

Exfoliation and Restacking Route to Keggin- Al_{13} - Treated Layered Ruthenium Oxide for Enhanced Lithium Ion Storage Performance

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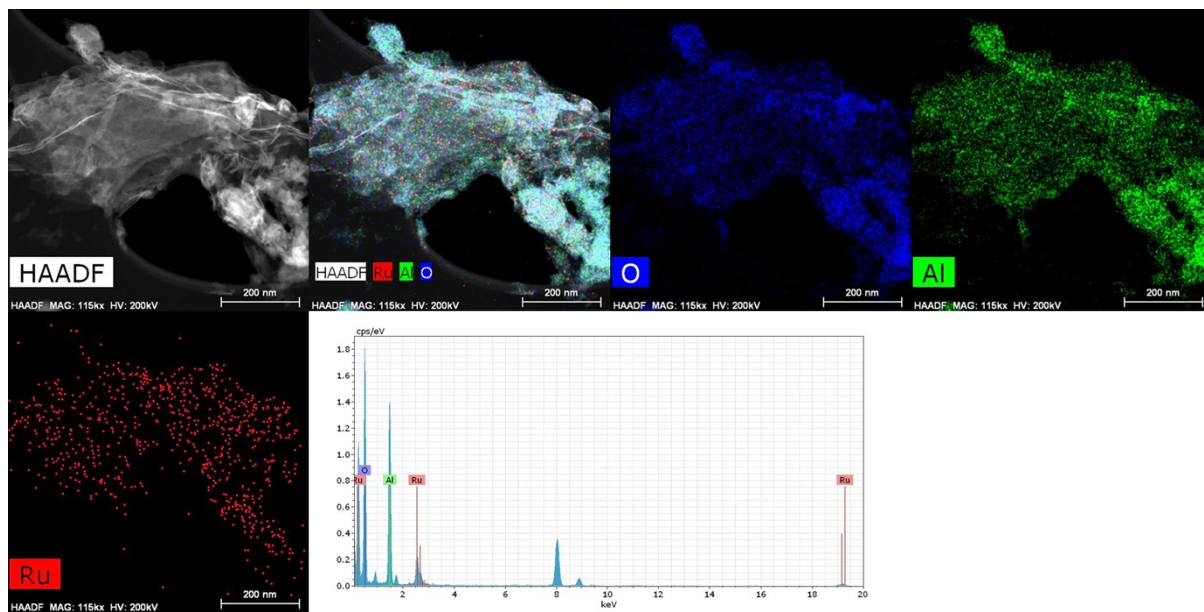


Fig. S1 HAADF-STEM images of AR-60; Elemental mapping image and EDS spectrum of AR-60.

