

Supporting Information

Co-Mo alloy oxides decorated carbon cloth as lithium host for dendrite-free lithium metal anode

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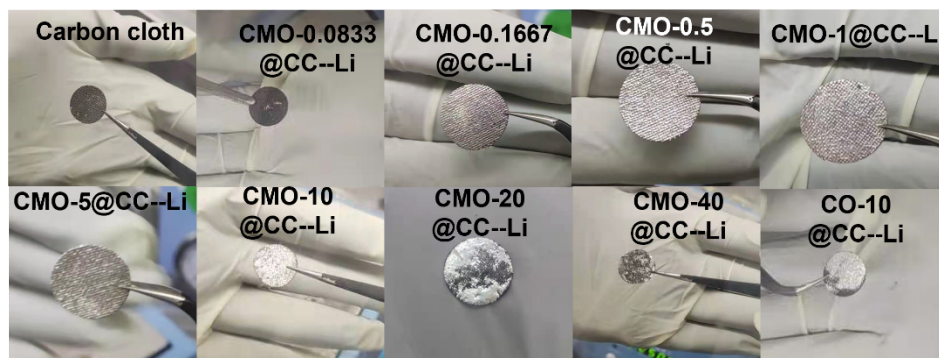


Fig. S1 Photographs of carbon cloth, CMO-T@CC-Li, (T=0.0833, 0.167, 0.5, 1, 5, 10, 20, 40 represents the time of electrochemical deposition of Co-Mo alloy. The CMO-T@CC-Li were obtained by electrodeposition of Co-Mo alloy (T min), oxidation and molten lithium infusion on the surface of carbon cloth.) CO-10@CC-Li (The CO-10@CC-Li were obtained by electrodeposition of Co (10 min), oxidation and molten lithium infusion on the surface of carbon cloth.) after thermal infusion process of molten Li.

