

Supporting Information

Dual-protection strategy by CMK-3 coated selenium and modified separators for high-energy Al-Se batteries

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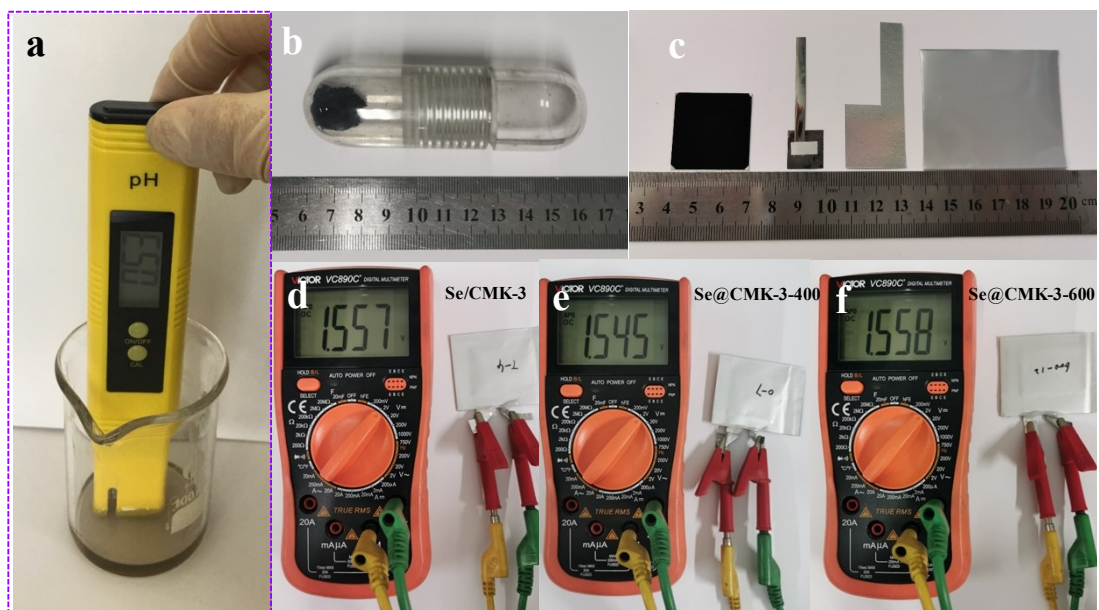


Figure S1 (a) The pH of the AlCl_3 /[EMIm]Cl electrolyte with the molar ratio of 1.3:1. (b) Sealed silica envelope. (c) The electrode materials. (d-f) The open circuit potential.

