Electronic Supplementary Material

A high-capacity and long-lifespan SnO_2@K-MnO_2 cathode material for aqueous zinc-ion batteries

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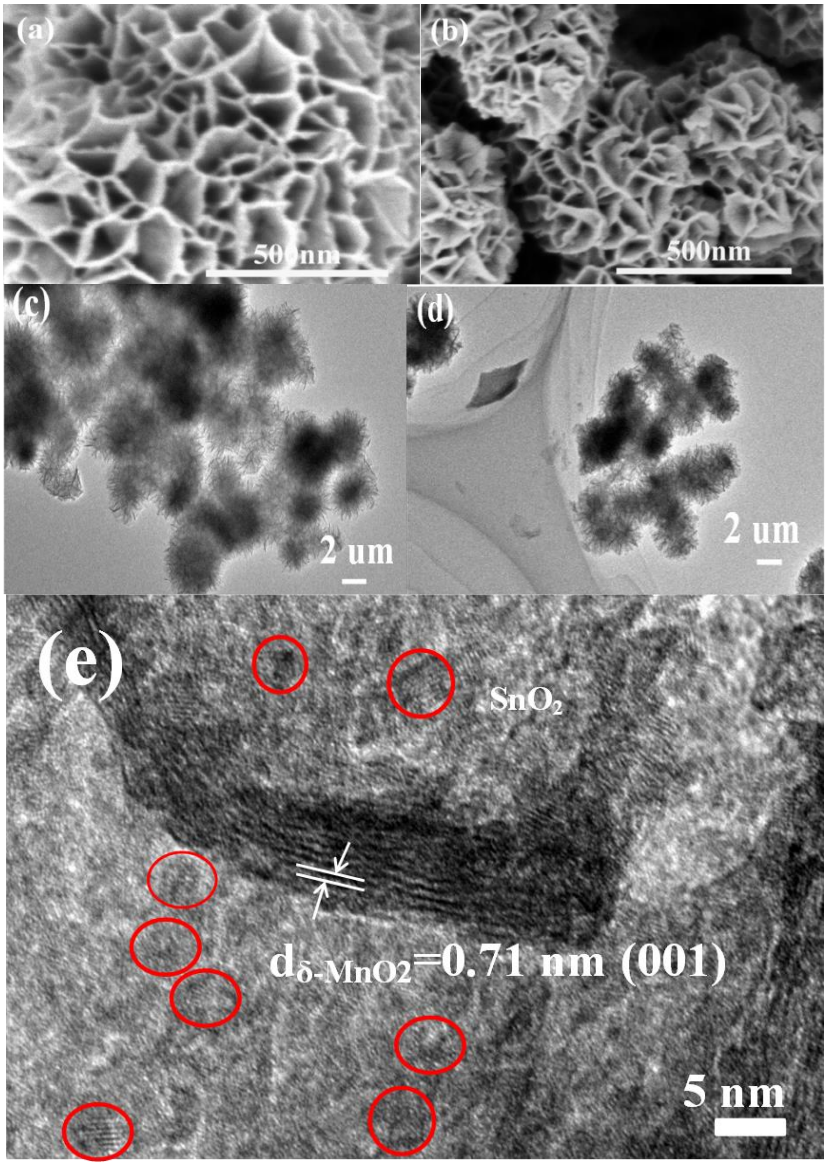

Fig. S1 SEM images of **(a)** SMO-0 and **(b)** SMO-2. TEM images of **(c)** SMO-0 and **(d)** SMO-2. **(e)** HRTEM image of SMO-2.

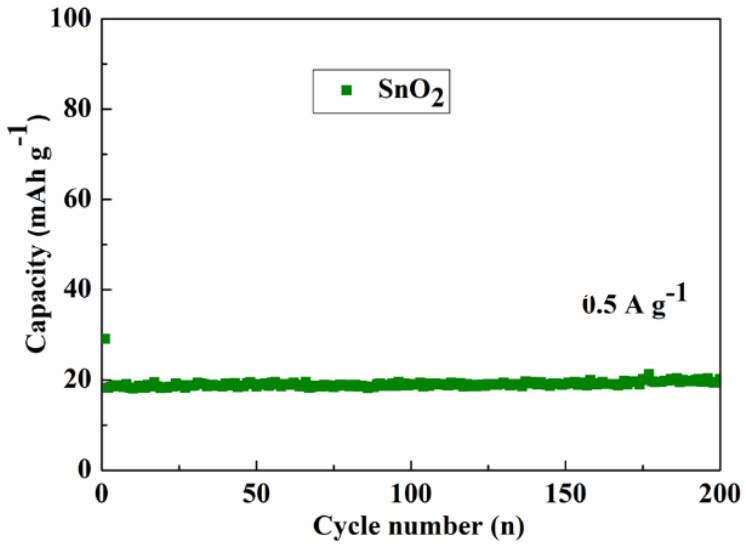

Fig. S2 Cycle performance of the Zn//SnO_2 battery at the current density of 0.5 A·g^{-1}.

