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多孔泡沫铜和硫脲协同作用构筑无枝晶锂负极

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Porous Copper Foam Co-operation with Thiourea for Dendrite-free Lithium Metal Anode

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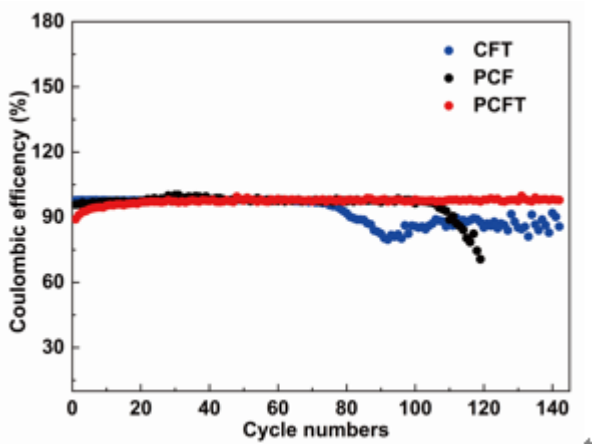

图 S1　泡沫铜加硫脲(CFT)，多孔泡沫铜(PCF)和多孔泡沫铜加硫脲(PCFT)组装半电池在 2 mA·cm^{-2} – 2 mAh·cm^{-2} 下的库伦效率

Fig. S1　Coulombic efficiency of Li|Cu cells with different electrodes of copper foam with thiourea (CFT), porous copper foam (PCF), and porous copper foam with thioura (PCFT) at 2 mA cm^{-2} - 2 mAh cm^{-2}.

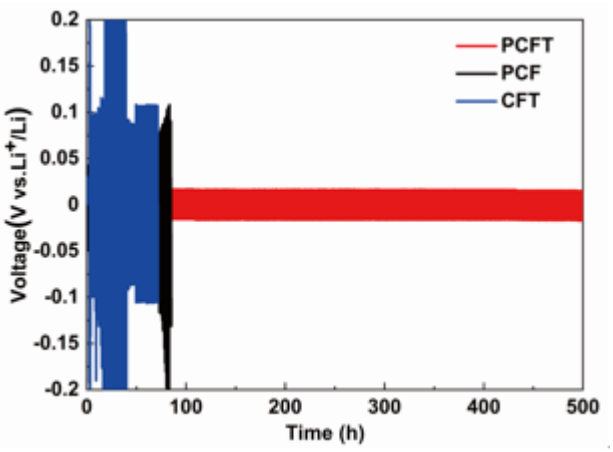

图 S2　泡沫铜加硫脲(CFT)，多孔泡沫铜(PCF)和多孔泡沫铜加硫脲(PCFT)组装 Li||Li 对称电池在 3 mA cm^{-2} – 1 mAh cm^{-2} 下的电压曲线

Fig. S2　Voltage profiles of Li||Li symmetrical cells with different electrodes copper foam with thiourea (CFT), porous copper foam (PCF), and porous copper foam with thioura (PCFT)at 3 mA cm^{-2} – 1 mAh cm^{-2}.

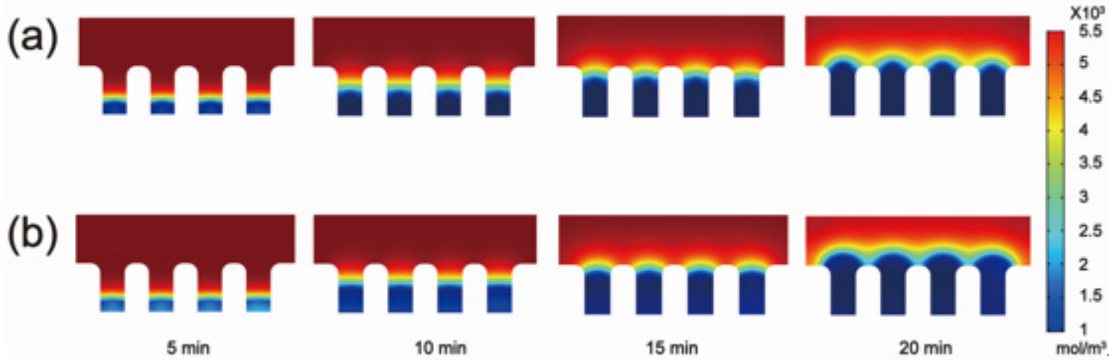

图 S3　有限元模拟多孔泡沫铜表面的锂离子浓度分布(a)加硫脲，(b)无硫脲

Fig. S3　Distribution of lithium ion concentration on the surface of porous copper foam (a) with thiourea and (b) without thiourea as additive in electrolyte.