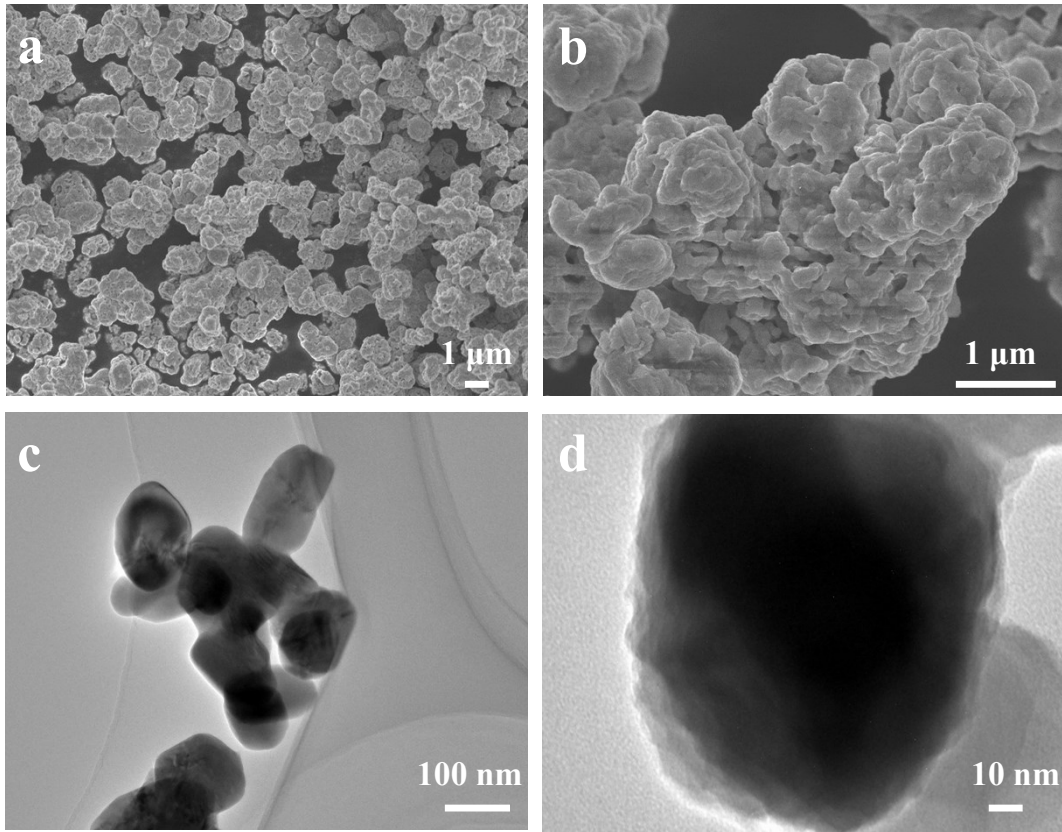


Figure S2 (a-b) SEM images of original Se. (c-d) TEM images of original Se.

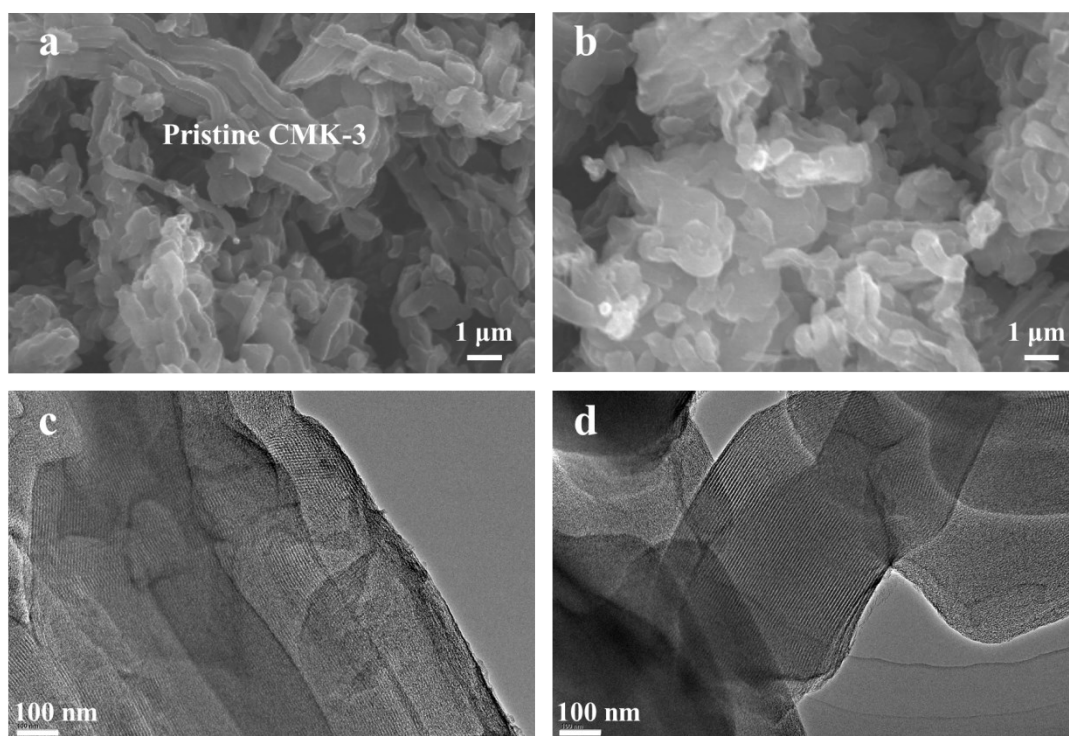


Figure S3 (a-b) SEM images of pristine CMK-3. (c-d) TEM images of pristine CMK-3.

Table S1 The Se and C contents of Se/CMK-3, Se@CMK-3-400, and Se@CMK-3-600.