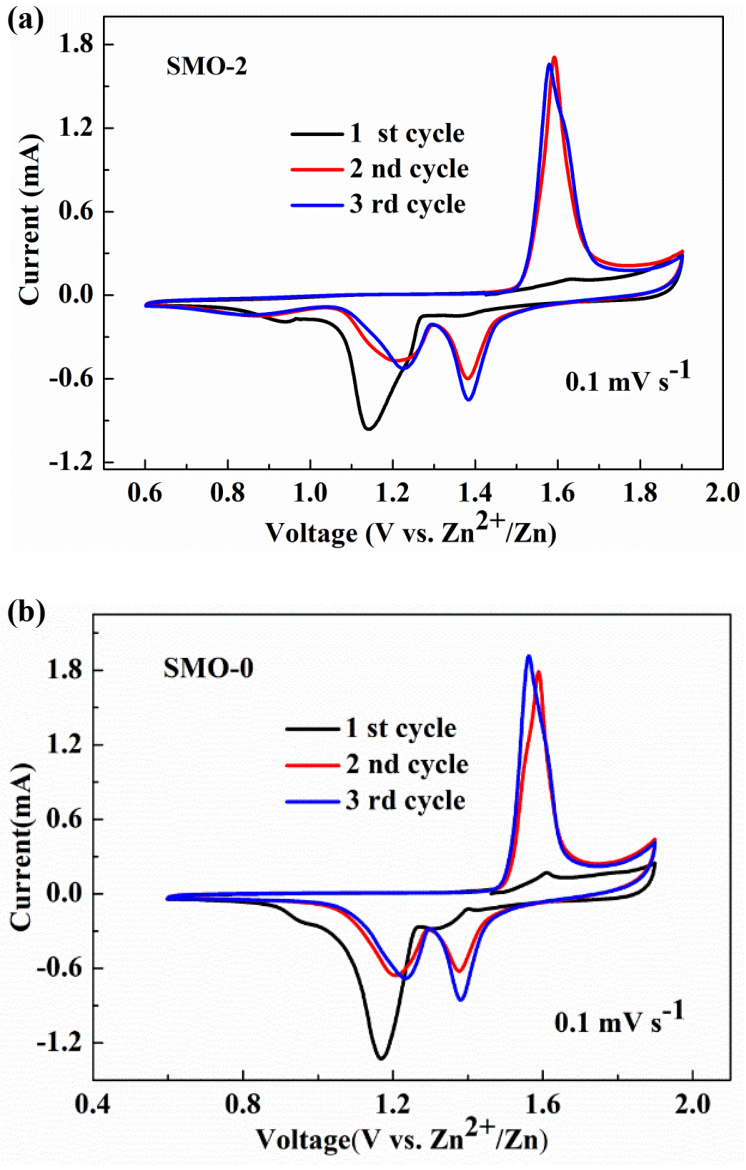

Fig. S3 First three-cycle CV curves of **(a)** Zn//SMO-2 and **(b)** Zn//SMO-0 cathodes at 0.1 mV·s^{-1}.

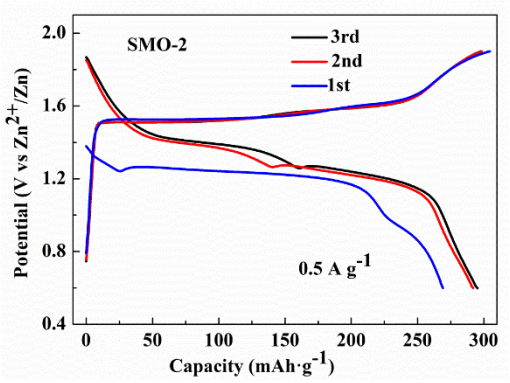

Fig. S4 First three discharge/charge profiles of Zn//SMO-2 at 0.5 A·g^{-1}.

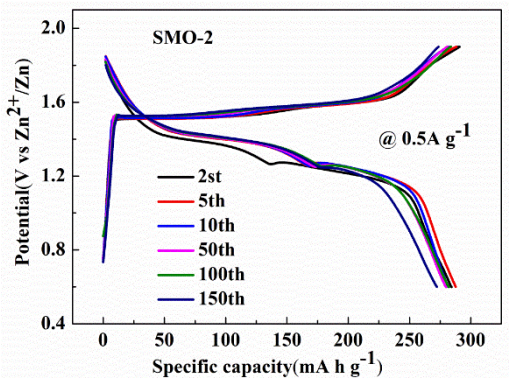

Fig. S5 Discharge/charge profiles of Zn//SMO-2 at 0.5 A·g^{-1} upon different cycling operations.

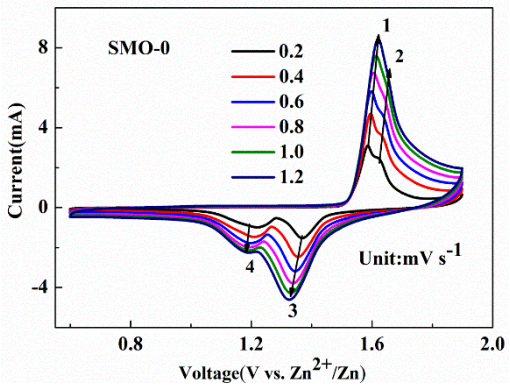

Fig. S6 CV curves of the SMO-0 cathode at various scan rates.

