

Supporting information

Determination of cesium using nickel hexacyanoferrate by stripping voltammetry

Zexiang Yu^a, Hu Fu^a, Wenhua Xu^c, Lihua He^{a,b}, Zhongwei Zhao^{a,b,*}

- School of Metallurgy and Environment, Central South University, Changsha, Hunan 410083, China.
- Key Laboratory of Hunan Province for Metallurgy and Material Processing of Rare Metals, Changsha, Hunan 410083, China.
- Zhongyuan Critical Metals Laboratory, Zhengzhou University, Zhengzhou 450001, China.

*Emails: zhaozw@csu.edu.cn

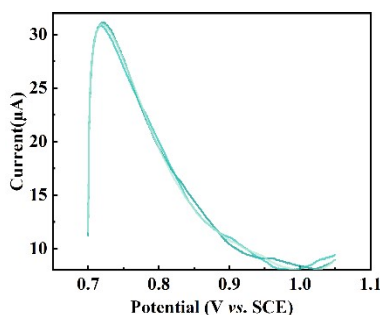


Figure S1 Three consecutive linear scanning voltammograms for stabilization of electrodes.

Experimental condition: standing for 120 s in different solutions, followed by LSV from 0.7 to 1.05 V vs. SCE at scan rate of 5 mV/s.

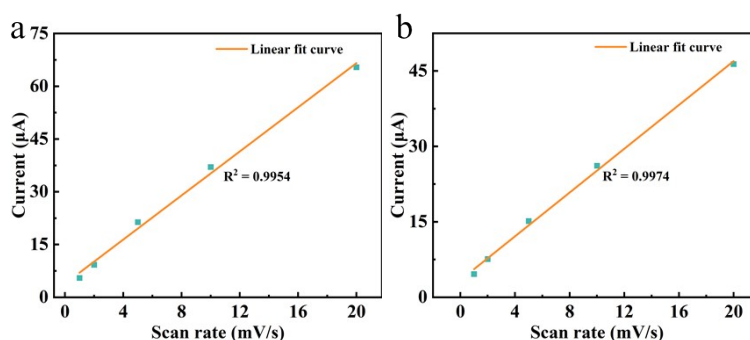


Figure S2 Plot of the respective LSV peak currents against scan rate. (a) generated from Fig. 5a;(b) generated from Fig. 5d.

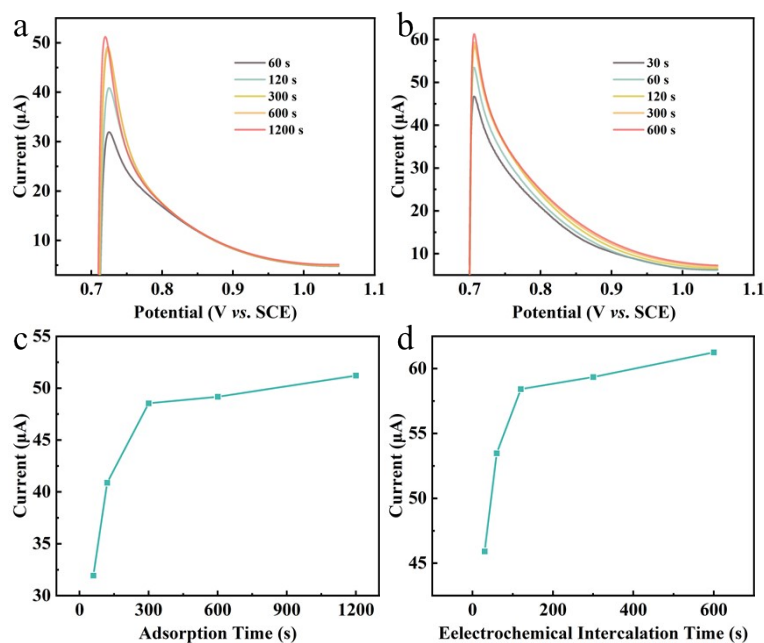


Figure S3 (a) LSVs of the NiHCF-modified electrode immersed in 1 mmol/L CsCl after vary times of adsorption at a scan rate of 5 mV/s. (b) LSVs of the NiHCF-modified electrode immersed in 1 mmol/L CsCl after vary times of electrochemical intercalation at a scan rate of 5 mV/s. (c) plot of the respective LSV peak currents against the adsorption time generated from figure S2a. (d) plot of the respective LSV peak currents against the electrochemical intercalation time generated from figure S2b.