Samples		C-K	Se-K
Se/CMK-3	wt%	25	75
	at%	68.67	31.33
Se@CMK-3-400	wt%	28.8	71.20
	at%	72.67	27.63
Se@CMK-3-600	wt%	35.47	64.53
	at%	78.32	21.68

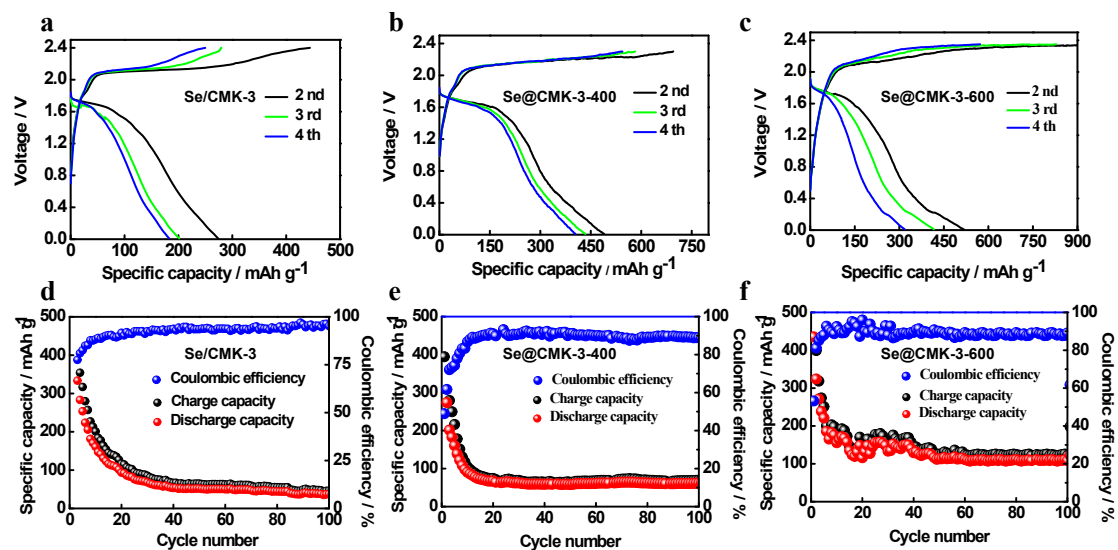


Figure S4 (a-c) The charge/discharge curves of grinding Se/CMK-3, Se@CMK-3-400, and Se@CMK-3-600 at a current density of 1000 mA g⁻¹. (d-f) The corresponding cycling performance.

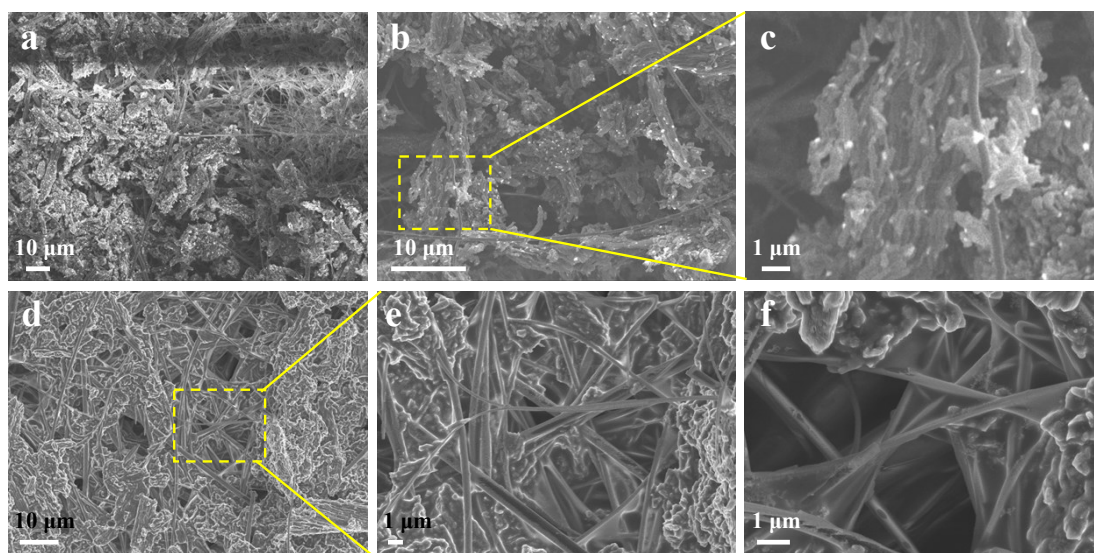


Figure S5 (a-c) SEM images of pristine CMK-3 modified separator. (d-f) SEM images of cycled CMK-3 modified separator.