

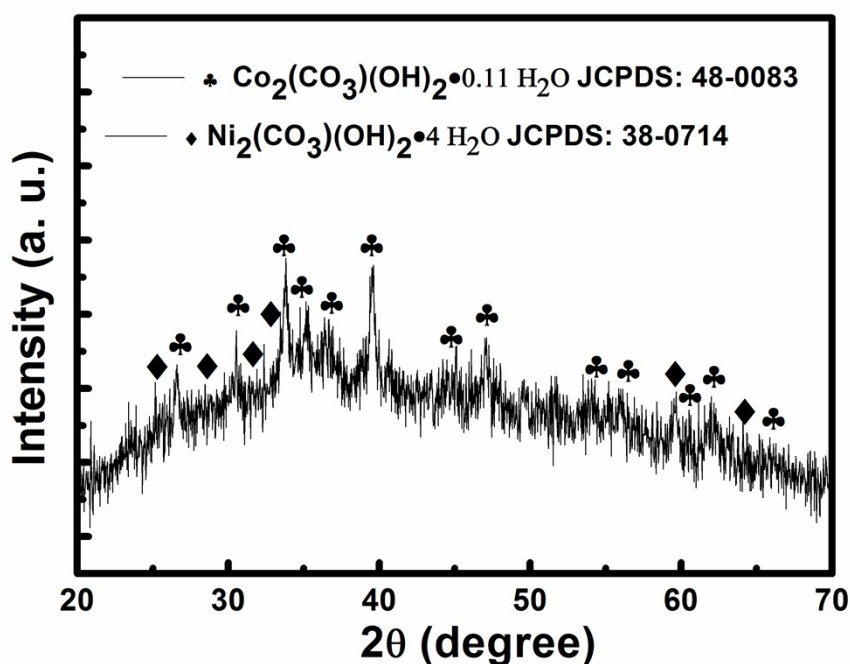
## Supporting information

# Unique Synthesis of Mesoporous Peapod-like NiCo<sub>2</sub>O<sub>4</sub>-C Nanorods Array as Enhanced Anode for Lithium Ion Batteries

