

ADVANCED MATERIALS

Supporting Information

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Textile Inspired Lithium–Oxygen Battery Cathode with
Decoupled Oxygen and Electrolyte Pathways

*Shaomao Xu, Yonggang Yao, Yuanyuan Guo, Xiaoqiao Zeng,
Steven D. Lacey, Huiyu Song, Chaoji Chen, Yiju Li, Jiaqi
Dai, Yanbin Wang, Yanan Chen, Boyang Liu, Kun Fu, Khalil
Amine, Jun Lu,* and Liangbing Hu**

Supporting Information

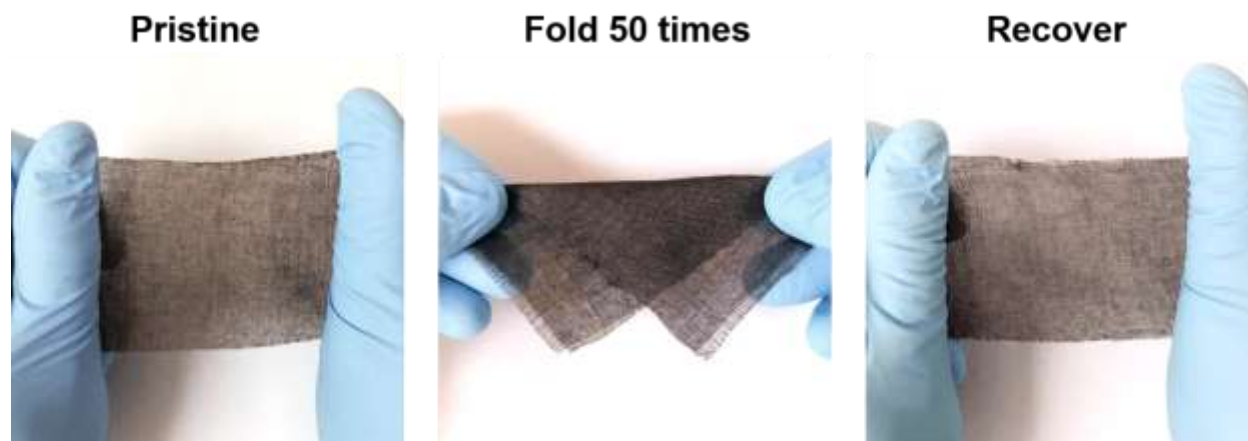


Figure S1. Digital images of the wet and breathable textile-based cathode before and after folding 50 times. The air cathode retained its original shape after extensive folding, which indicates the flexibility of the reported system.

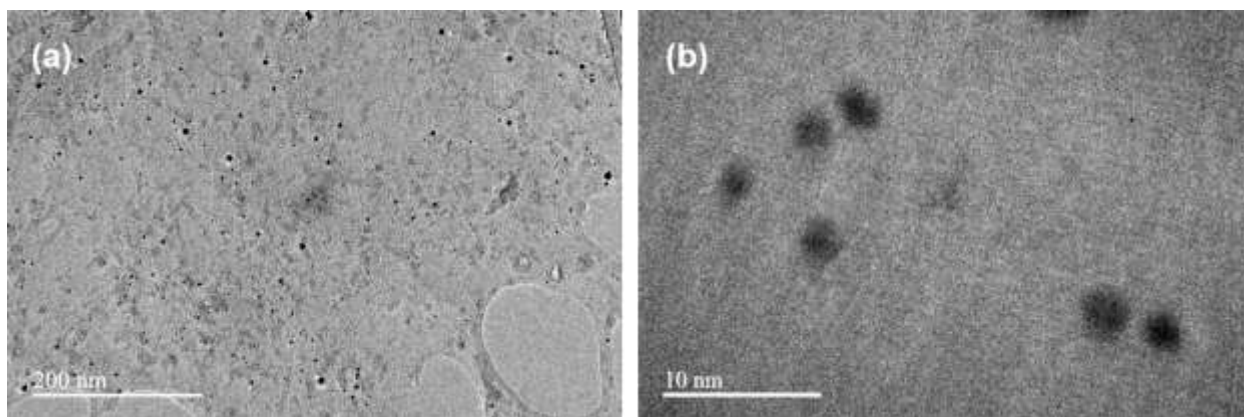


Figure S2. TEM images of Pd nanocatalysts showing 2-5 nm Pd particles uniformly decorating CNT network.

