Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supporting Information for

Single-crystal $FeFe(CN)_6$ nanoparticles: A high capacity and high rate cathode for Na-ion batteries

Xianyong Wu, Wenwen Deng, Jiangfeng Qian,* Yuliang Cao, Xinping Ai, and Hanxi Yang*

College of Chemistry and Molecular Science, Wuhan University, Wuhan 430072, China.
Fax: (+) 86-27-87884476; Tel: (+) 86-27-87884476;
*E-mail: jfqian@whu.edu.cn (J. F. Qian); hxyang@whu.edu.cn (H.X. Yang)

1. Thermogravimetric analysis (TG) of the $FeFe(CN)_6$ sample:

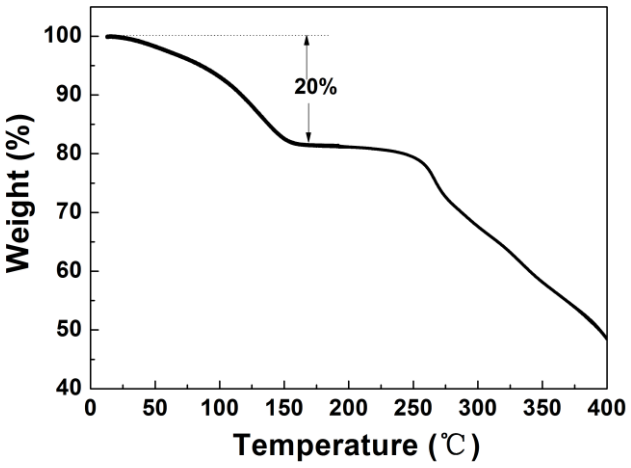

Figure S1. Thermogravimetric curve of the $FeFe(CN)_6$ sample at a rate of 10 °C min^{-1} in air.

Thermogravimetric analysis (Figure S1) reveals a large weight loss of 20% occurred in the temperature range of 50-150 °C, corresponding to four water molecules per $FeFe(CN)_6$ unit. The chemical composition of the sample can thus be expressed as $FeFe(CN)_6 \cdot 4H_2O$.

2. Infrared spectra (IR) of the $FeFe(CN)_6$ sample:

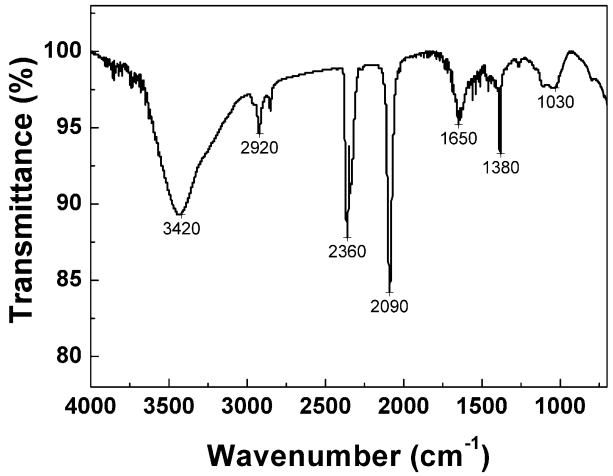

Figure S2. Infrared spectra of the $FeFe(CN)_6$ sample

From the IR spectrum of the $FeFe(CN)_6$ sample, a singlet peak was observed at 2090 cm^{-1}, corresponding to the characteristic of the $C\equiv N^-$ vibration in the lattice.

3. *Ex-situ* XRD patterns of the $FeFe(CN)_6$ electrodes charged or discharged at different depths

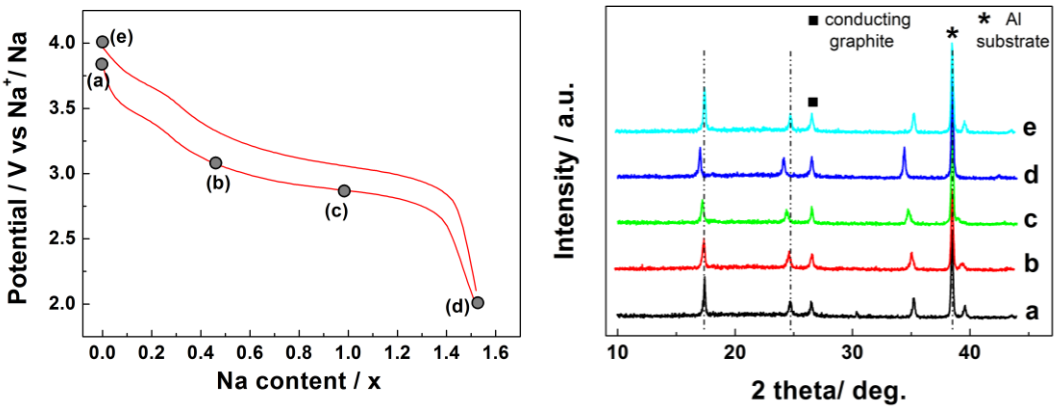

Figure S3. *Ex-situ* XRD patterns (right) of the $FeFe(CN)_6$ electrodes charged or discharged at different depths as labeled by Arabic characters on the charge-discharge curve (left).

Table 1. The lattice parameter of $FeFe(CN)_6$ electrodes during the Na^+ insertion / extraction process

	At the points labeled at CV curves	Na content (x)	lattice parameter (a)
Na^+ insertion process	a	0	10.18
	b	0.5	10.21
	c	1	10.29
	d	1.52	10.41
Na^+ extraction process	e	0	10.19