Supporting Information

Low defect potassium cobalt hexacyanoferrate as a superior cathode for aqueous potassium ion batteries

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Supplemental Figures

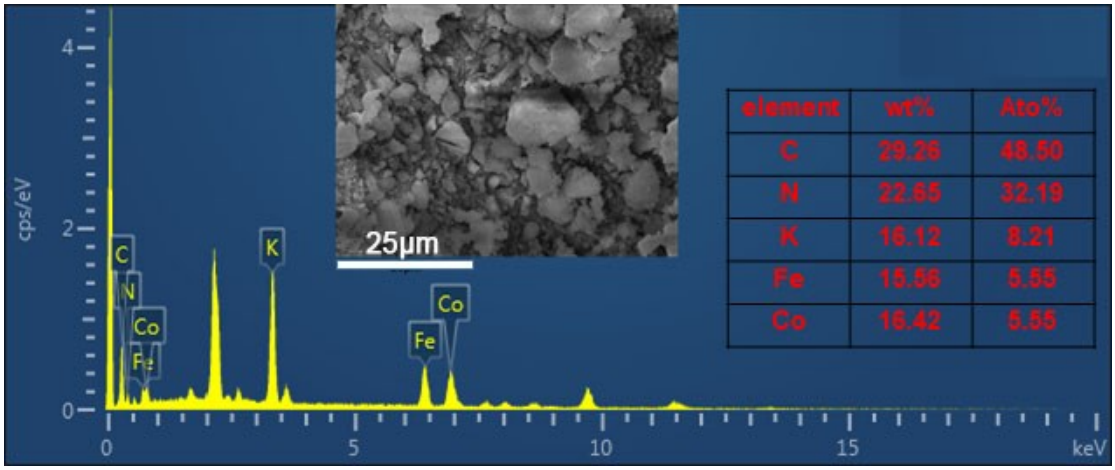

Fig. S1 EDX analysis (SEM) of CoHCF.

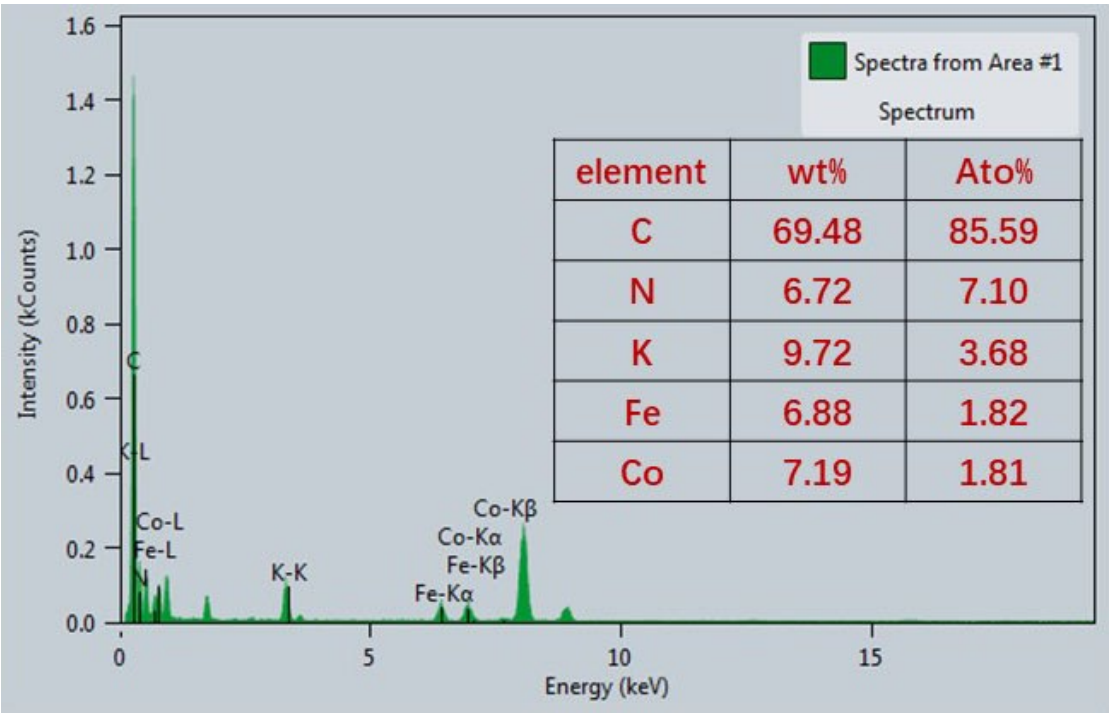

Fig. S2 EDX analysis (TEM) of CoHCF.