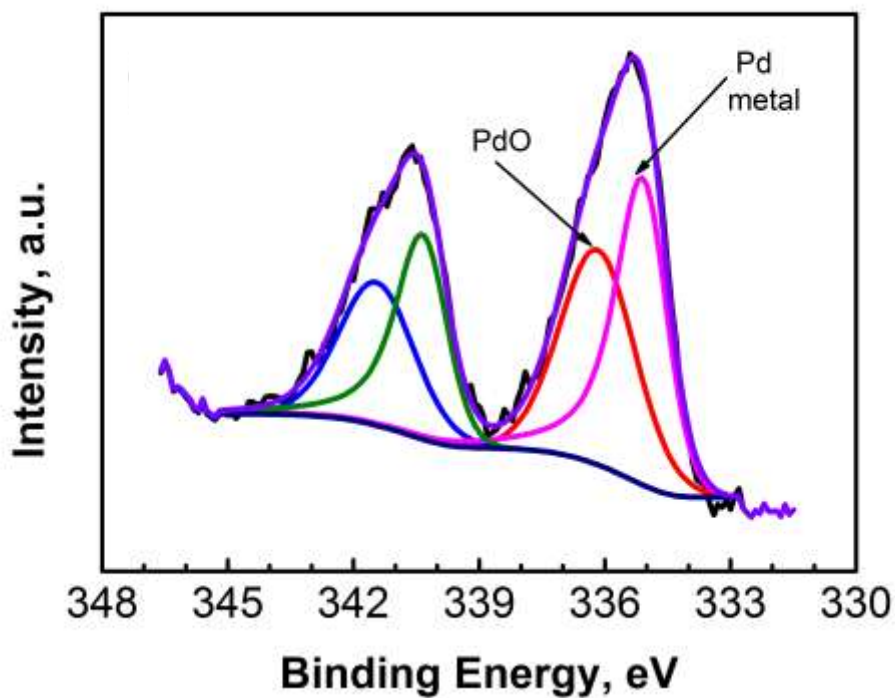


Figure S3. Pd3d scan of the textile-based air cathode. The characteristic binding energy of metallic Pd and PdO can be observed. The existence of PdO is hard to avoid and occurs during the experimental procedures where Pd nanoparticles are exposed to ambient air and undergo oxidation.

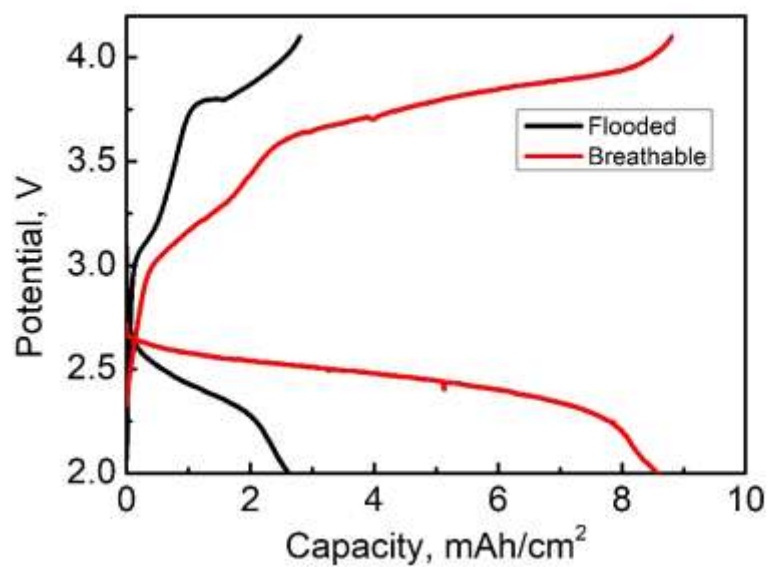


Figure S4. Charge/discharge curve of Li-O₂ battery with flooded cathode and breathable cathode with current density 0.1 mA/cm².