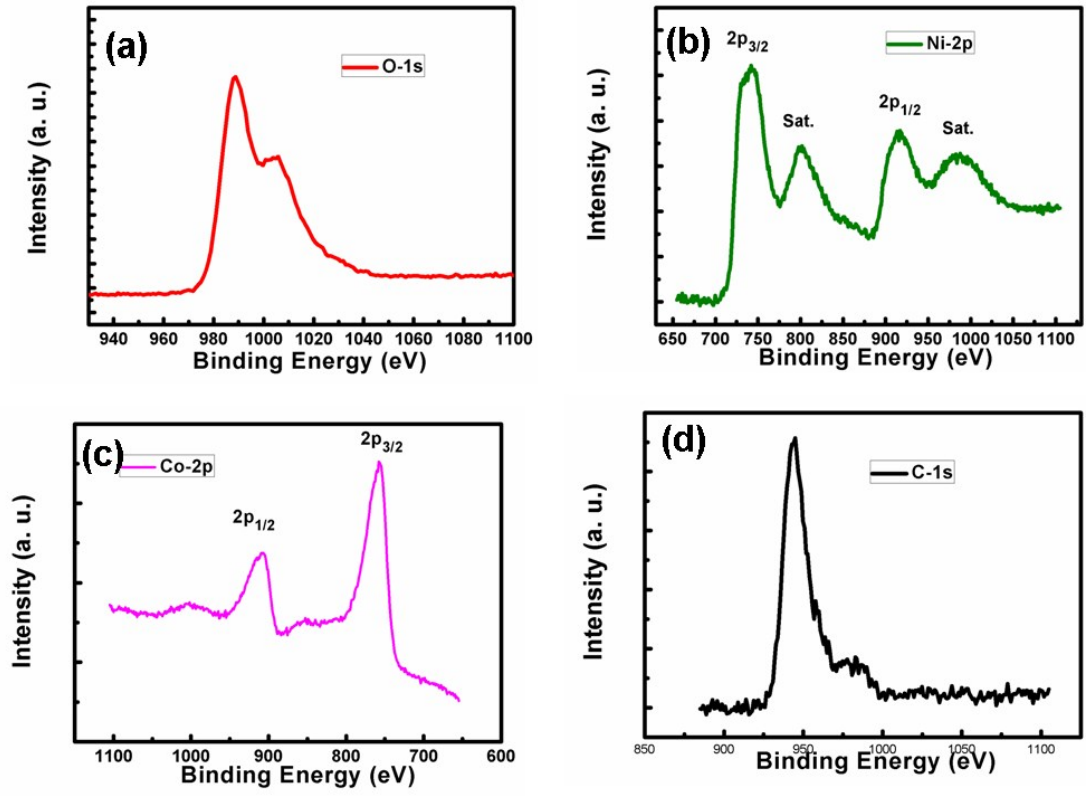
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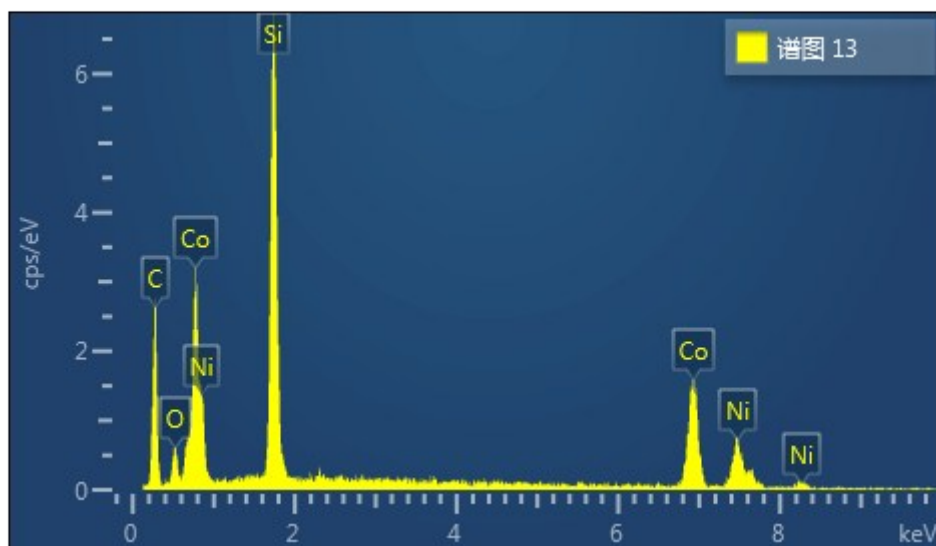
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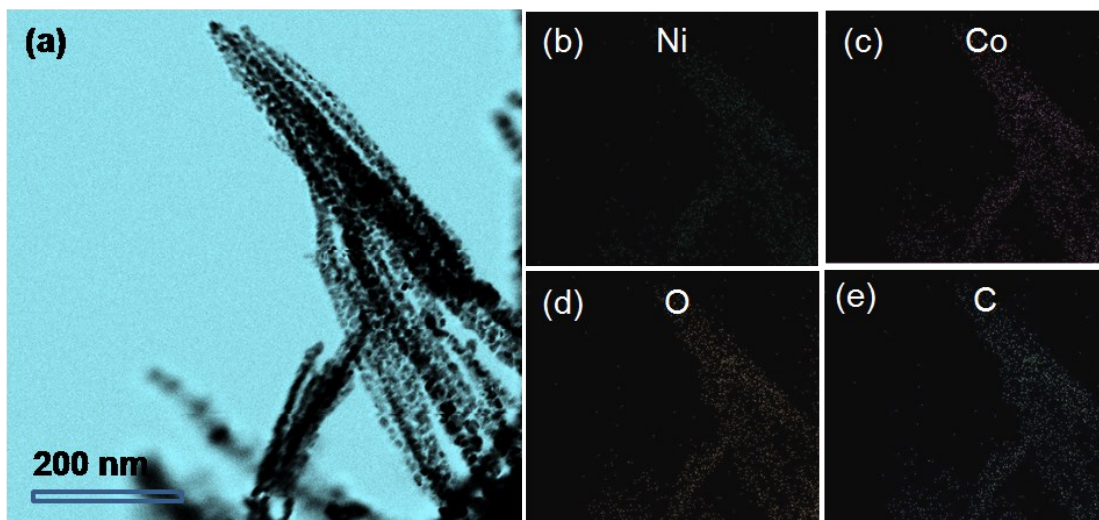
**Fig. S1** XRD pattern of the Ni-Co precursors, where the  $\text{Co}_2(\text{CO}_3)(\text{OH})_2 \cdot 0.11 \text{H}_2\text{O}$  and  $\text{Ni}_2(\text{CO}_3)(\text{OH})_2 \cdot 4 \text{H}_2\text{O}$  are shown. The samples are scraped off by a thin knife from the substrate to better reflect the XRD peaks of the Ni-Co precursors.



