Supplementary Materials

Monodisperse Hierarchical N-Doped Carbon Microspheres with Uniform Pores as a Cathode Host for Advanced K–Se Batteries

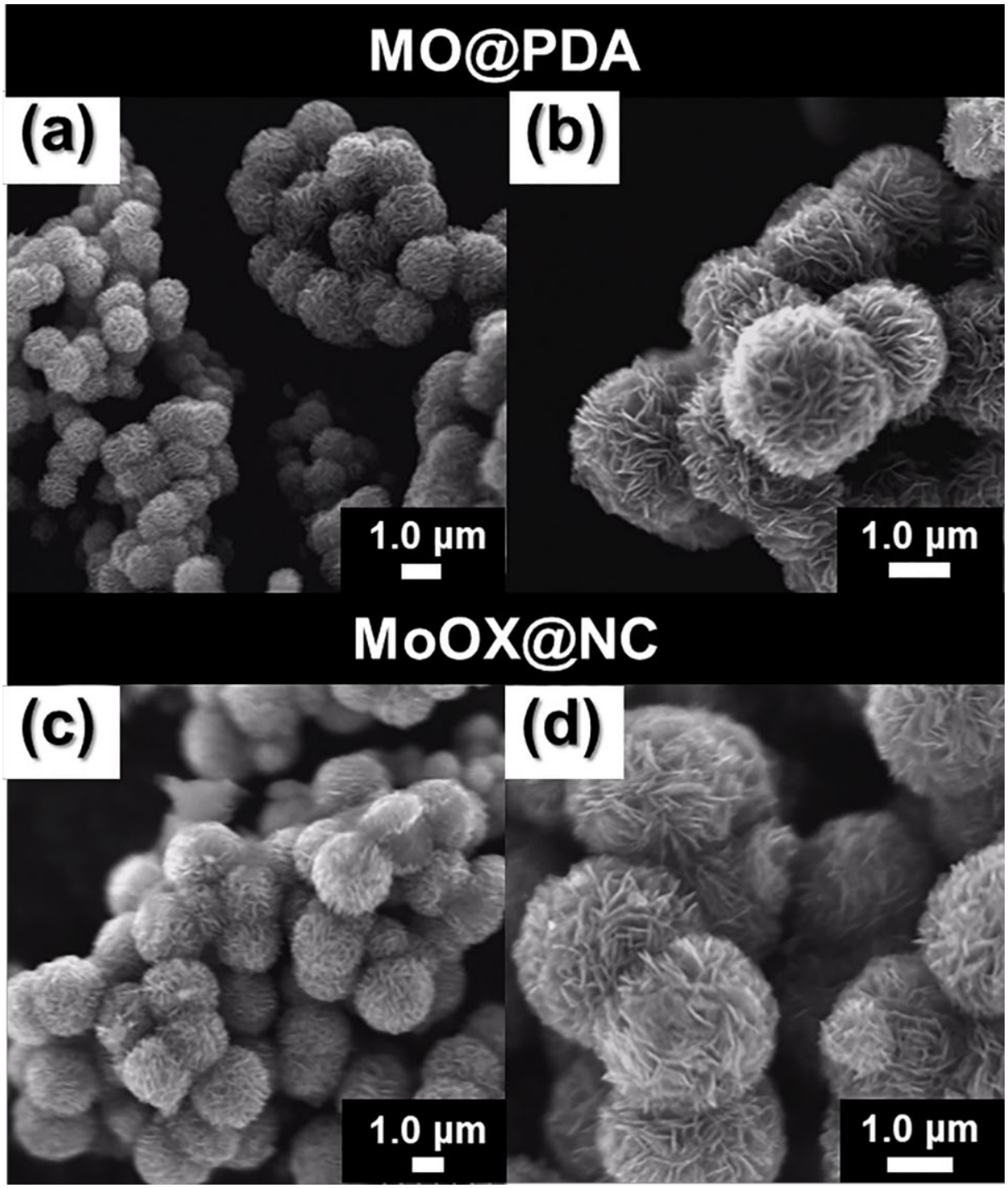


Figure S1. SEM images of (**a**,**b**) Mo@PDA and (**c**,**d**) MoOX@NC.

