

Supporting information

Buckled-layer $K_{1.39}Mn_3O_6$: a novel cathode for potassium-ion batteries

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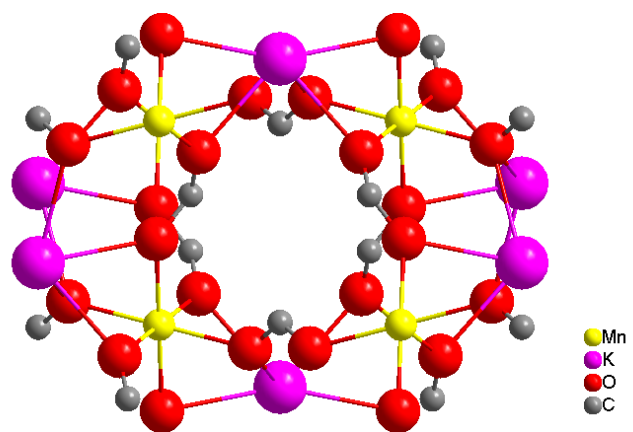


Fig. S1 Structural characterization of KM-MOF.

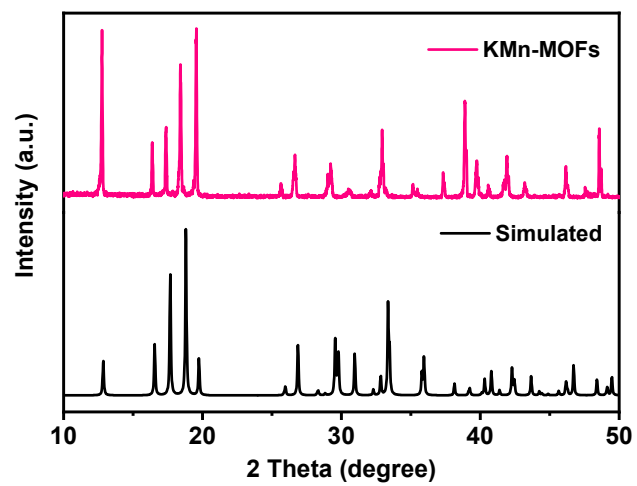


Fig. S2 XRD patterns at different temperatures of KM-MOF.

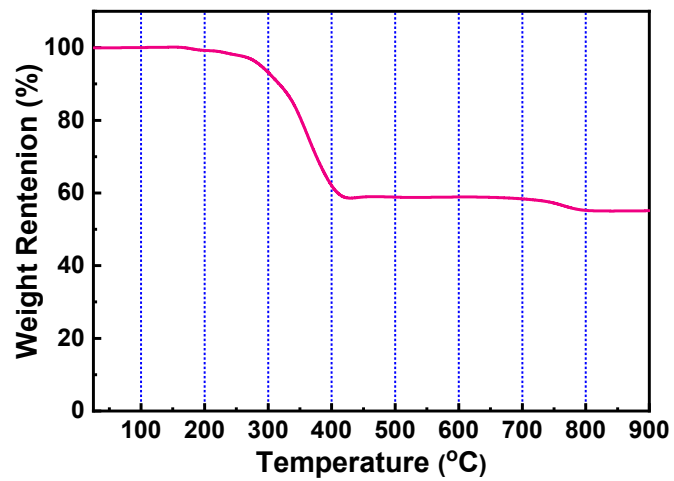


Fig. S3 TGA curve of KMn-MOF.

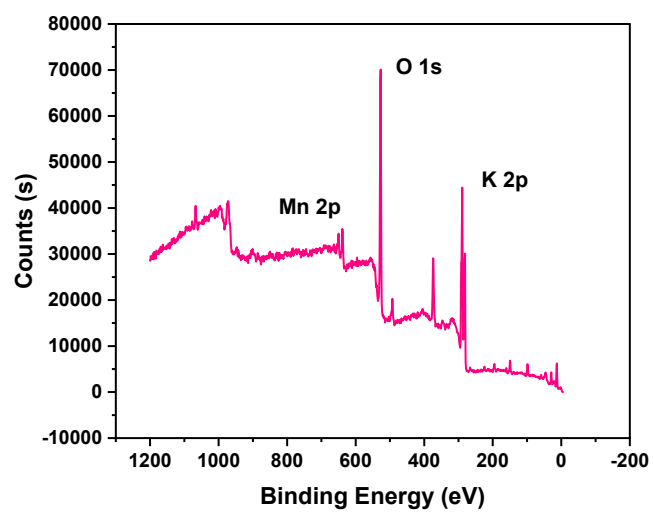


Fig. S4 XPS survey scans of BL-KMO.

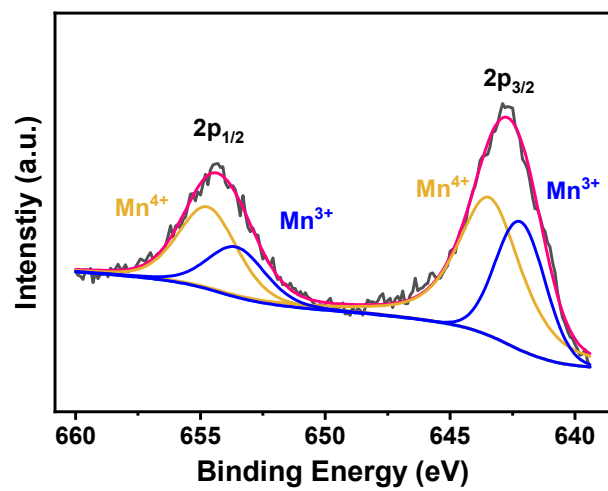


Fig. S5 High-resolution Mn2p XPS spectrum of BL-KMO.