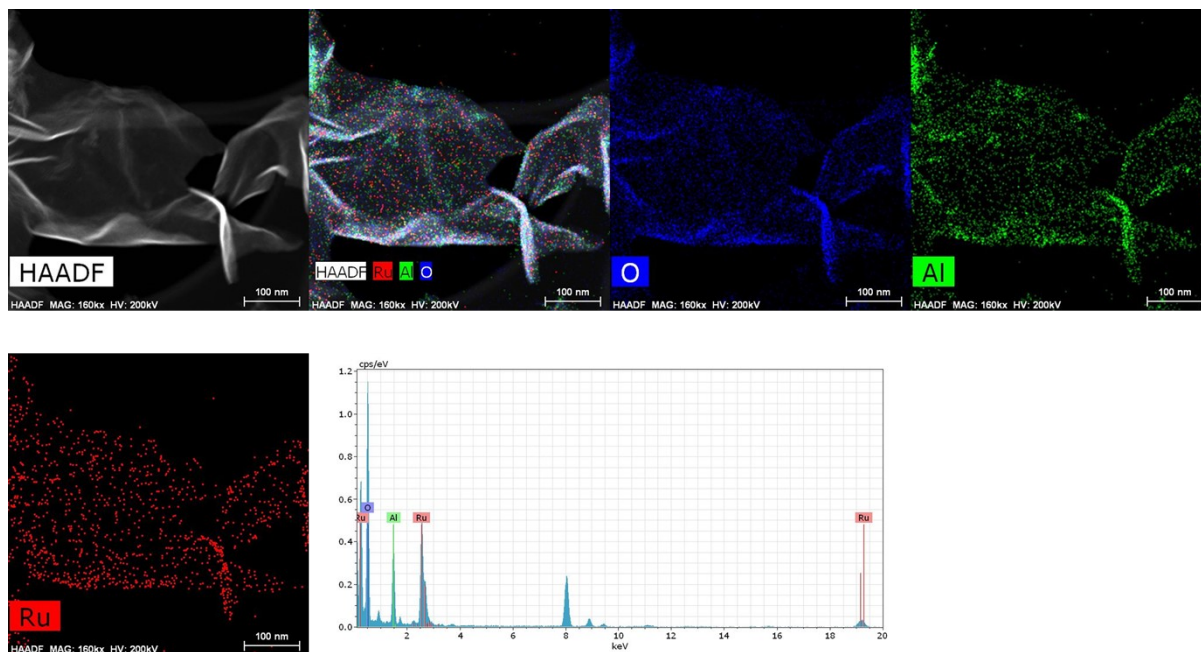


Fig. S2 HAADF-STEM images of AR-150 ; Elemental mapping image and EDS spectrum of AR-150 .

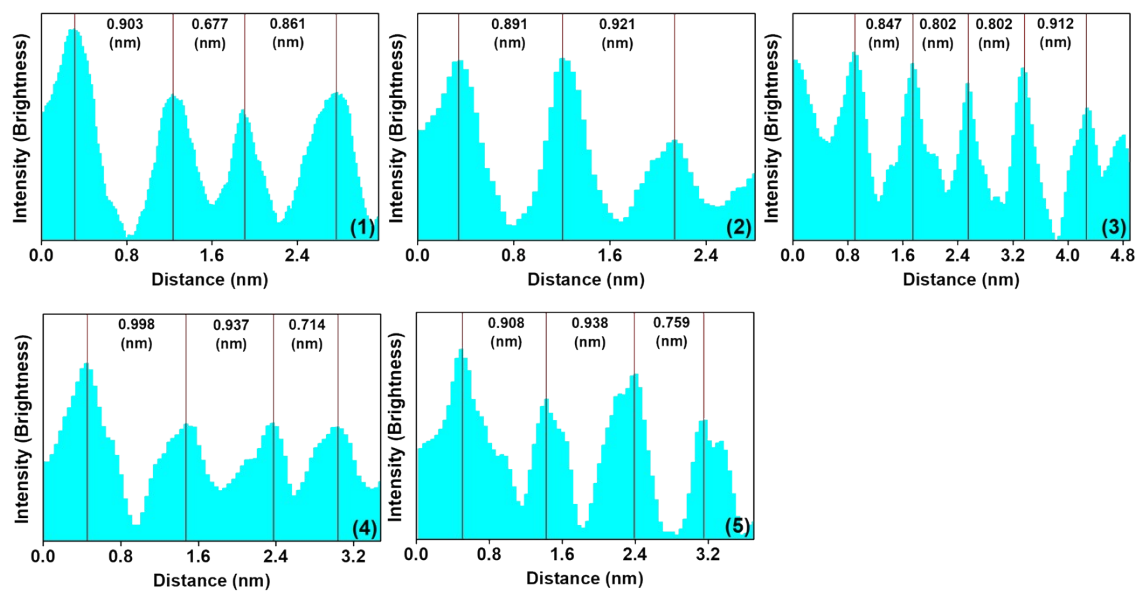


Fig. S3 Brightness profile corresponding to Fig. 5

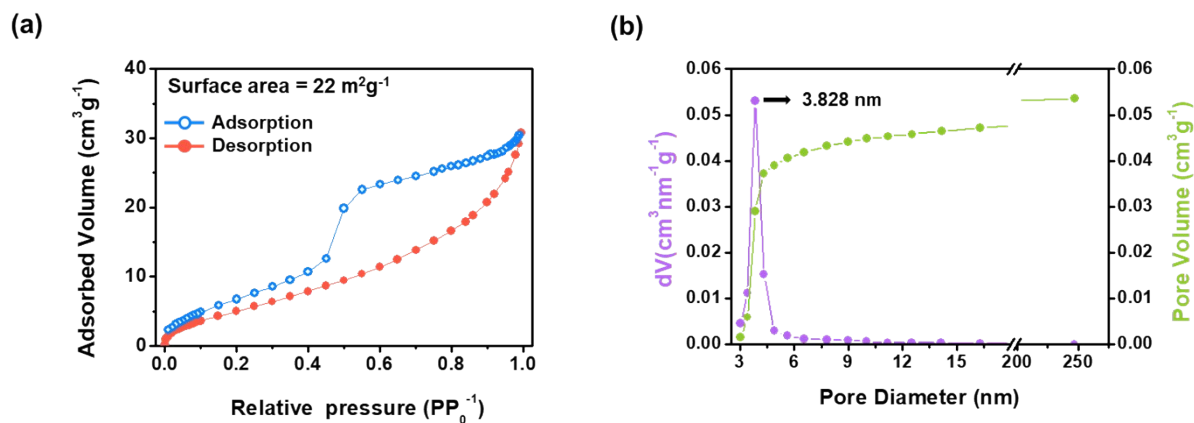


Fig. S4 (a) N_2 adsorption-desorption isotherms and (b) pore size distribution curve based on the Barrett-Joyner-Halenda (BJH) method for AR-150 .