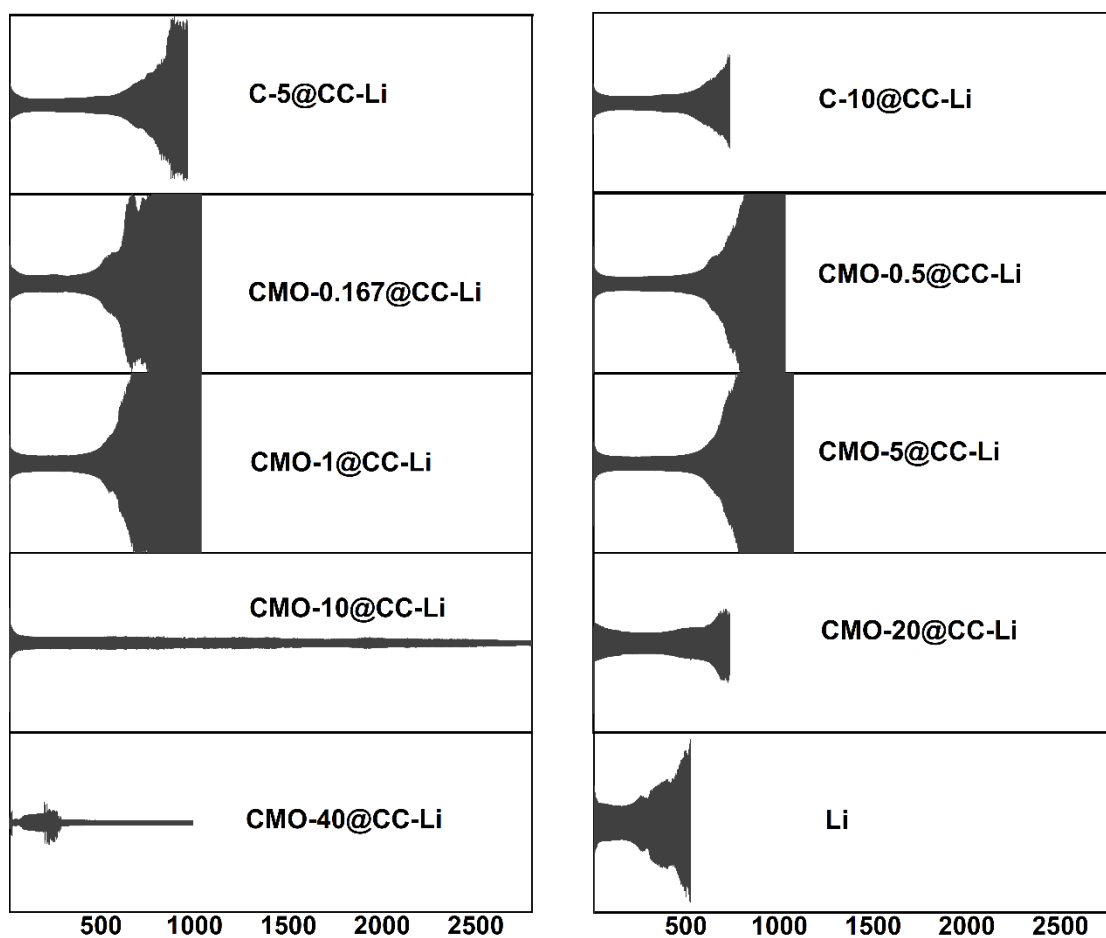


Fig. S2 Voltage profiles of (a) CO-5@CC-Li, (b) CO-10@CC-Li, (c) CMO-0.167@CC-Li, (d) CMO-0.5@CC-Li, (e) CMO-1@CC-Li, (f) CMO-5@CC-Li, (g) CMO-10@CC-Li, (h) CMO-20@CC-Li, (i) CMO-40@CC-Li and (j) bare Li in symmetric coin cells at 1 mA cm^{-2} , 1 mAh cm^{-2} .

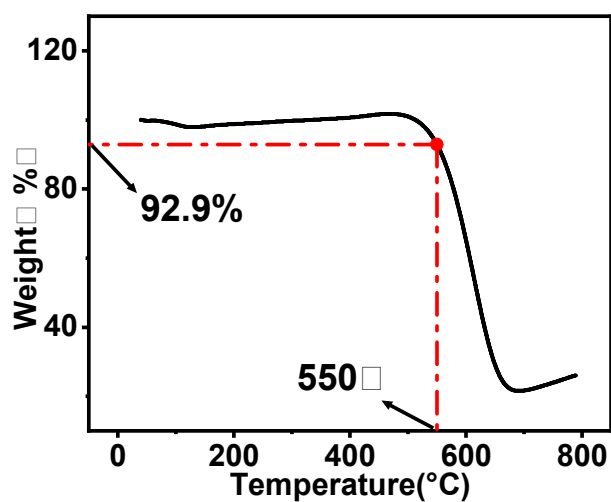


Fig. S3 Thermogravimetric curve of bare CM-10@CC under air atmosphere.