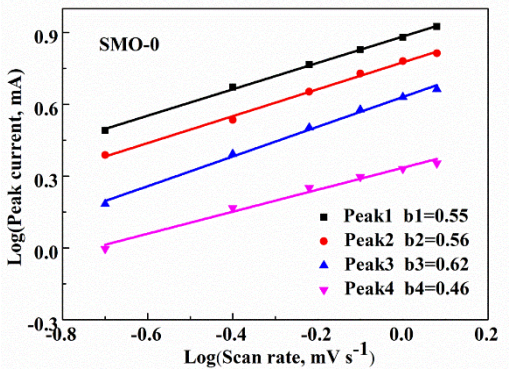

Fig. S7 Relationship between peak current and scan rate of the SMO-0 cathode.

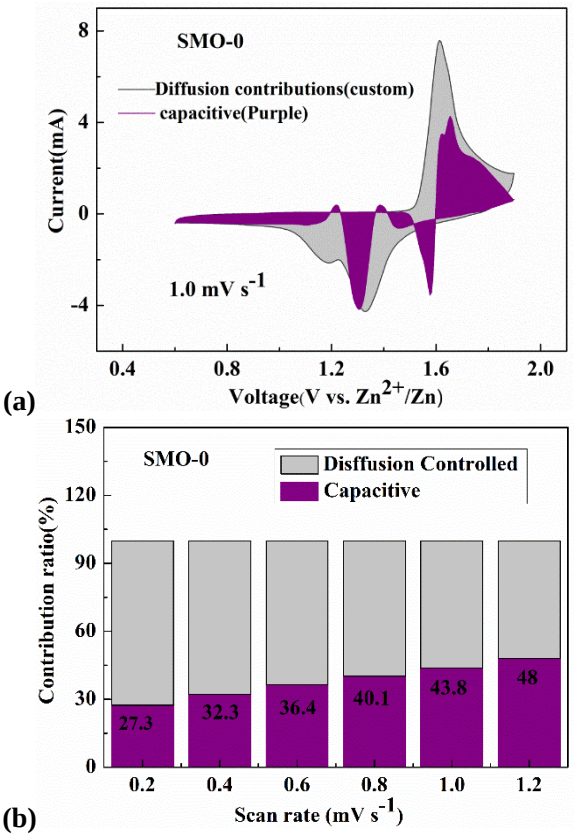

Fig. S8 (a) Capacitive behaviors and intercalation reaction contributions at 1.0 $mV \cdot s^{-1}$ of the SMO-0 cathode. **(b)** Diffusion and capacitance contributions at different scan rates of the SMO-0 cathode.

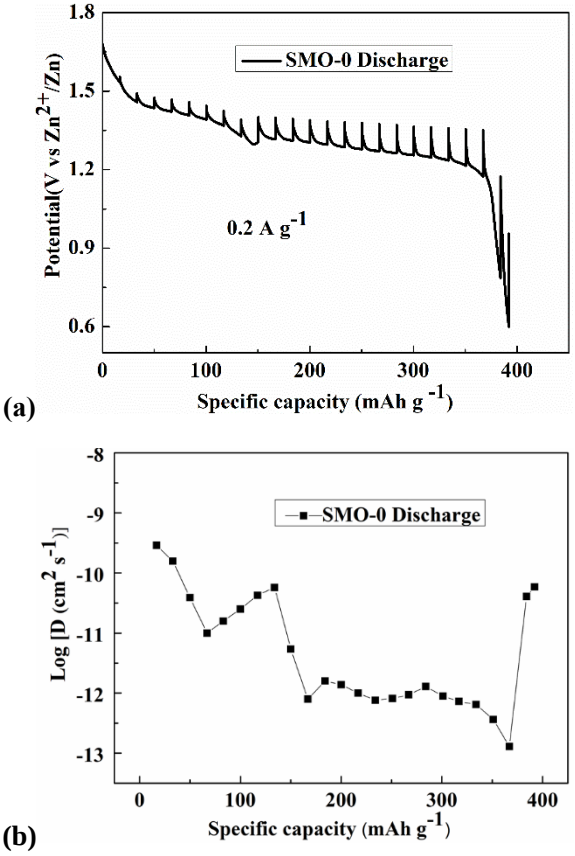

Fig. S9 (a) Discharge GITT curves of the SMO-0 cathode at 0.2 $A \cdot g^{-1}$. **(b)** Relationship between the H^+/Zn^{2+} diffusion coefficient and the specific capacity.

Table S1 Element contents in SMO-2 determined by ICP-OES

Sample	c(Sn)/(mg·L^{-1})	c(K)/(mg·L^{-1})	c(Mn)/(mg·L^{-1})
SMO-2	489.6	135.9	2661.5