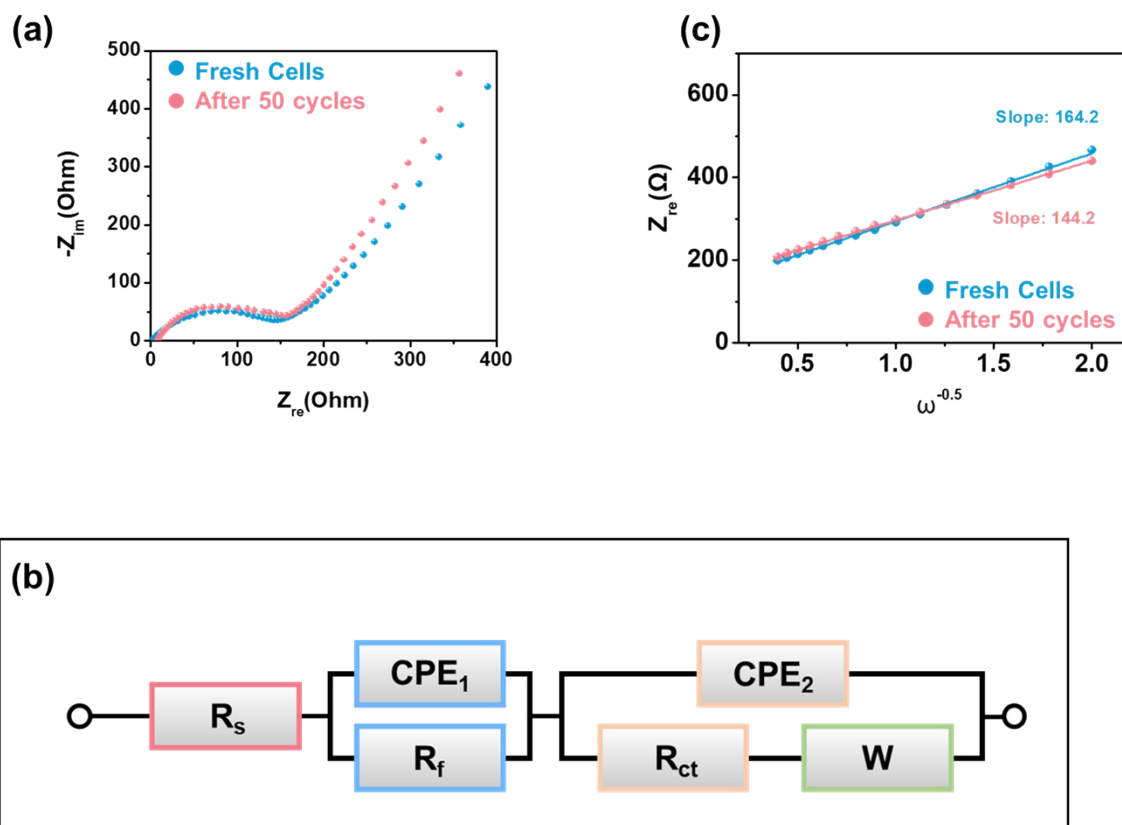


Fig. S5 EIS analysis of AR-150 anode; (a) Nyquist plots for a fresh cell and after 50 cycles; (b) The equivalent circuit model for the EIS data fitting; (c) Warburg plots for a fresh cell and after 50 cycles.

Table S1. Comparison of lithium storage performance of RuO₂-based anodes reported in previous literature; a (mA h g⁻¹); b (mA g⁻¹).

Anode materials	Capacity (Capacity ^a /Current density ^b /Cycle number)	Voltage range (vs. Li/Li ⁺)	Ref.
AR-150	418.2/50/80 379.0/100/120	0.05–2.5	This work
RuO ₂ hollow sphere	600/50/30	0.05–2.5	1
Ge/RuO ₂ nanocomposite	471/90/100	0.01–2.0	2
Hierarchical columnar RuO ₂ nanoplates	~754.9/806/60	0.1–4.0	3
NiRu–C–NF-2	350/72/40	0.005–3.0	4

Table S2. Impedance parameter values for the AR-150 electrode fitted through the equivalent circuit model in Fig S5b.

	AR-150		
	R_s (Ω)	R_f (Ω)	R_{ct} (Ω)
Fresh cell	2.7	1.9	97.1
50th cycling	7.7	10.2	87.6

References

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