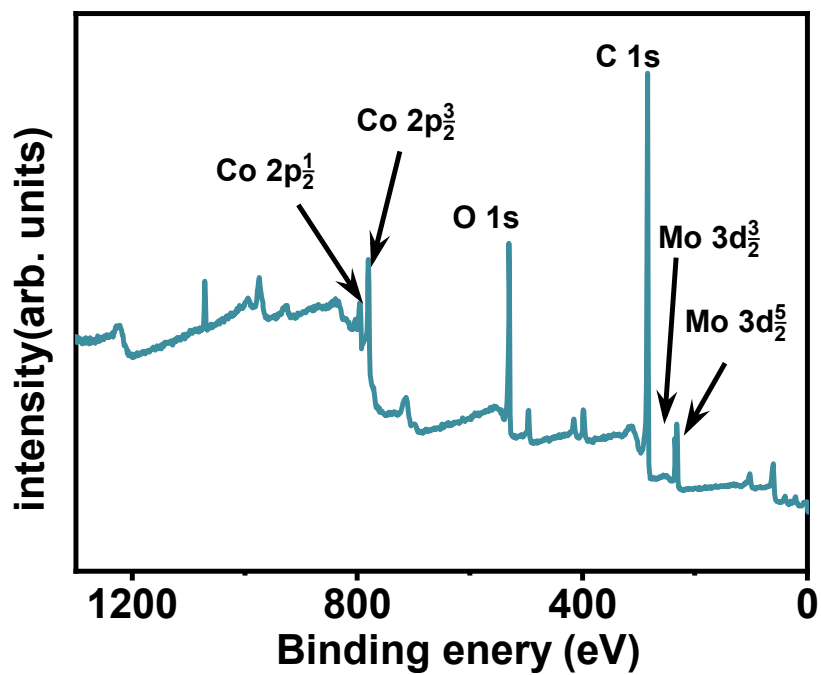


Fig. S4 XPS full survey spectrum of CMO-10@CC.

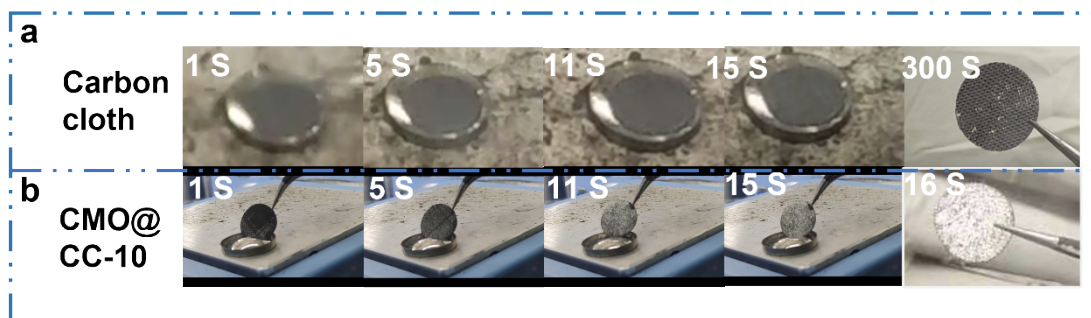


Fig. S5 (a) Photographs of molten Li infused into carbon cloth. (b) Photographs of the evolution of CMO-10@CC to CMO-10@CC-Li composite through 16 s thermal infusion process of molten Li.

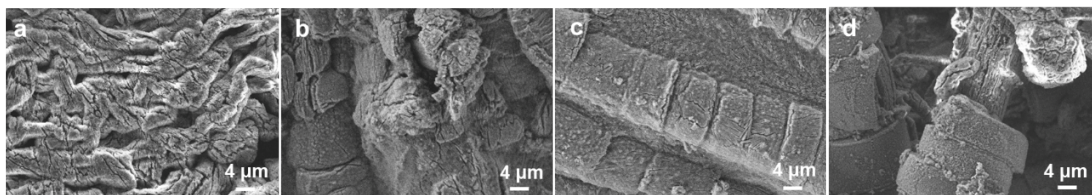


Fig. S6 SEM images of (a)bare Li, (b)CMO-5@CC-Li, and (c)CMO-10@CC-Li (d)CMO-20@CC-Li, after first cycling at 1 mA cm^{-2} 1 mAh cm^{-2} .

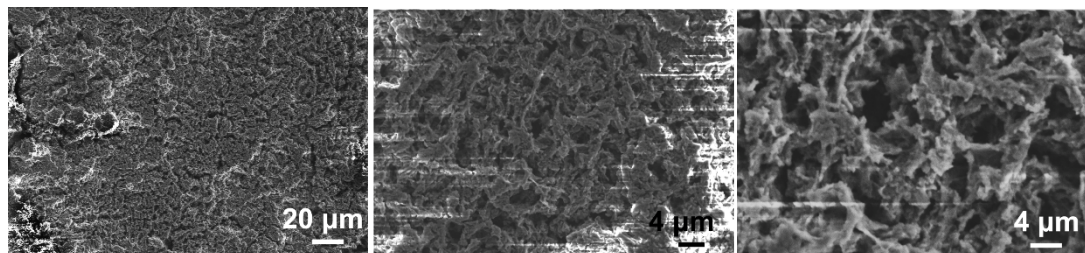


Fig. S7 Top-view SEM images of bare Li electrodes after 100 cycles at 2 mA cm^{-2} with a capacity of 1 mAh cm^{-2} .

