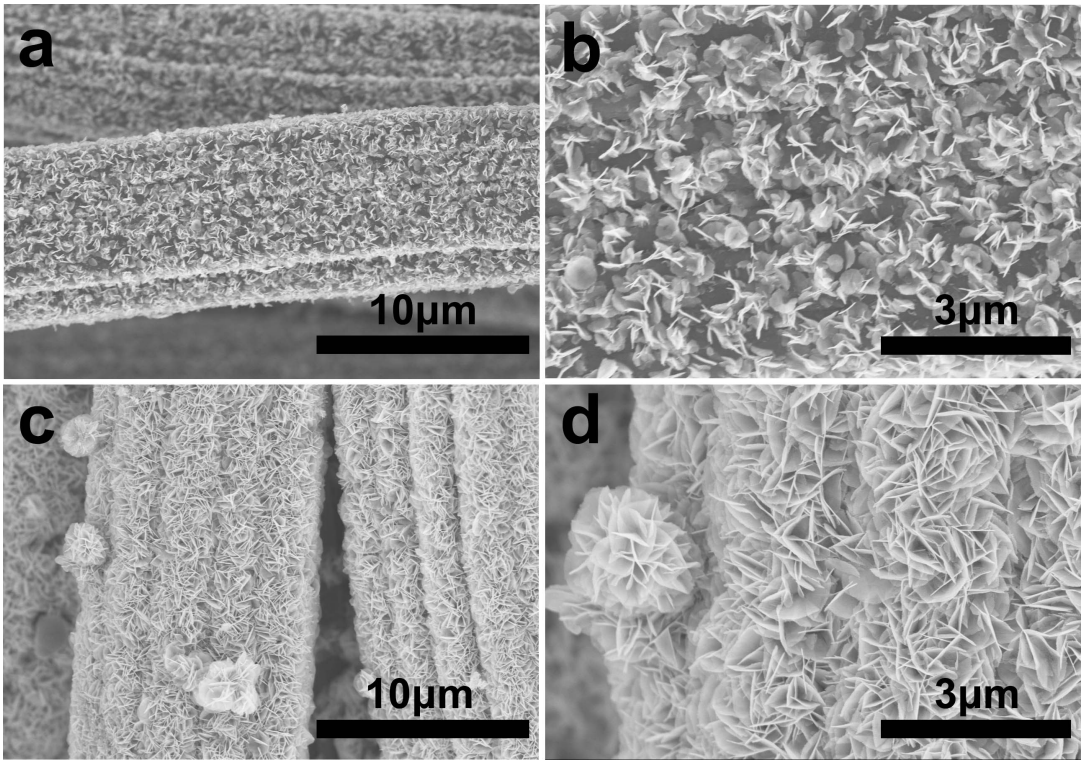

Fig. S3 SEM images of the (a, b) NCO-PSA/CC-1 and (c, d) NCO-PSA/CC-2 composites synthesized from different dosage of $Co(NO_3)_2 \cdot 6H_2O$ and $Ni(NO_3)_2 \cdot 6H_2O$.

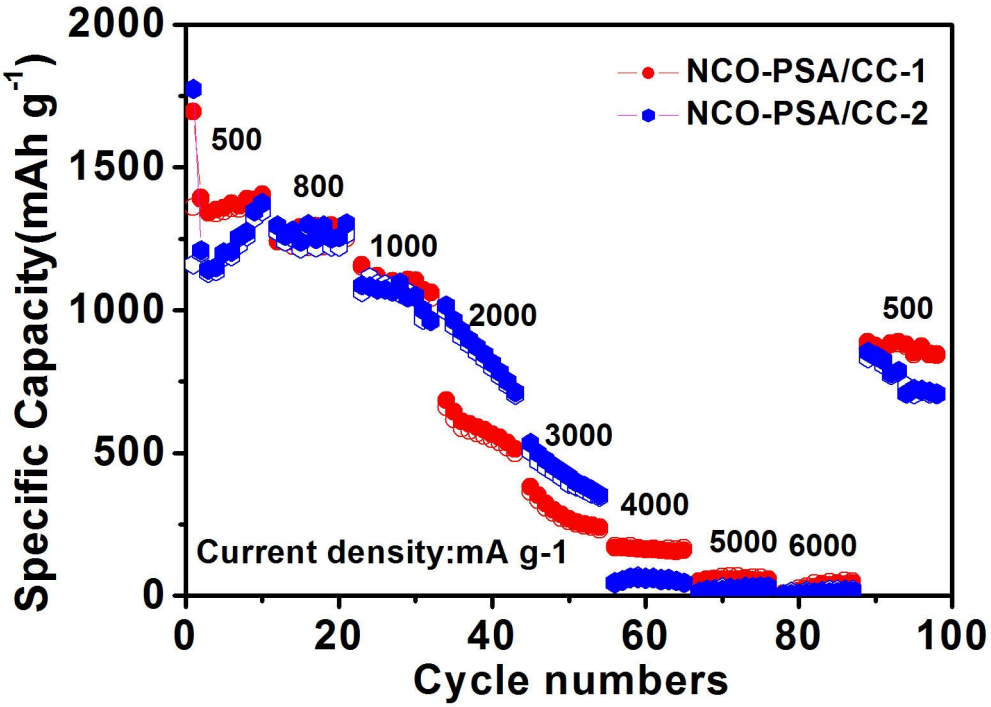

Fig. S4 Rate capabilities of the NCO-PSA/CC-1 and NCO-PSA/CC-2 electrodes at different current density from 500 to 6000 mA g^{-1}.

