

Supplementary Information

An integrated dual-gradient host facilitates oriented bottom-up lithium growth in lithium metal anodes

Zhuzhu Du,^{a,b} Xin Chen,^b Ying Zhao,^c Yuhang Liu^{b*} and Wei Ai^{b*}

^a School of Materials Science and Engineering & Institute of Flexible Electronics and Intelligent Textile, Xi'an Polytechnic University, Xi'an 710048, China

^b Frontiers Science Center for Flexible Electronics & Shaanxi Institute of Flexible Electronics, Northwestern Polytechnical University, Xi'an 710072, China

^c Xi'an Hongxing Electronic Paste Technology Co., Ltd., Xi'an 710199, China

Correspondence: liuyh@mail.nwpu.edu.cn, iamwai@nwpu.edu.cn

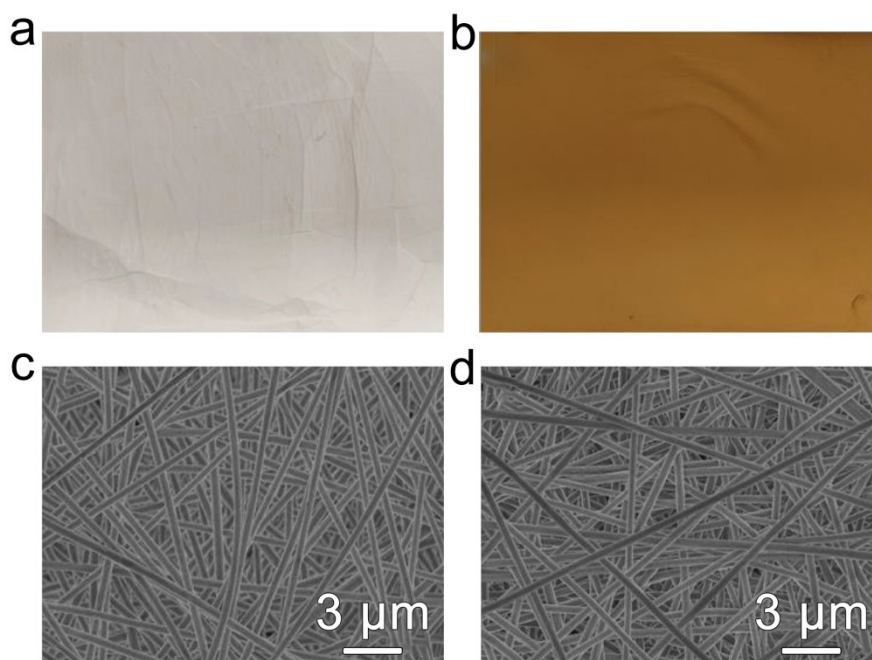


Fig. S1 Digital photographs of (a) PAN and (b) OPAN films. SEM images of (c) PAN and (d) OPAN nanofibers.

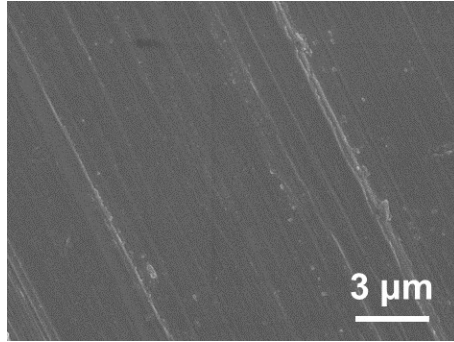


Fig. S2 SEM image of bare Cu foil.

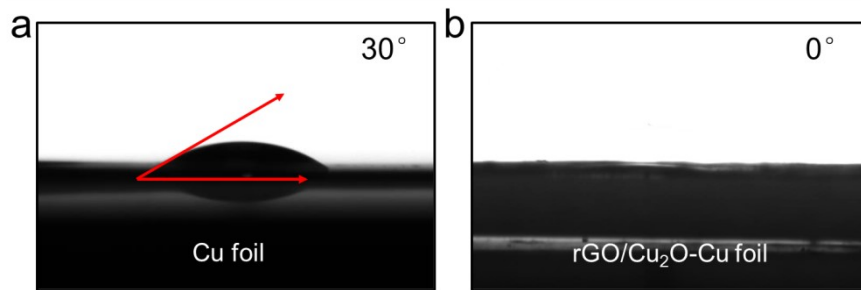


Fig. S3 Contact angle tests of (a) Cu foil and (b) rGO/Cu₂O-Cu foil.