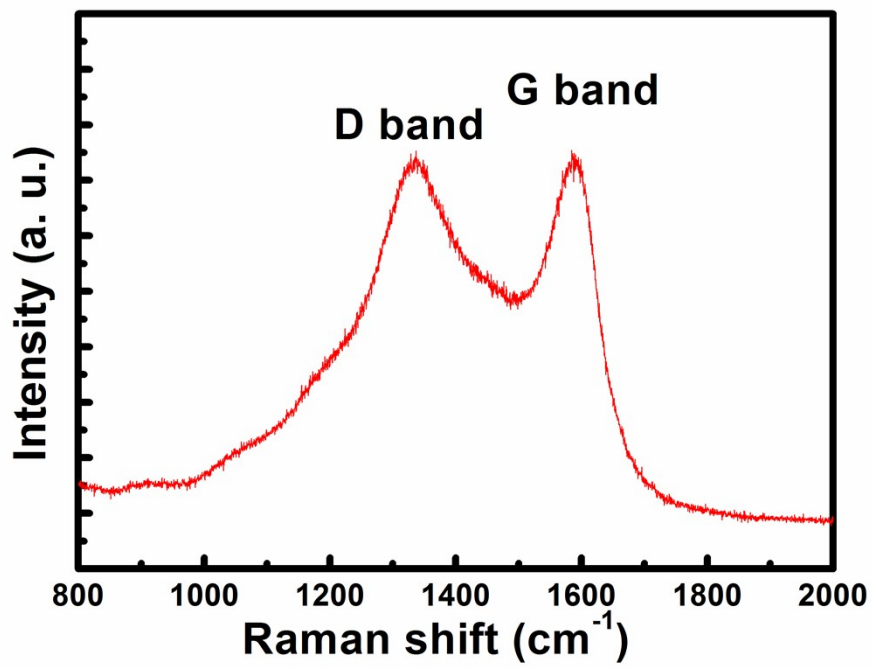
**Fig. S2** XPS analysis of the peapod-like NCO-C nanorods array: (a) O 1s (b) Ni 2p (c) Co 2p and (d) C 1s.



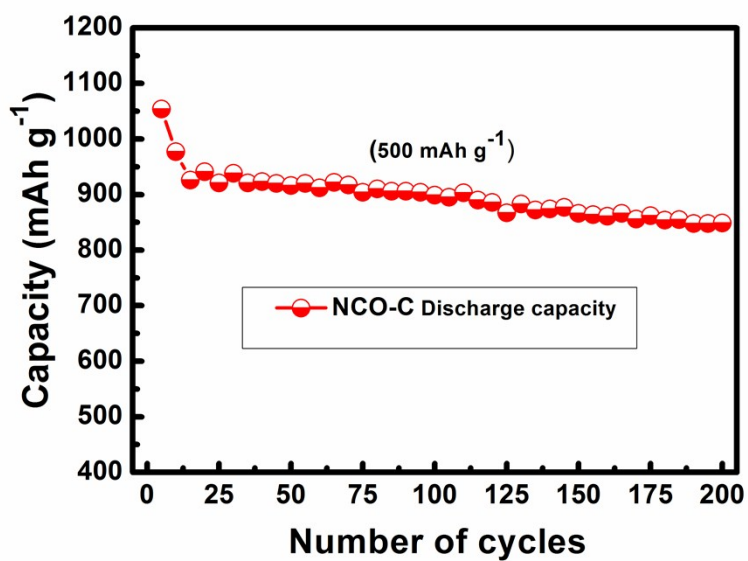
**Fig. S3** EDS spectrum of the peapod-like NCO-C nanorods array scraped from the Ni-foam, the peak of Si come from the Si wafer. .



**Fig. S4** Elemental mapping of the peapod-like NCO-C nanorods array: (a) is the typical TEM image of the array. (b)-(e) are the corresponding elemental distribution images.



**Fig. S5** Raman spectra of the peapod-like NCO-C nanorods array.



**Fig. S6** The cycle performance of the NCO-C composite, which is scripted off from the Ni-sheet.