Electronic Supplementary Material (ESI) for CrystEngComm.

Supporting Information

Morphological and Chemical Tuning of Lead Halide Perovskite Mesocrystal as Long-life Anode Materials in Lithium-Ion Batteries

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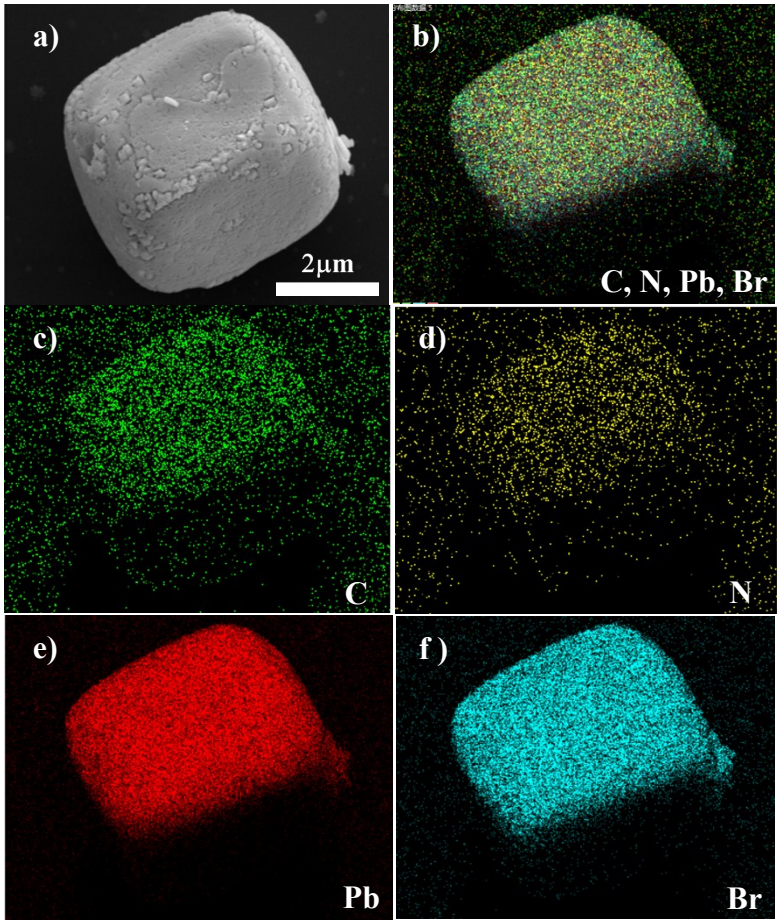


Fig. S1. SEM images (a) and (b-d) the EDS mapping spatially resolved C N, Pb and Te elemental mapping of the $MAPbBr_3$ cubic microcrystal.