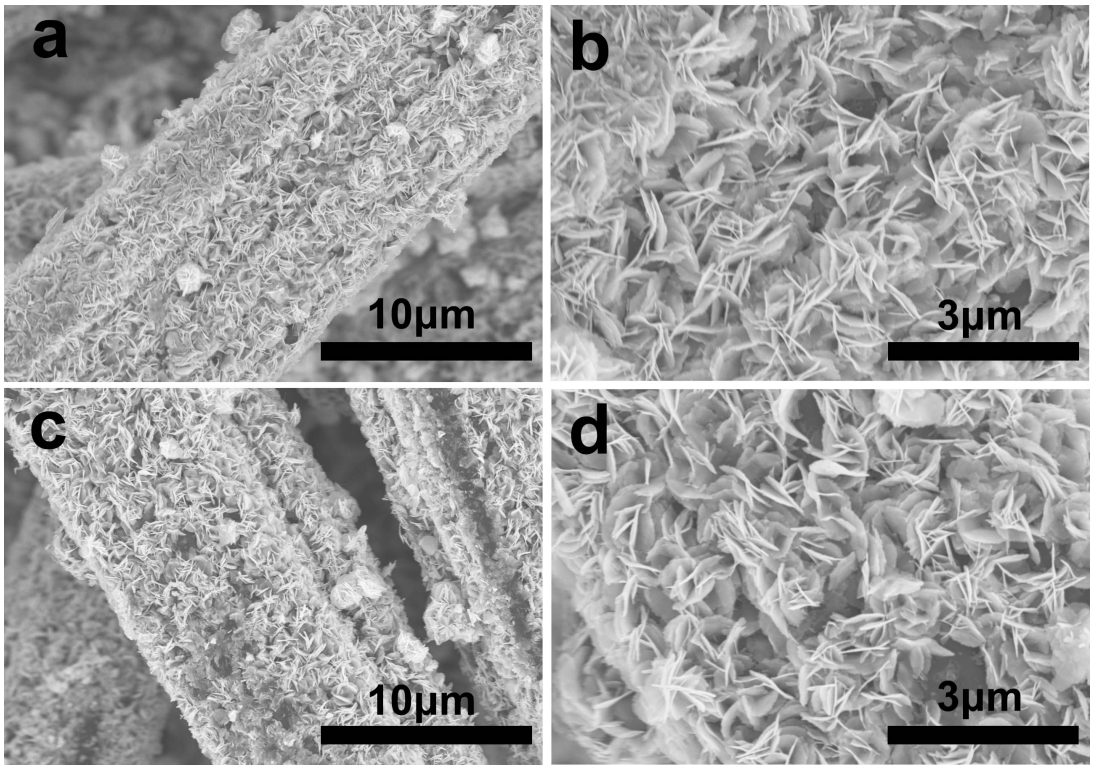

Fig. S5 SEM images of (a, b) NCO-PSA/CC-160 and (c, d) NCO-PSA/CC-200 synthesized by the solvothermal temperatures 160 °C and 200 °C, respectively.

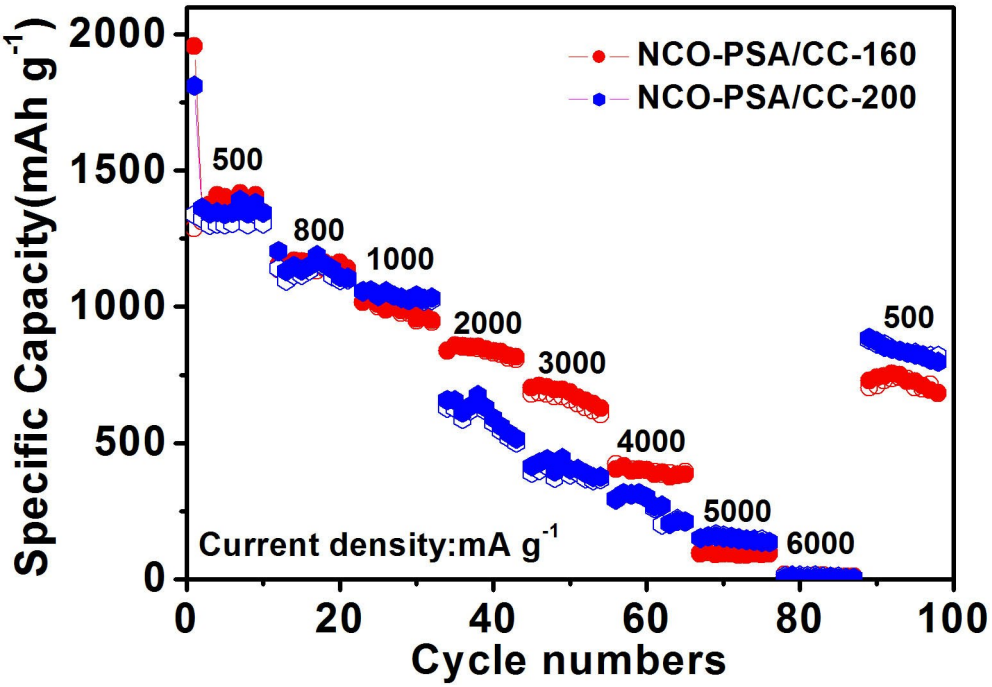

Fig. S6 Rate capabilities of the NCO-PSA/CC-160 and NCO-PSA/CC-200 electrodes at current density from 500 to 6000 mA g^{-1}.

References:

[S1] J. Li, S. Xiong, X. Lia, Y. Qian, *Nanoscale*, 2013, **5**, 2045-2054.

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[S3] Y. Zhu, C. Cao, J. Zhang, X. Xu, *J . Mater. Chem. A*, 2015, **3**, 9556-9564.

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