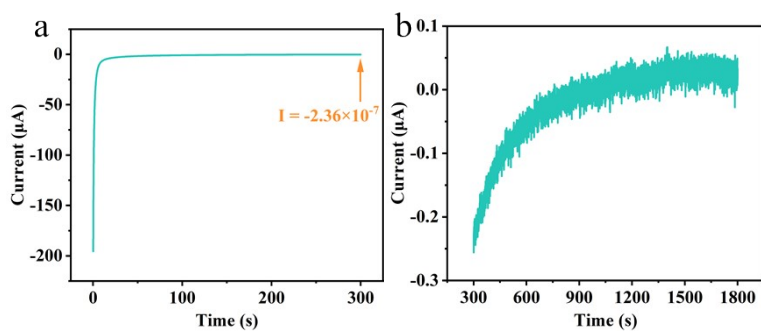


Figure S4 Plot of peak current versus electrochemical intercalation time. (a) the first 300 s. (b) 300 – 1800 s. Experiment conditions: working electrode potential=0.7V vs. SCE

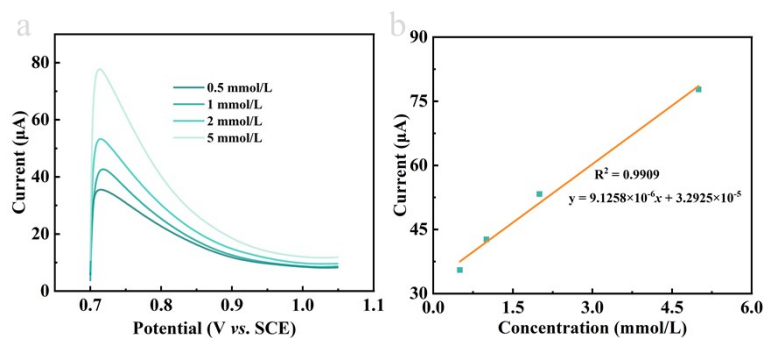


Figure S5 (a) LSVs of the NiHCF-modified electrode immersed in CsCl solution of different concentrations after electrochemical intercalation for 120 s at a scan rate of 5 mV/s, and all solutions contained 2.5 mmol/L of LiCl; (b) Plot of the respective LSV peak currents against the Cs⁺ concentration generated from Fig. S4a.

Table S1 Peak current of the blank control groups

No.	1	2	3	4	5	6	7
Peak current (μA)	11.92	11.85	12.93	13.15	13.45	13.58	13.68

Experimental conditions: The electrode was left for 300 s to stabilize, and the potential was left at 0.7 V vs. SCE for 120 s followed by LSV from 0.7 to 1.05 V vs. SCE at a scan rate of 5 mV/s in 2.5 mmol/L pure LiCl solution.

Standard Deviation = 7.06×10^{-7}

$$\text{LOD} = \frac{3\delta}{S} \quad (\text{equation S1})$$

Where LOD represent standard deviation. δ represent standard deviation, S represent slope of the fitted line.

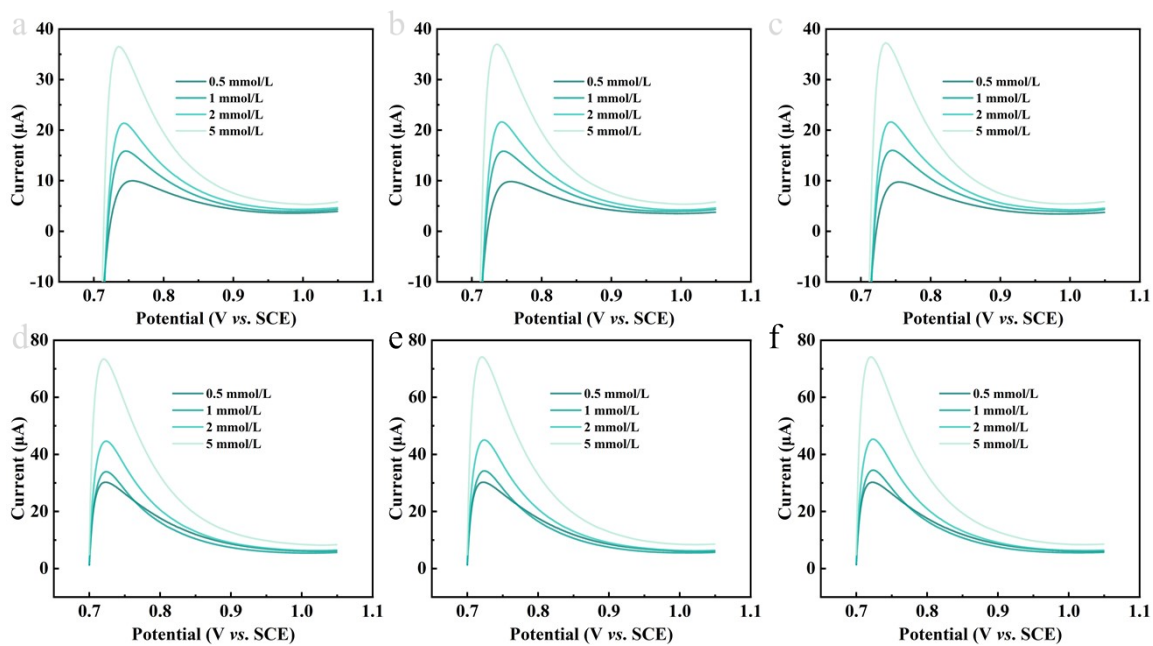


Figure S6 LSVs of the NiHCF-modified electrode immersed in CsCl solution of different concentrations after adsorption for 300 s at a scan rate of 5 mV/s. (a) group 1 (b) group 2 (c) group 3; LSVs of the NiHCF-modified electrode immersed in CsCl solution of different concentrations after electrochemical intercalation for 120 s at a scan rate of 5 mV/s. (d) group 1 (e) group 2 (f) group 3.