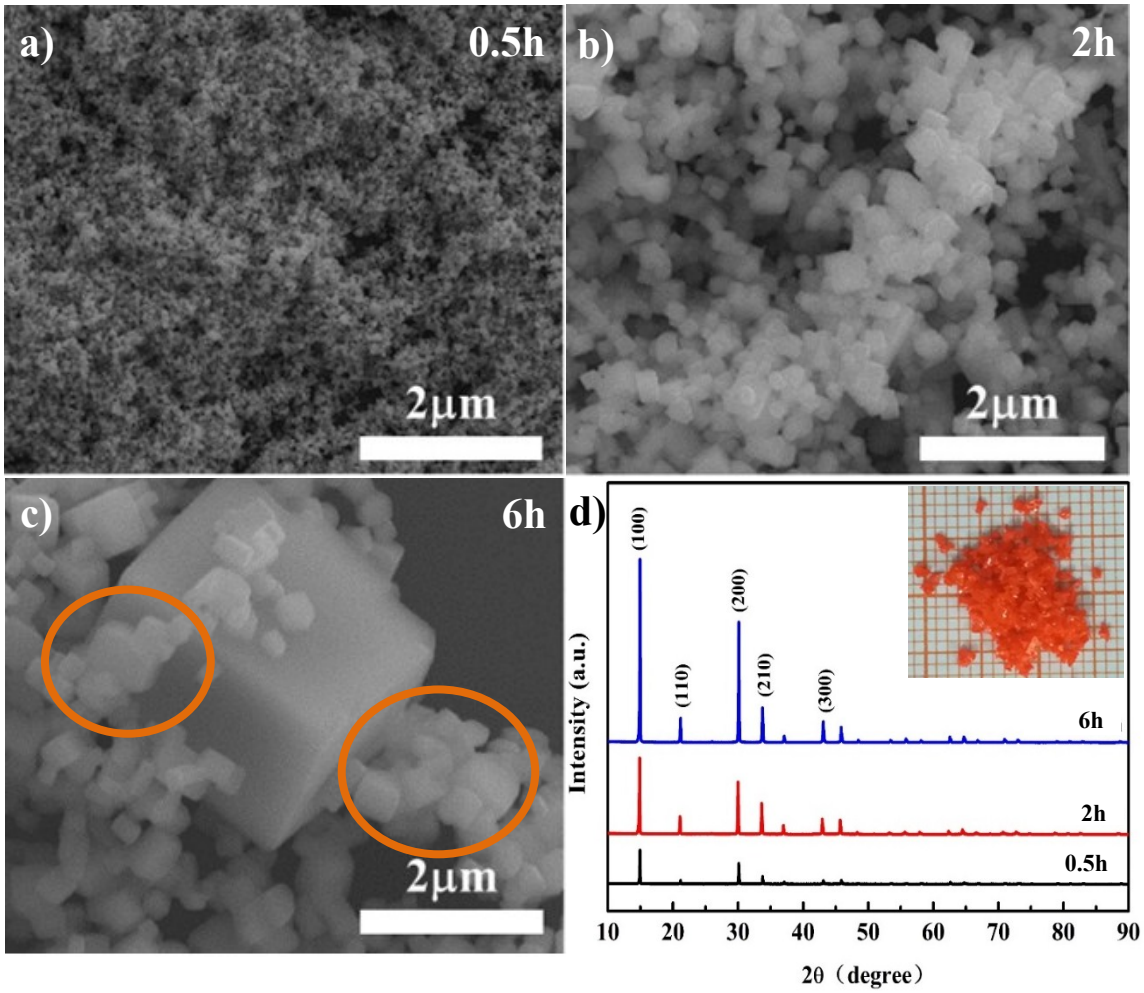


Fig. S2. SEM images of the $MAPbBr_3$ specimens prepared at different synthesis stages for (a) 0.5 h, (b) 2 h, and (c) 6 h. (d) All the XRD patterns are identical to those in Figure 1. The inset is the optical image of $MAPbBr_3$ powder prepared for 6h.