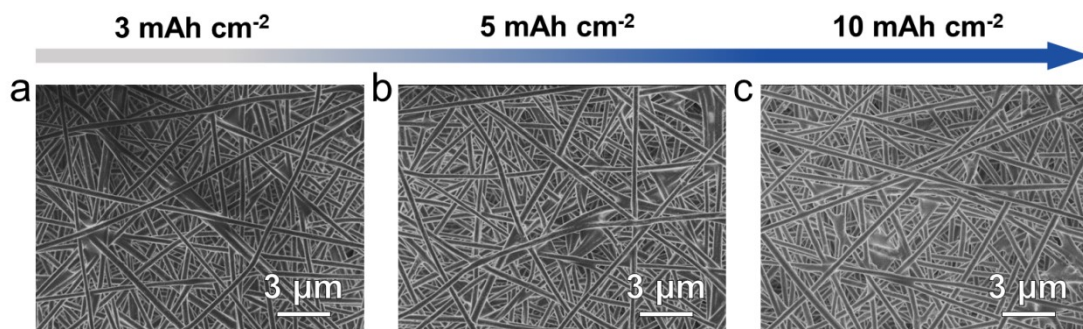


Fig. S4 Top-view SEM images of Li deposition on the OGCC at 0.5 mA cm⁻²: (a) 3 mAh cm⁻², (b) 5 mAh cm⁻², and (c) 10 mAh cm⁻².

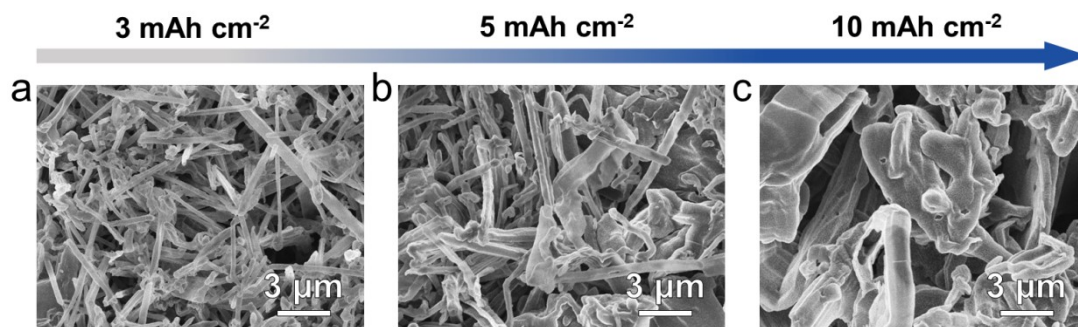


Fig. S5 Top-view SEM images of Li deposition on the Cu foil at 0.5 mA cm⁻²: (a) 3 mAh cm⁻², (b) 5 mAh cm⁻², and (c) 10 mAh cm⁻².

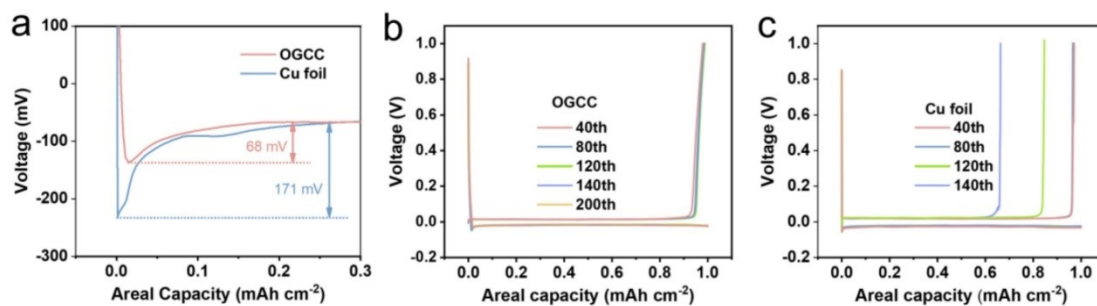


Fig. S6 (a) Nucleation overpotential of Cu foil and OGCC. Capacity-voltage curves of (b) OGCC and (c) Cu foil under different cycles.