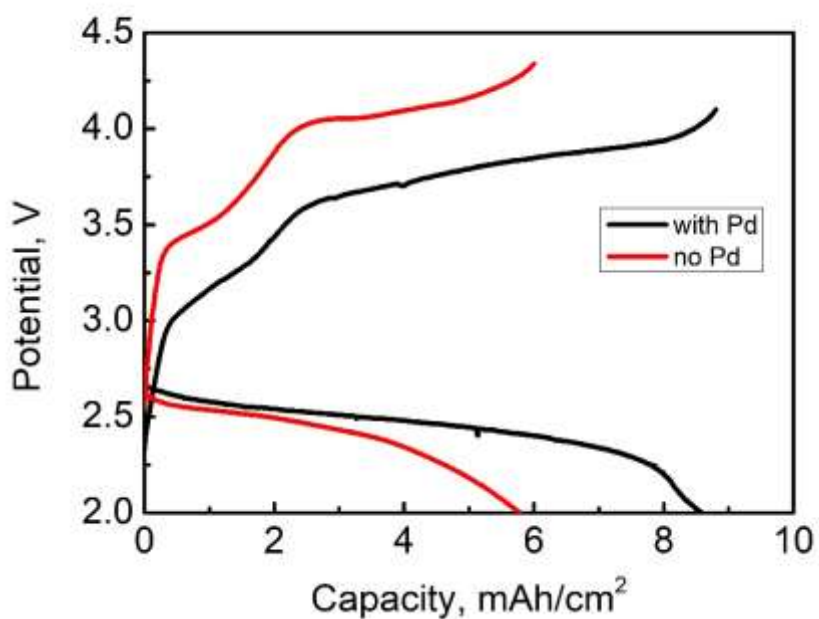


Figure S5. The voltage profile of Li-O₂ batteries with and without Pd catalyst.

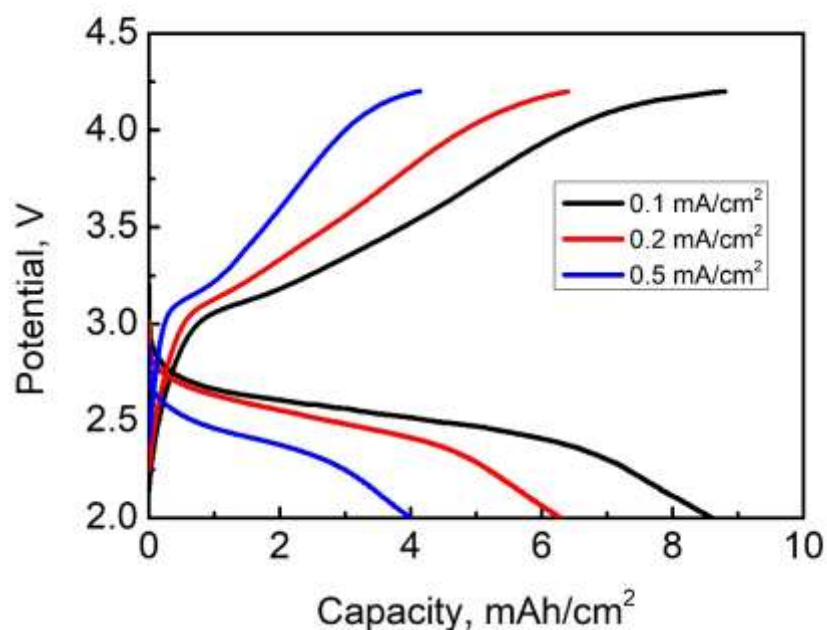


Figure S6. Voltage profiles of Li-O₂ battery with breathable cathode under different current densities.

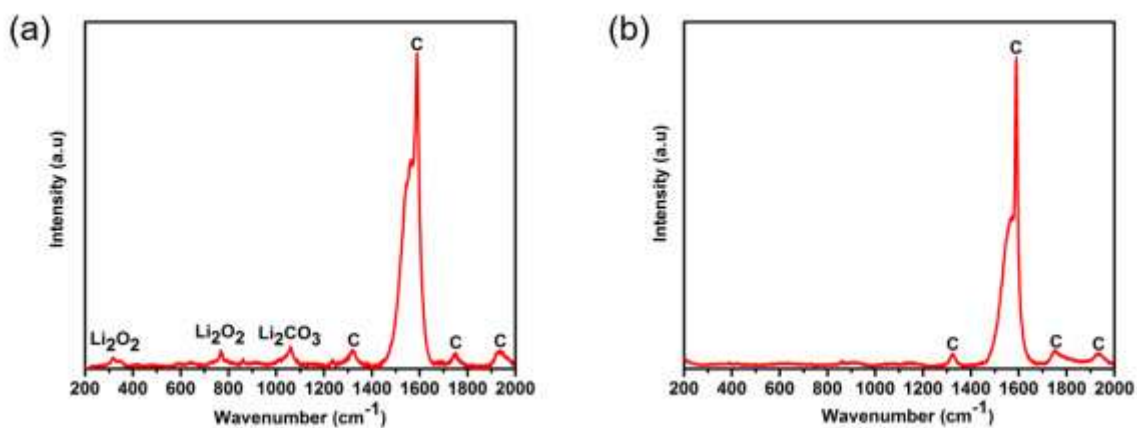


Figure S7. Raman spectrum of Cathode after discharge (a) and after recharge (b). Characteristic peaks for Li₂O₂ can be observed after discharge. The Li₂O₂ peaks disappear after recharge, indicating the rechargeability of the battery.