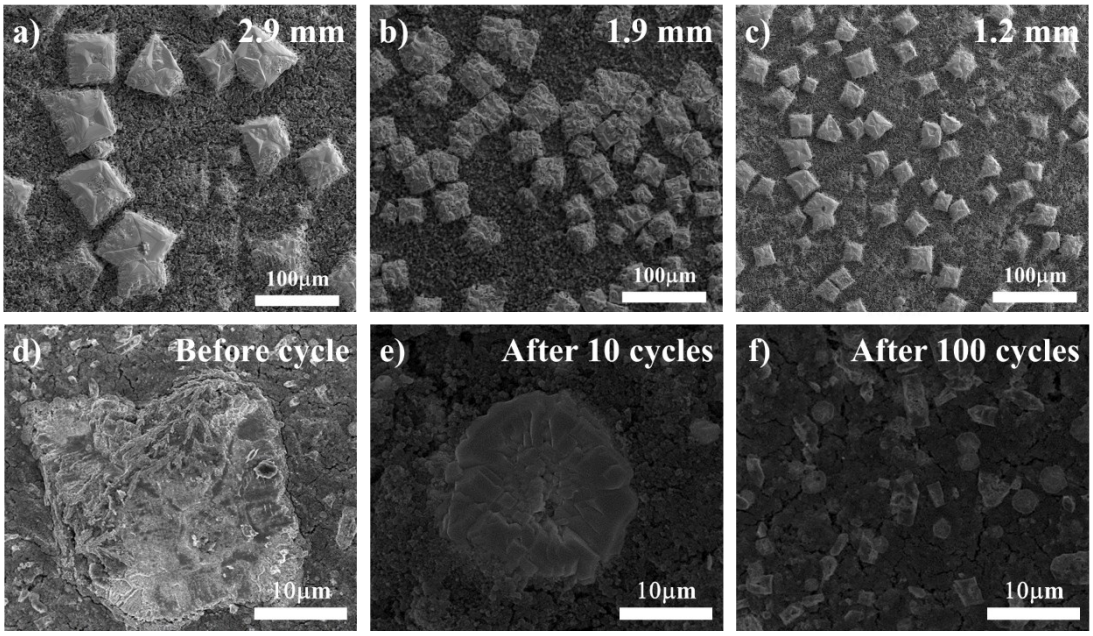
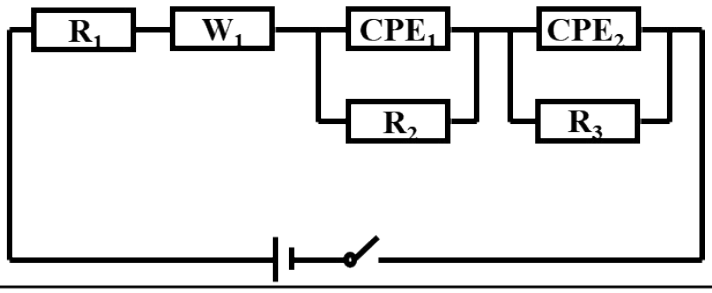


Fig.S3 SEM images of the as-prepared $CH_3NH_3PbBr_3$ electrodes with different magnifications before and after different cycling test.



	R_1 (Ω cm^{-2})	W_1 (Ω cm^{-2})	R_2 (Ω cm^{-2})	CPE_1 (S $s^{1/2}$ cm^{-2})	R_3 (Ω cm^{-2})	CPE_2 (S $s^{1/2}$ cm^{-2})
Result (2.9 mm)	10.086	354.9	45.23	3.26×10^{-5}	45.23	4.26×10^{-5}
Error (2.9 mm)	3.267	6.594	1.88	3.569	7.351	0.927
Result (1.9 mm)	8.734	167.4	14.54	2.63×10^{-5}	29.31	3.87×10^{-5}
Error (1.9 mm)	2.432	4.279	6.594	1.871	2.127	4.703
Result (1.2 mm)	6.901	13.3	11.83	2.55×10^{-6}	24.392	1.52×10^{-6}
Error (1.2 mm)	2.02	3.181	5.174	4.269	1.249	0.271

Fig.S4 The electrical equivalent circuit model and the corresponding data obtained from the equivalent circuit model.

Table S1 Comparison of some reported relevant $MAPbBr_3$ composite anode.

Electrode materials	1st discharge capacity (mA h g^{-1})	Current density	Cyclability mA h g^{-1}/ cycles times	Applied potential range (V)	Ref.
$MAPbBr_3$	331.8	200 mA·g^{-1}	121/200	0.01-1.5	[1]
$MAPbI_3$	43.6	200 mA·g^{-1}	15/100	0.01-1.5	[1]
$MAPbBr_3$	412	50mC	-	0.01-1.8	[2]
$MAPbBr_3$	134.3	20 mA·g^{-1}	-	0.1-2.0	[3]
$(MA)_2(PA)_2Pb_3Br_{10}$	425	200 mA g^{-1}	-	0-1.5	[4]
$CH_3NH_3PbI_{3-x}Br_x$	500	200 mA g^{-1}	-	0-1.5	[4]
$MAPbBr_3$	330	300 mA g^{-1}	150-200/10	0.2-2	[4]
$MAPbBr_3$	200	200 mA g^{-1}	-	0-1.6	[5]
1.2 mm $MAPbBr_3$	164.9	300 mA g^{-1}	124/1000	0-1.5	Our work

References:

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