Table S1 A performance comparison for Co-based PBAs investigated in different electrolytes for potassium ions energy storage

Material[ref]	Electrolyte	Capacity at lower current density mA h g^{-1}/mA g^{-1}(cycles)	Capacity at higher current density mA h g^{-1}/mA g^{-1} (cycles)
This work	Aqueous	83.6/20(200)	53.8/600 (1000)
$K_2Ni_{0.4}Co_{0.6}(CN)_6$[1]	Organic	84/20(50)	75.6/20(300)
$K_xCoFe(CN)_6$[2]	Organic	38.4/20(15)	none

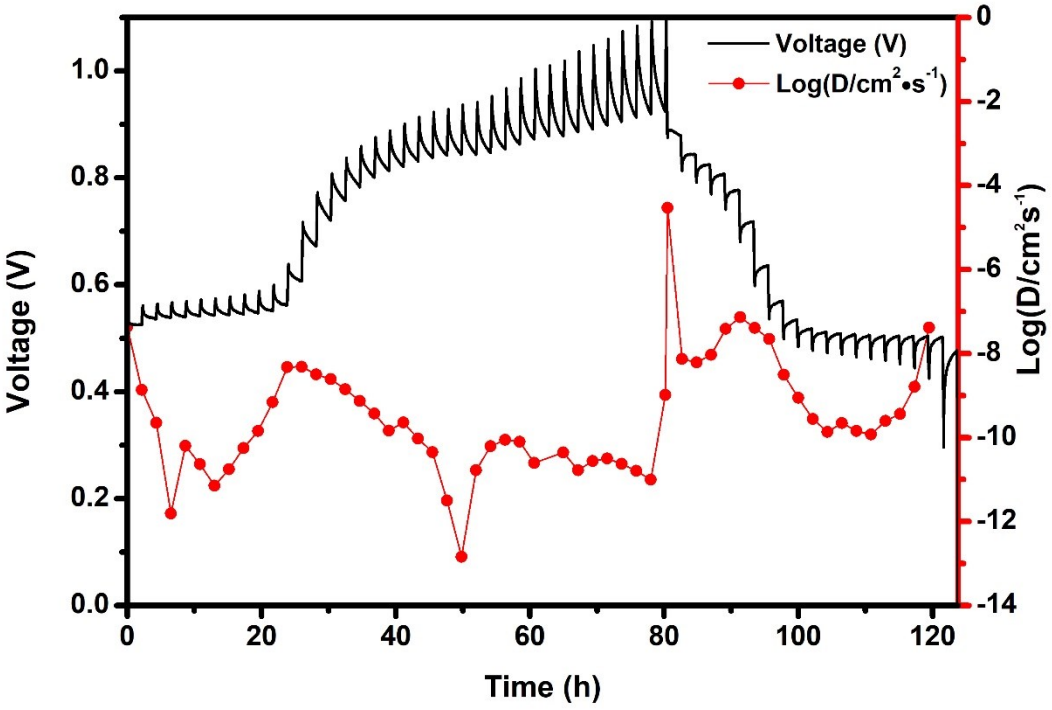

Fig. S3 Galvanostatic intermittent titration technique curves of the CoHCF electrode during the second cycle.