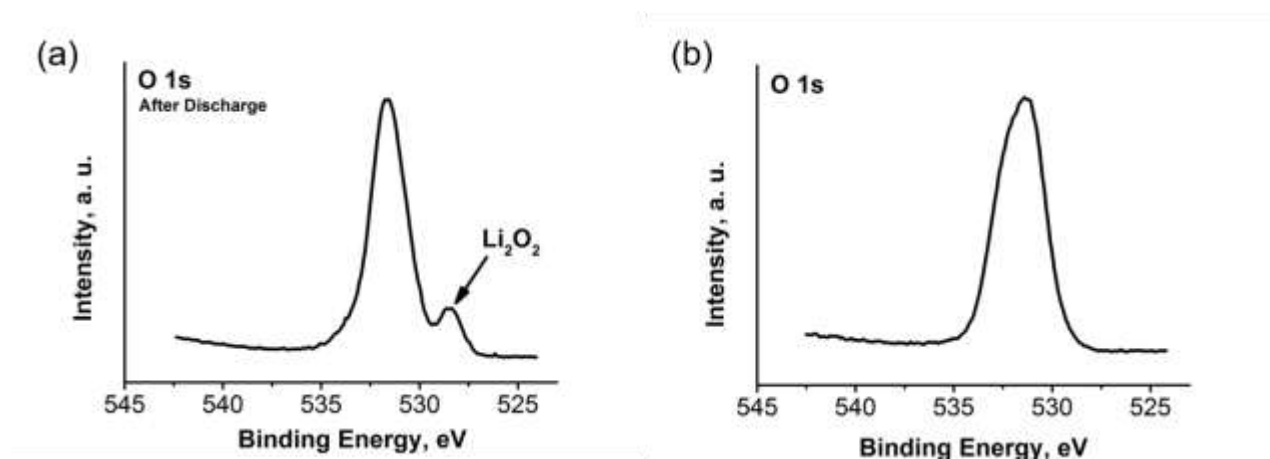


Figure S8. XPS spectrum of cathode after discharge (a) and (b) charge. The characteristic peak of Li_2O_2 was observed.

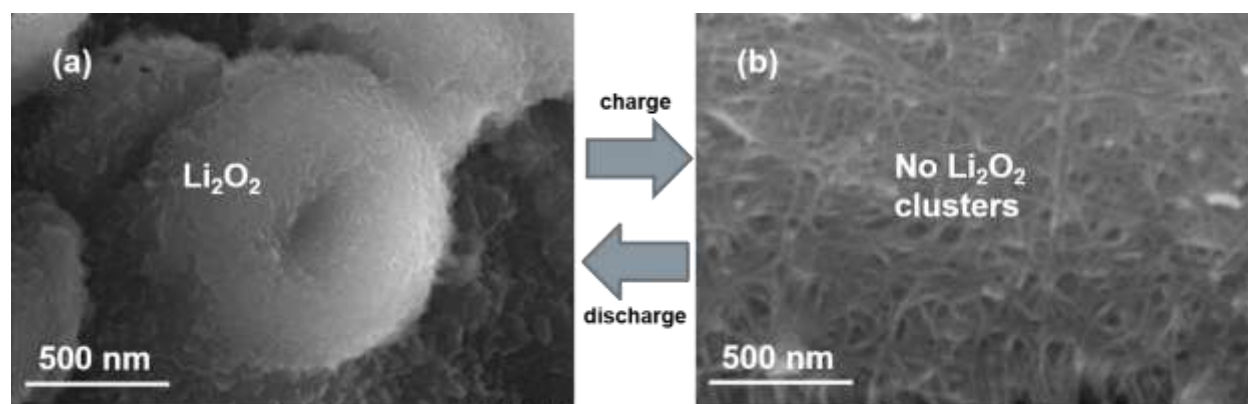


Figure S9. SEM images of the textile-based air cathode in the (a) discharge and (b) charge state. The formation and decomposition of Li_2O_2 occurs after discharge and charge processes, respectively.