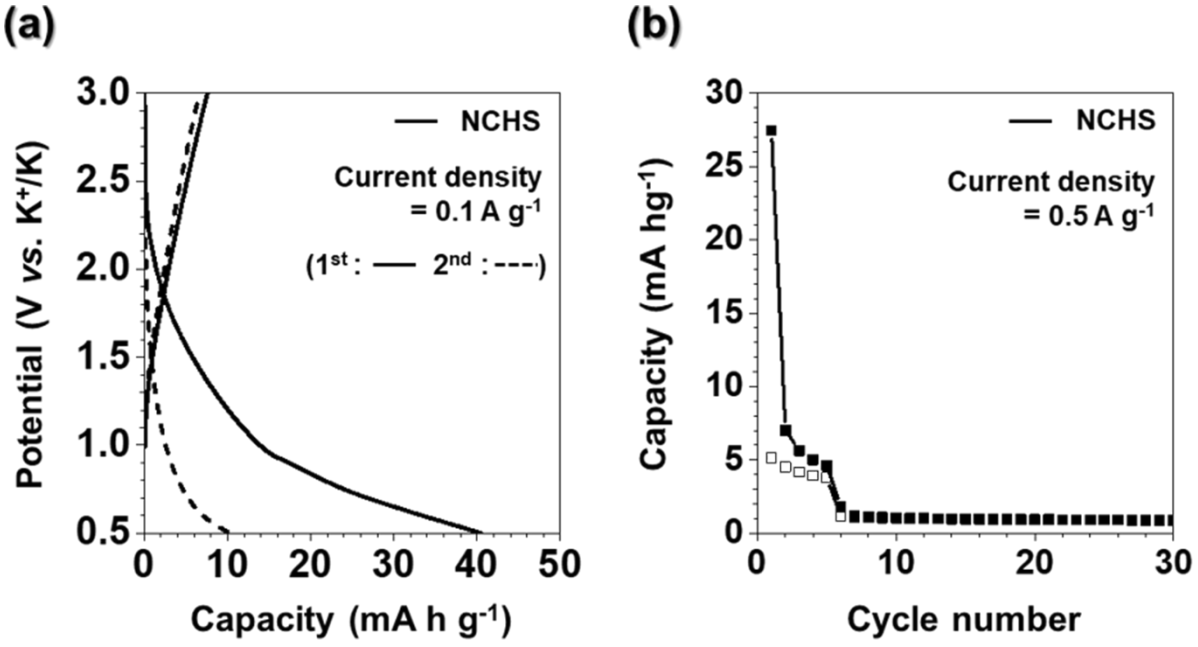


Figure S2. (**a**) the initial galvanostatic charge–discharge profiles at 0.1 A g^{-1} and (**b**) cycling stability of NCHS.

Table S1. Textural Properties of NCHS and Super P.

Sample	NCHS	Super P
S_{bet} (m^2 g^{-1})	341.94	55.71
S_{mic} (m^2 g^{-1})	252.98	4.50
$S_{mes+macro}$ (m^2 g^{-1})	88.96	51.21
V_{total} (cm^3 g^{-1})	78.562	12.8
V_{mic} (cm^3 g^{-1})	0.10	0.0030
$V_{mes+macro}$ (cm^3 g^{-1})	78.46	12.80

Table S2. Electrochemical properties of various nanostructured Se cathode host for K–Se batteries reported in previous literature.

Morphology	Se content [wt%]	Voltage window [V]	Current density [C]	Discharge capacity [mA h g^{-1}] (cycle)	Rate performance [mA h g^{-1}] (Curren density)	Ref.
Se@NCHS	60	0.5-3.0	0.5	199.4 (500th)	282 (3.0 C)	Our work
Se-O-PCS	51	0.5-3.0	0.2	402 (45th)	280 (2.0 C)	10.1016/j.jechem.2021.03.027
c-PAN-Se	60	0.7-3.3	0.1	396 (100th)	140 (10 C)	10.1016/j.nanoen.2017.03.029
NSHPC-700/Se	60	0.5-3.0	0.2	436 (120th)	137 (5.0 C)	10.1021/acsnano.0c04870

Se-W_2N/C	45	0.5-3.0	1.48	286 (500^{th})	345 (3.0 C)	10.1021/acs.energyfuels.3c02328
Se@NOPC-CNT	60	0.5-3.0	0.18	544 (700^{th})	273 (9.19 C)	10.1002/adma.201805234