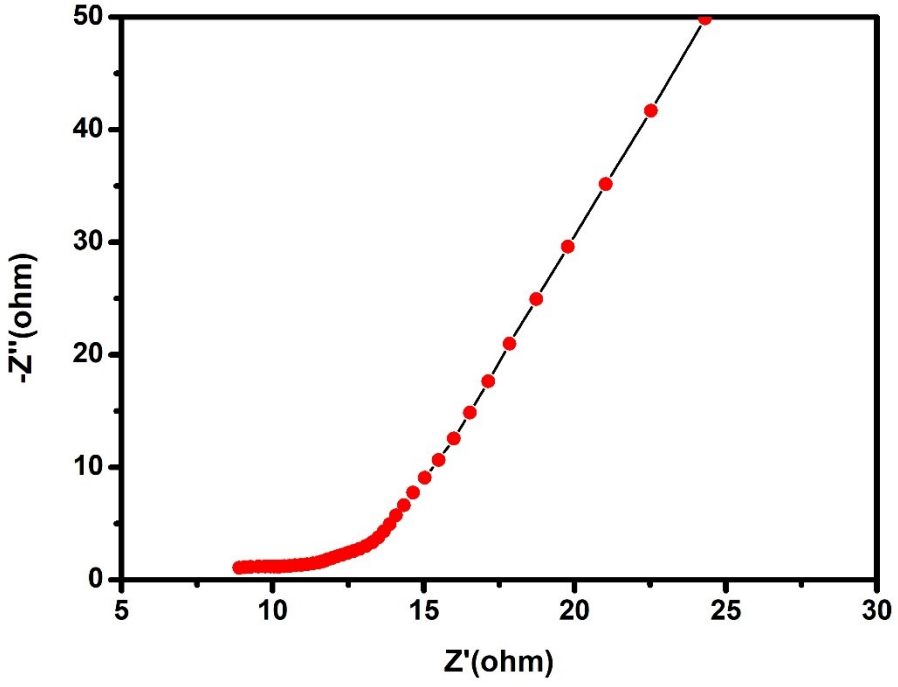

Fig. S4 Electrochemical impedance spectra of the CoHCF electrode.

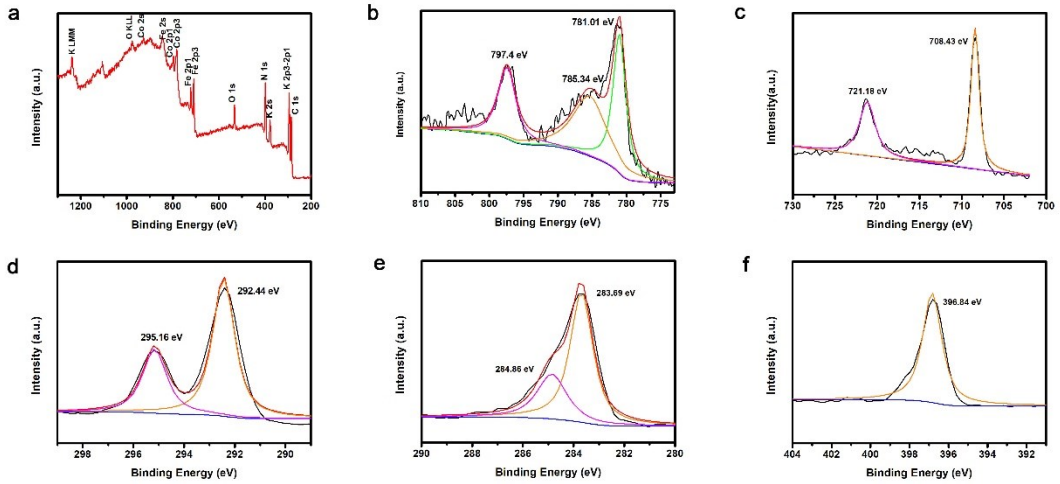

Fig. S5 (a) The full survey XPS date of the CoHCF sample at the pristine state. The high resolution Co 2p spectra (b), Fe 2p spectra (c), K 2p spectra (d), C 1s spectra (e) and N 1s spectra (f).

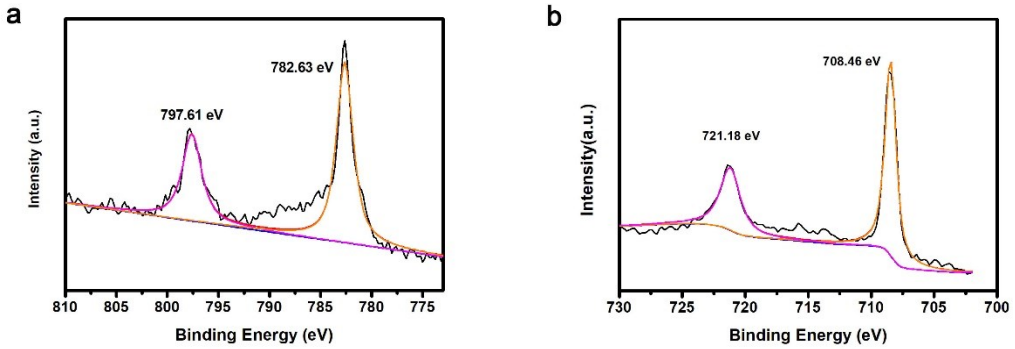

Fig. S6 The high resolution Co 2p spectra (a) and Fe 2p spectra (b) of the CoHCF when charged to 0.71V in the first cycle.