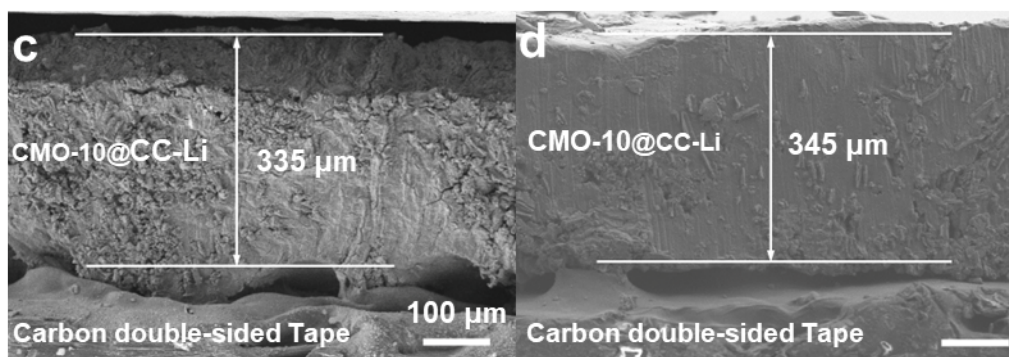


Fig. S8 Cross-section view SEM images of bare Li before and after 100 cycles at 2 mA cm^{-2} with a capacity of 1 mAh cm^{-2} .

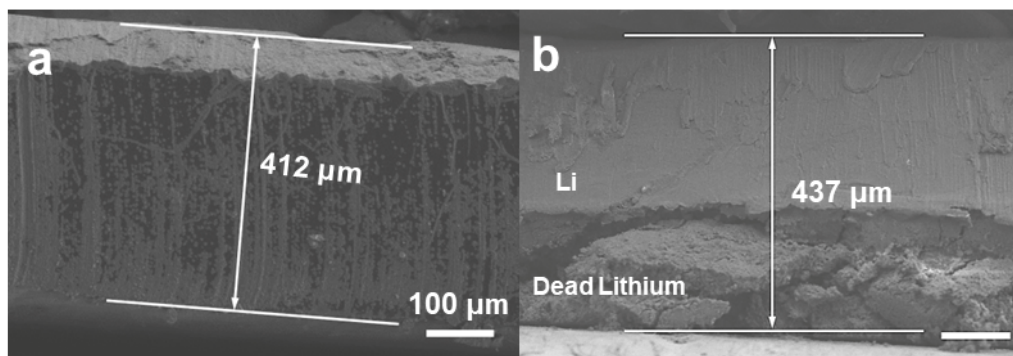


Fig. S9 Cross-section view SEM images of CMO-10@CC-Li before and after 100 cycles at 2 mA cm^{-2} with a capacity of 1 mAh cm^{-2} .