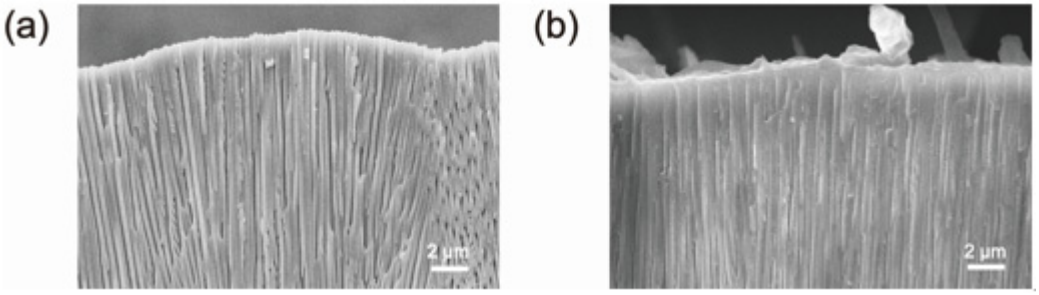

图 S4　(a)商业化 AAO 模板(孔径 160–200 nm)的截面图，(b)在 0.5 mA·cm^{-2} 条件下沉积 3 mAh 金属锂的截面图

Fig. S4　(a) the cross-sectional SEM image of commercial AAO template with aperture diameter of 160–200 nm; (b) the cross-sectional SEM image of AAO template after Li metal deposition of 0.5 mA·cm^{-2} – 3 mAh.

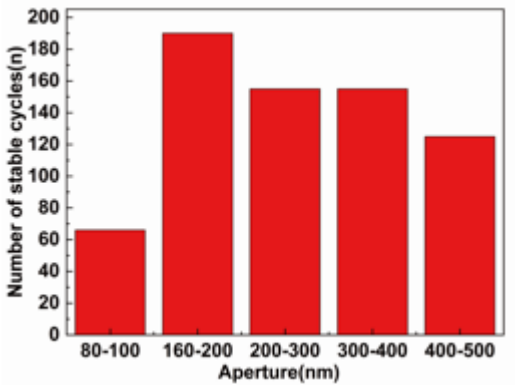

图 S5　金属锂沉积的孔径依赖性：以不同孔径的碳包覆 AAO 模板组装半电池(Li||C-AAO)在 1 mA·cm^{-2} – 1 mAh·cm^{-2} 下的稳定循环圈数

Fig. S5　Stable cycle numbers of the Li||C-AAO half cells assembled using carbon coated AAO template with different aperture diameter at 1 mA·cm^{-2} – 1 mAh·cm^{-2}.

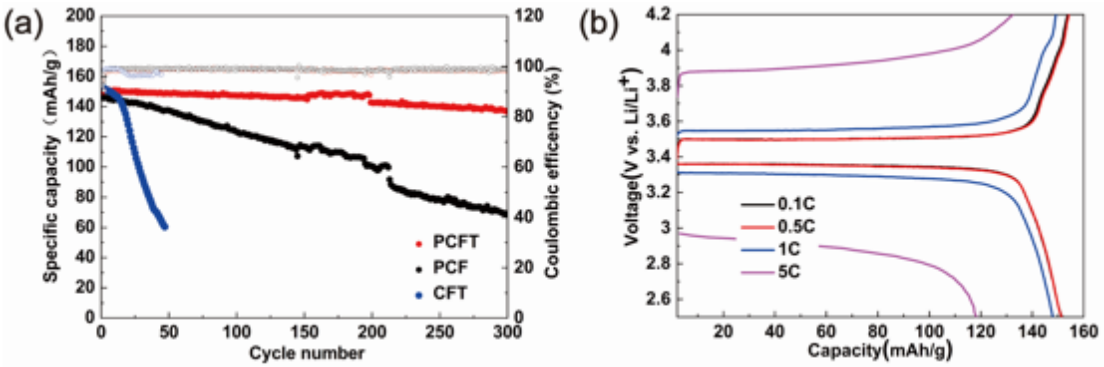

图 S6　(a)多孔泡沫铜(PCF)、泡沫铜加硫脲(CFT)和多孔泡沫铜加硫脲(PCFT)组装锂金属全电池在 1*C* 条件下的循环性能；(b)多孔泡沫铜加硫脲(PCFT)组装锂金属全电池在不同倍率下的充放电曲线

Fig. S6　(a) Cycle performance of Li metal cells assembling with copper foam with thiourea (CFT), porous copper foam (PCF), and porous copper foam with thioura (PCFT) at 1*C*; (b) charge-discharge curves of Li metal cells with porous copper foam and thiourea (PCFT) at different *C*-rates.