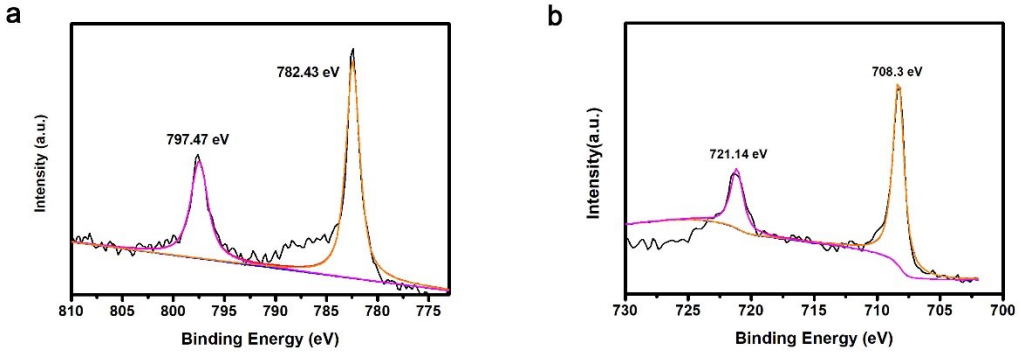

Fig. S7 The high resolution Co 2p spectra (a) and Fe 2p spectra (b) of the CoHCF when charged to 1.1V in the first cycle.

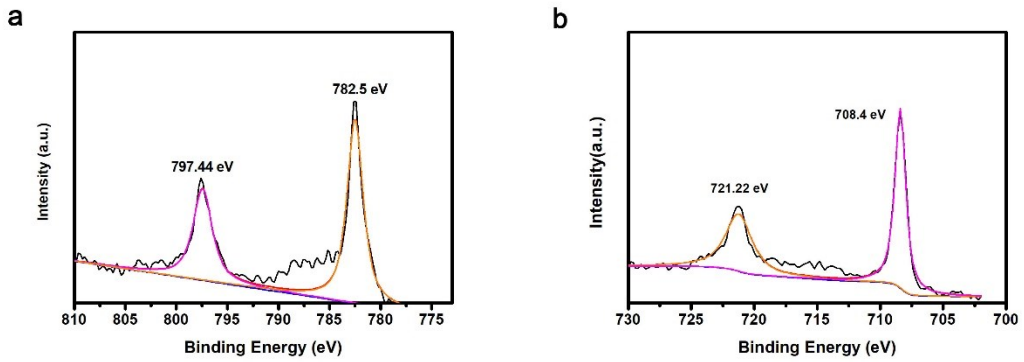

Fig. S8 The high resolution Co 2p spectra (a) and Fe 2p spectra (b) of the CoHCF when discharged to 0.65V in the first cycle.

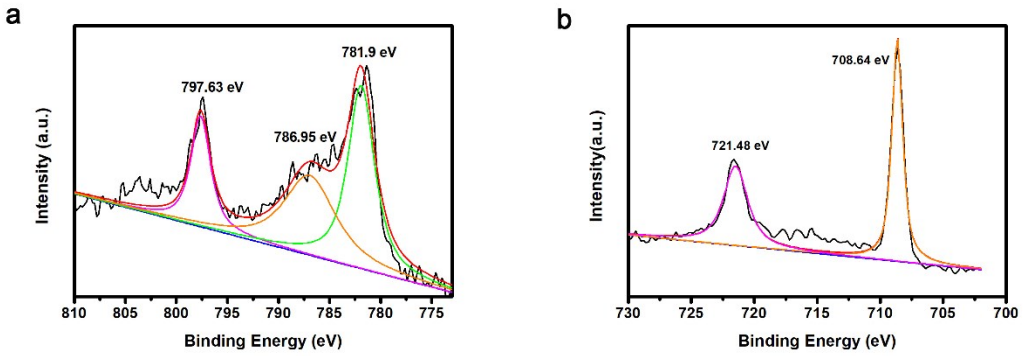

Fig. S9 The high resolution Co 2p spectra (a) and Fe 2p spectra (b) of the CoHCF when discharged to 0V in the first cycle.

References：

1. B. Huang; Y. Shao; Y. Liu; Z. Lu; X. Lu; S. Liao, *ACS Appl. Energy Mater.* **2019,** *2*, 6528-6535.
2. X. Wu; Z. Jian; Z. Li; X. Ji, *Electrochem. Commun.* **2017,** *77*, 54-57.