

Supporting information

Dynamic changes in charge transfer resistances during cycling of aprotic Li-O₂ batteries

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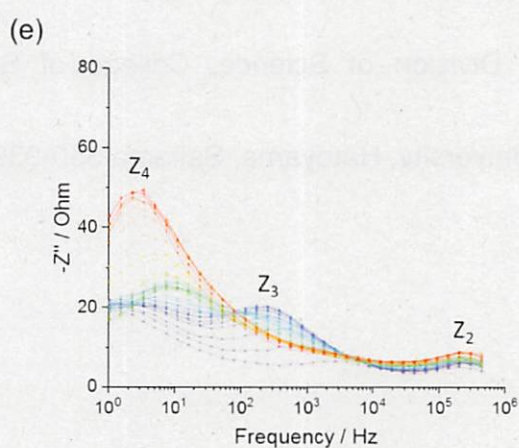
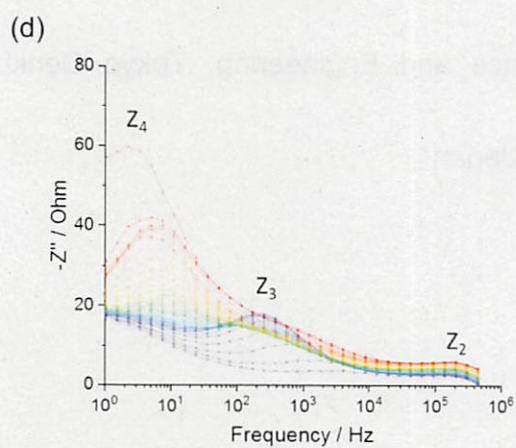
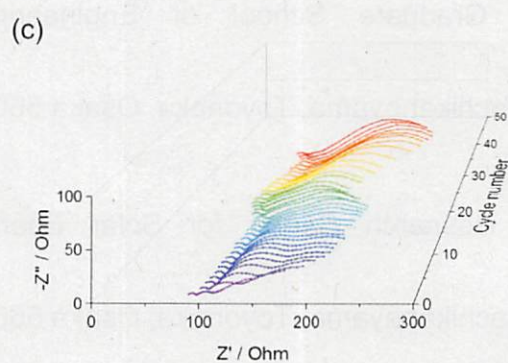
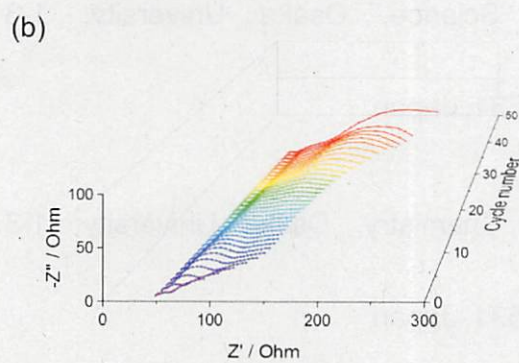
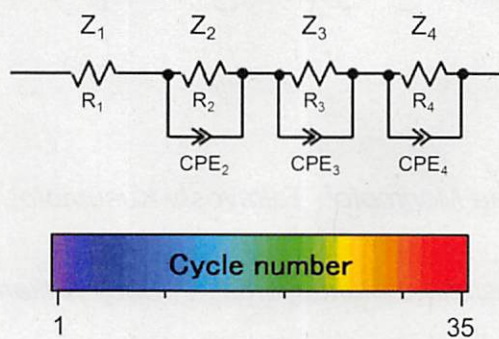
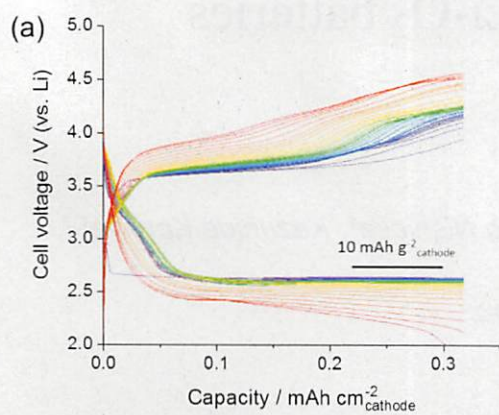


Figure S1. (a) (left) Cycle profiles of Li-O₂ cells with CC charging mode, and (right) equivalent circuit used for analyzing the EIS data. (b, c) Cole-Cole plots and (d, e) Bode plots of the EIS data collected after (b, d) discharging and (c, e) charging processes.