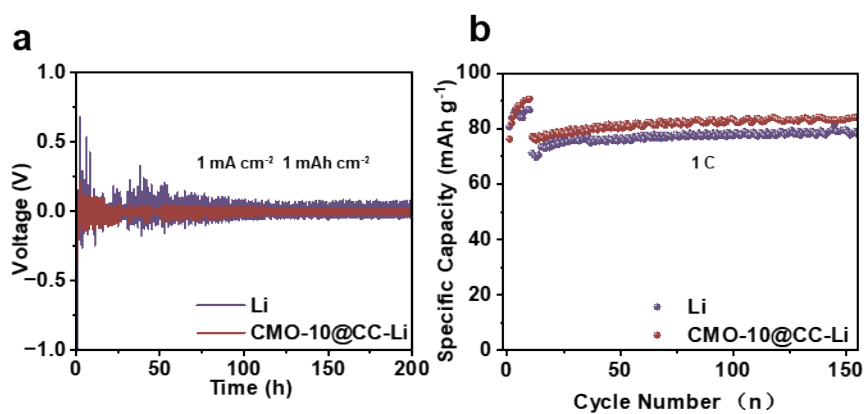


Fig. S10 Long-term cycling performance of (a) symmetric cells and (b) full cells with bare Li and CMO-5, 10, 20@CC-Li anodes ($-5 \text{ }^\circ\text{C}$)

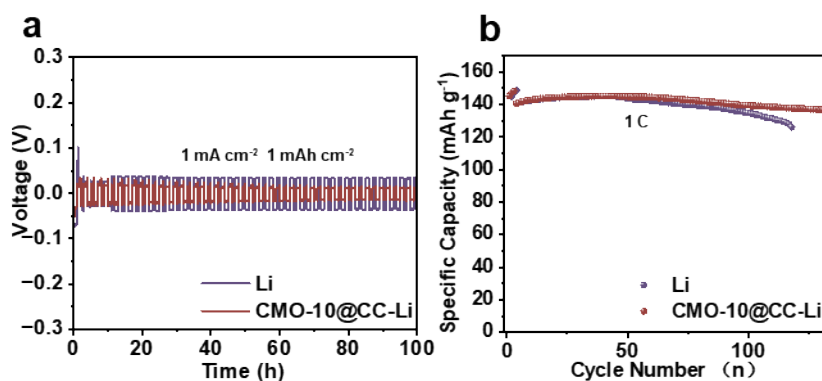


Fig. S11 Long-term cycling performance of (a) symmetric cells and (b) full cells with bare Li and CMO-5, 10, 20@CC-Li anodes ($15 \mu\text{L mAh}^{-1}$)

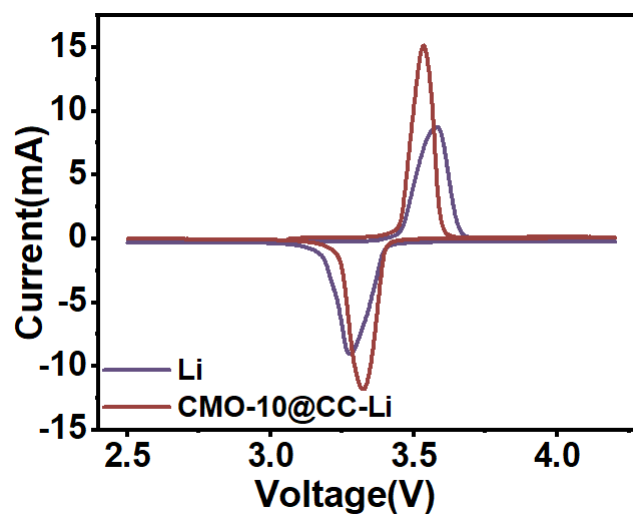


Fig. S12 CV curves of LFP||Li and LFP||CMO-10@CC-Li anodes.

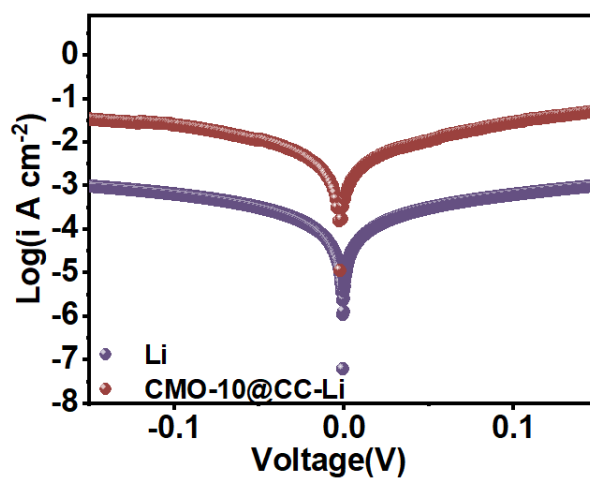


Fig. S13 Tafel curves of bare Li and CMO-10@CC-Li in symmetrical cells.

