Supporting Information

High Voltage and Superior Cyclability of Indium Hexacyanoferrate Cathodes for Aqueous Na-ion Batteries Enabled by Superconcentrated $NaClO_4$ Electrolytes

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Experimental

Electrodeposited NaIn[Fe(CN)$_6$] films with high mass loading:

The electrochemical deposition of NaIn[Fe(CN)$_6$] thin film on a circular piece (Φ= 12 mm) of conductive carbon cloth was performed similar to the method for Au quartz crystals in an electrochemical glass cell in three-electrode configuration under inert argon atmosphere. In short, the substrate was submerged in an aqueous solution containing 2 mM K_3[Fe(CN)$_6$] (99%, Sigma-Aldrich), 2 mM In(III)Cl_3 (≥ 99.9%, Carl Roth) and 0.25 M Na_2SO_4 (≥ 99%, Sigma-Aldrich). The deposition was performed by means of cyclic voltammetry with a scan rate of 50 mV/s in two different potential ranges (see **Figure** S1; first 50 cycles: 0.4 – 1.05 V *vs* SSC; followed by 50 cycles: 0.4 – 1.15 V *vs* SSC). After the synthesis, the sample was dried in the cell for 1 hour in argon atmosphere. The performance of the InHCF electrode, as shown in **Figure S1B**, was investigated by galvanostatic cycling in 8 M $NaClO_4$ within the potential range from 0.4 V to 1.5 V *vs* SSC.

An approximate mass loading of 483 µg cm^{-2} was calculated for the electrode using its measured maximum capacity (28 µAh cm^{-2}, see **Figure S1B**) and the experimentally determined specific capacity for InHCF of 58 mAh g^{-1}.

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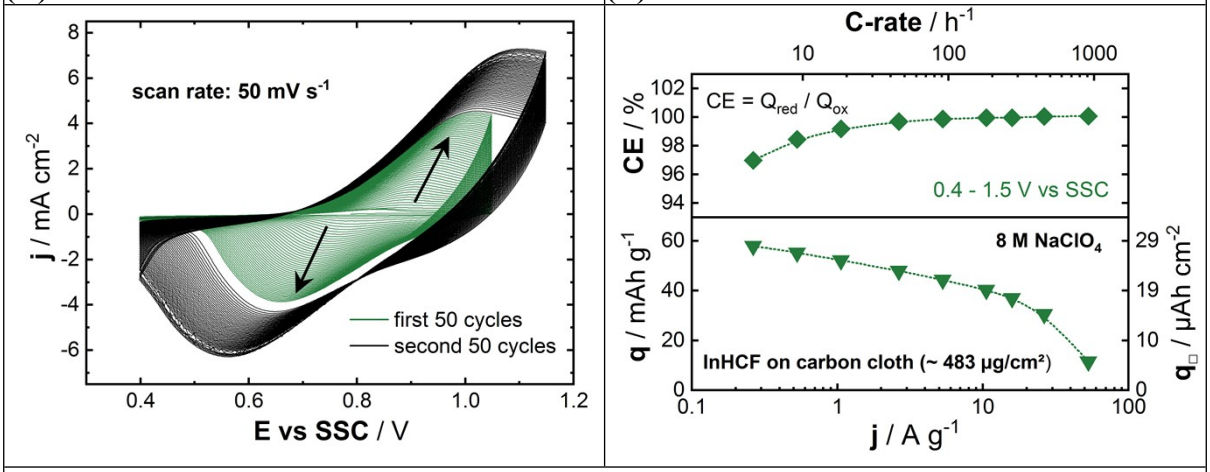

Figure S1. Electrodeposition and characterization of a $NaIn[Fe(CN)_6]$ thin film on a high surface-area carbon substrate to achieve an increased mass loading. (A) CV of the InHCF electrodeposition. (B-top) Coulombic efficiency (CE) of the deposited $NaIn[Fe(CN)_6]$ films at different C-rates. (B-bottom) Specific discharge capacity, q (left axis), and areal capacity, $q_{\square}$ (right axis), of the $NaIn[Fe(CN)_6]$ films at different current densities. An approximate mass loading of 483 µg cm^{-2} was calculated assuming a specific capacity of 58 mAh g^{-1}. The dotted lines in (B) serve as a guide to the eye.