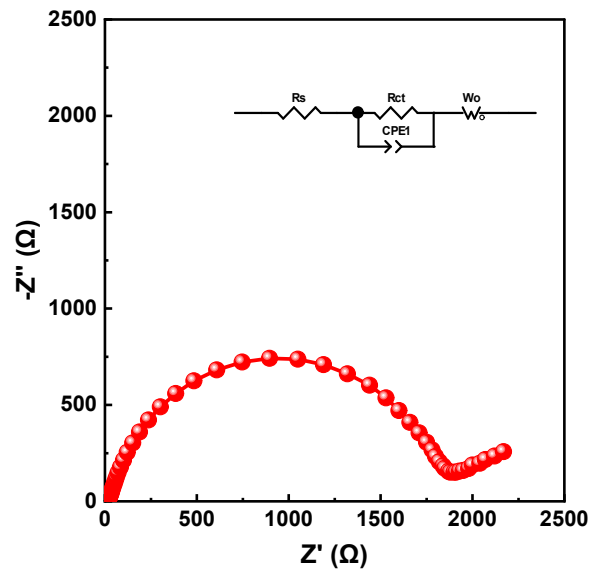


Fig. S6 Nyquist plot of BL-KMO at open-circuit voltage.

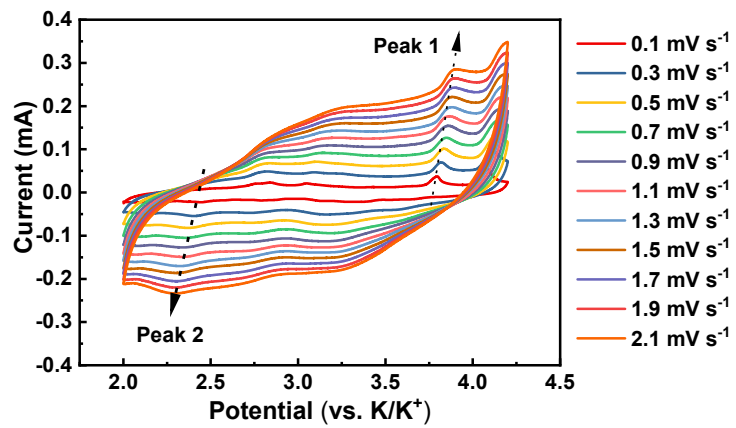


Fig. S7 CV curves of the BL-KMO cathode at different scan rates.

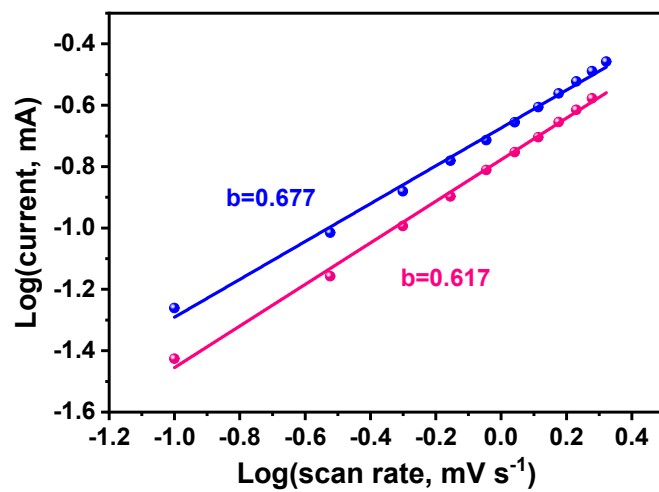


Fig. S8 Linear correlation between $\log i$ and $\log v$ of BL-KMO.

Layered oxide	Discharge capacity (mAh g ⁻¹ @ mA g ⁻¹)	Cycle performance (capacity retention@cycles)	Rate performance (mAh g ⁻¹ @ mA g ⁻¹)	References
BL-KMO	105@100 70@200	91.3%@100 99.2%@100	70@1000	This work
K _{0.5} Mn _{0.8} Cu _{0.1} Mg _{0.1} O ₂	100.1 @50	75.41%@100	91.2@500	1
P3-K _{0.5} Mn _{0.67} Fe _{0.33} O _{1.95} N _{0.05}	100@100	74.4%@100	about 50@500	2
P3-K _{0.5} Mn _{0.7} Ni _{0.3} O ₂	about 80@100	77%@300	57.1@500	3
P3- K _{0.5} Mn _{0.85} Co _{0.05} Fe _{0.05} Al _{0.05} O ₂	90@50	/	61.9@500	4
KMOLi10	90.71 @100	84.04%@100	53.7@5C	5
P3-K _{0.5} Mn _{0.8} Co _{0.2} B _{0.1} O ₂	86.1@200	87.1%@100	58.3@5C	6
P3-K _{0.45} Rb _{0.05} Mn _{0.85} Mg _{0.15} O ₂	95.1@50	81%@100	about 50@500	7
P3- K _{0.48} Mn _{0.4} Co _{0.6} O ₂	64@C/20	82%@30	24@1C	8
P2-K _{0.44} Ni _{0.22} Mn _{0.78} O ₂	82@100	67%@500	58@500	9
P2-K _{0.75} Mn _{0.8} Ni _{0.1} Fe _{0.1} O ₂	80@100	70%@200	62@1000	10

Tab. S1 Electrochemical performance comparison of LTMOS in KIBs in this work and the literature.

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