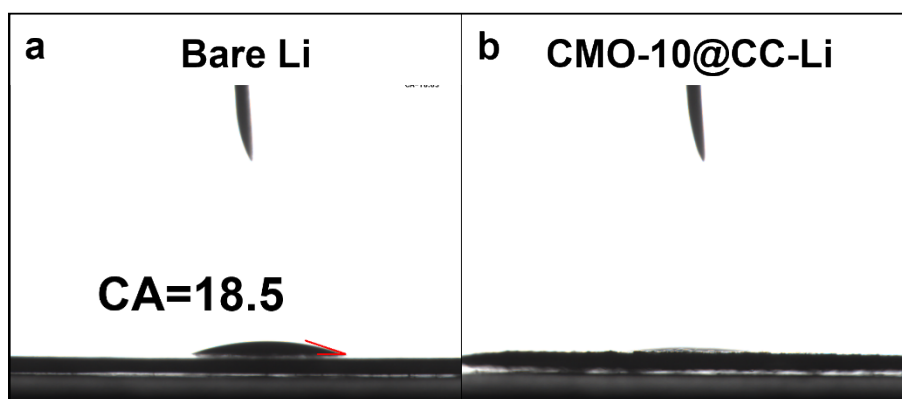


Fig. S14 Wetting angle of (a) bare Li and (b) CMO-10@CC-Li electrodes with electrolyte (Atmospheric Environment).

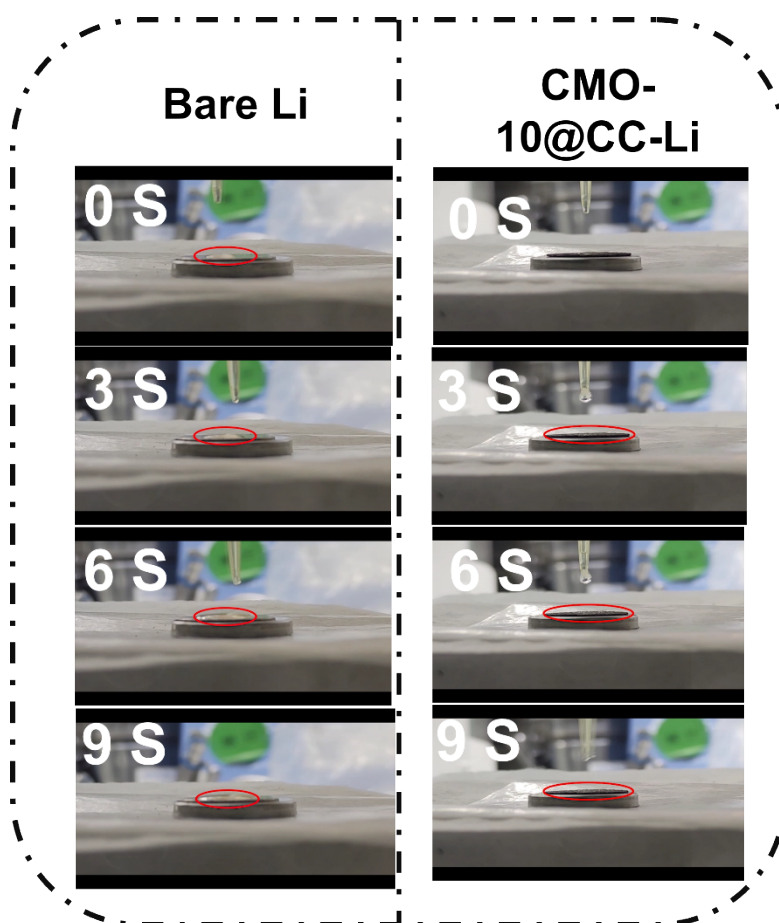


Fig. S15 Wettability test of bare Li electrode and CMO-10@CC-Li electrode with electrolyte (Argon gas environment).