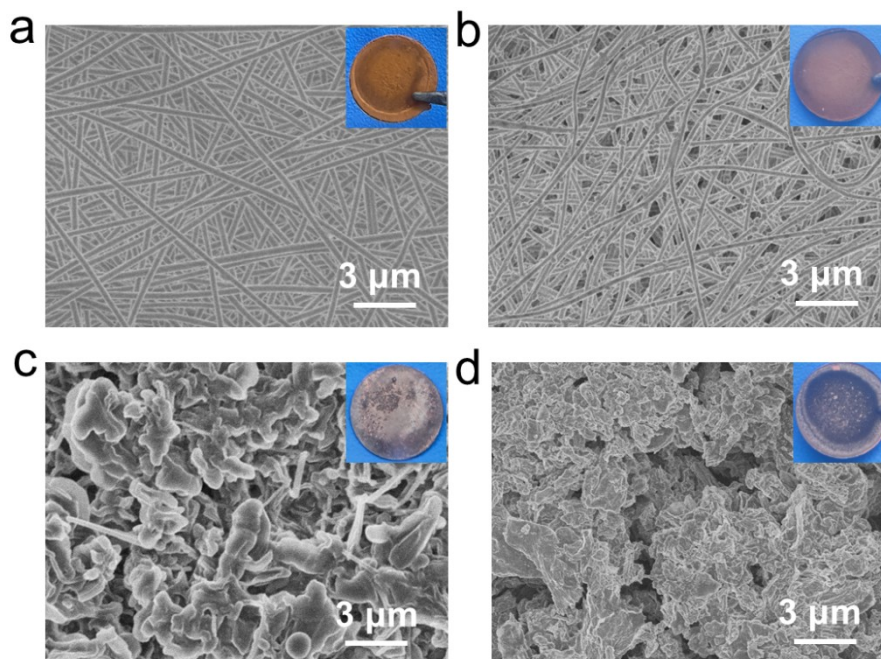


Fig. S7 SEM images and digital photographs of (a, b) OGCC and (c, d) Cu foil at 1 mA cm^{-2} for 1 mAh cm^{-2} after (a, c) the first cycle and (b, d) 50 cycles.

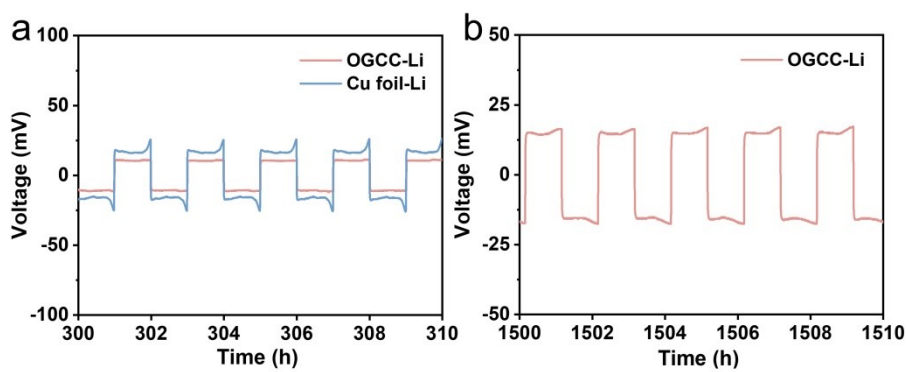


Fig. S8 Local enlarged voltage curves of cycling performance in Figure 4c at (a) 300-310 h and (b) 1500-1510 h.

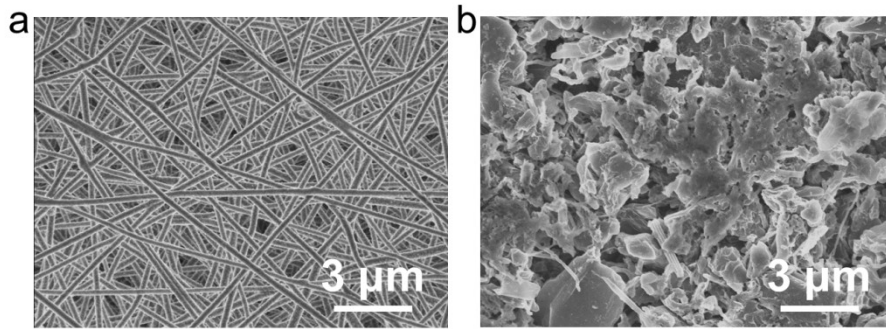


Fig. S9 Top-view SEM images of (a) OGCC-Li and (b) Cu foil-Li electrodes after 50 cycles.