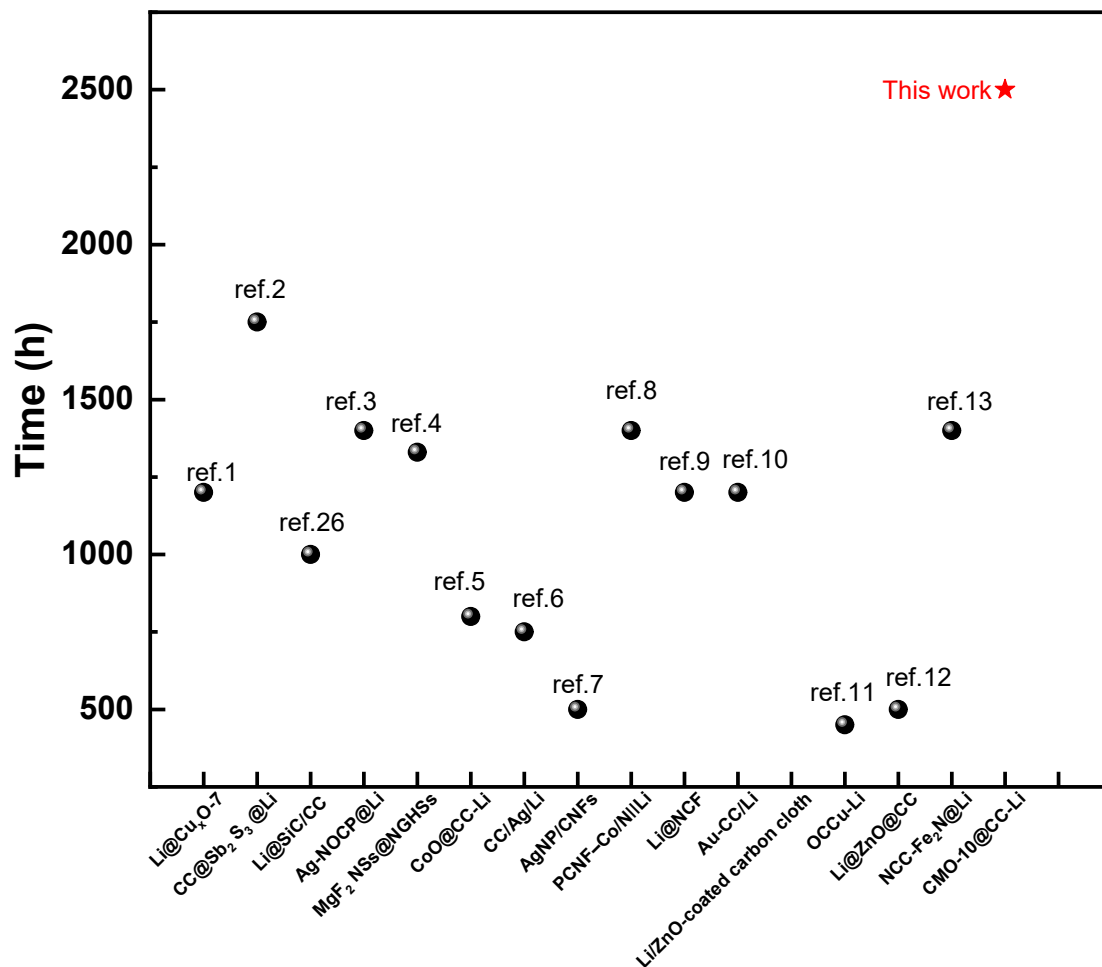


Fig. S16 Comparison of the cycle life of symmetric cells with CMO-10@CC-Li anodes and those of previously reported excellent Li metal anodes at 1 mA cm⁻² with the cycling capacity of 1 mAh cm⁻² 1-13.

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