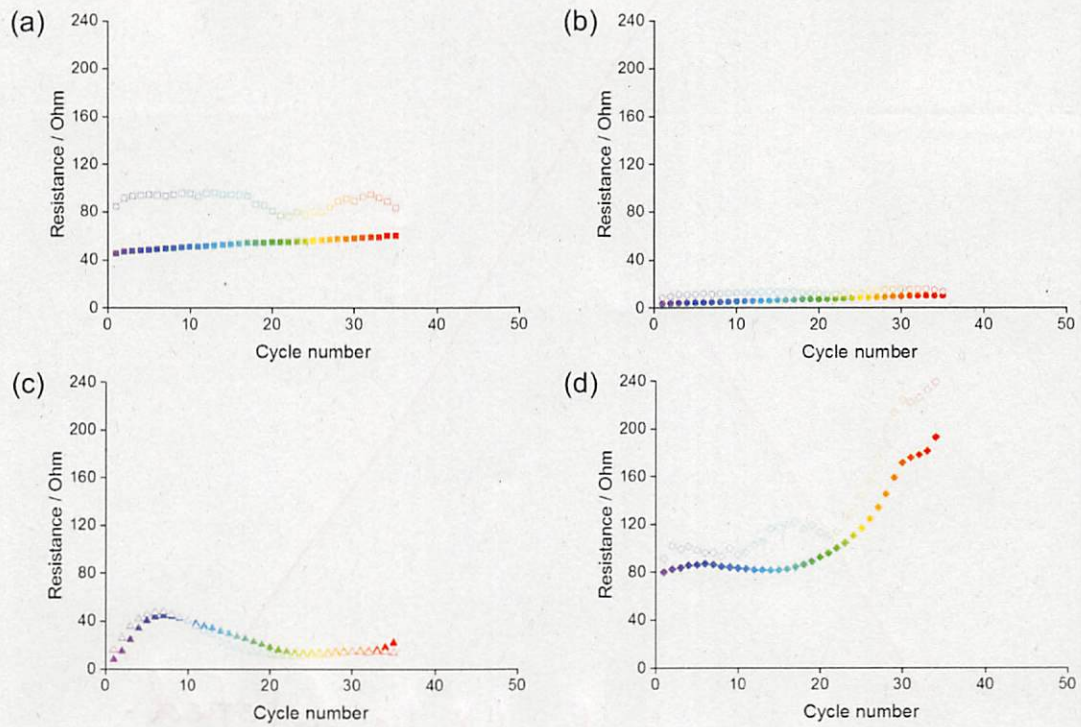
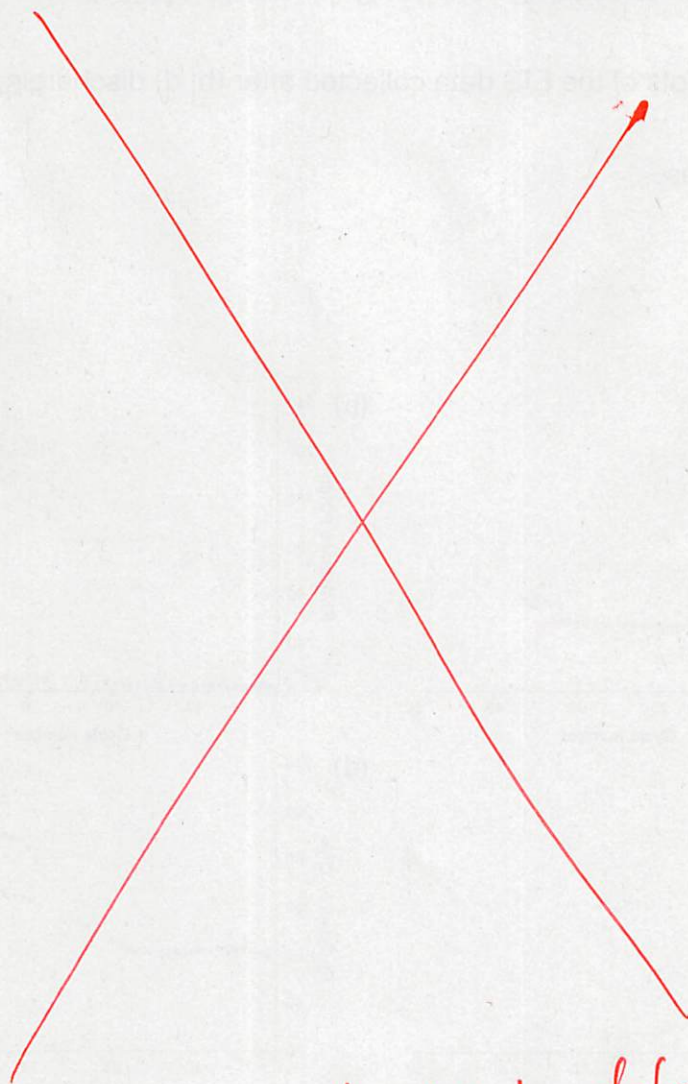


Figure S2. Resistances vs. cycle number plots obtained for the cycle test with the CC charging mode shown in Figure 3: (a) R_1 , (b) R_2 , (c) R_3 , (d) R_4 . The filled and open symbols correspond to the data obtained after the discharging and charging process, respectively.



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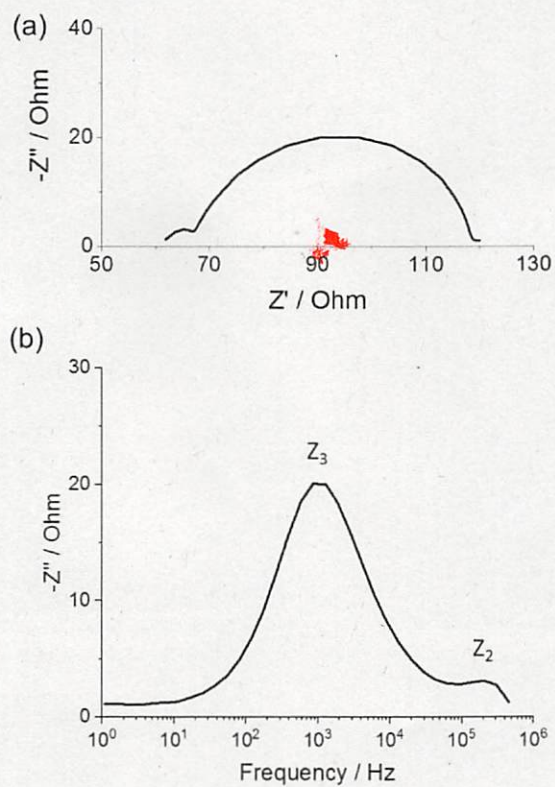


Figure S3. (a) Cole-Cole plot and (b) Bode plot of the potentiostatic EIS measurements at OCV using Li/Li symmetry cell.

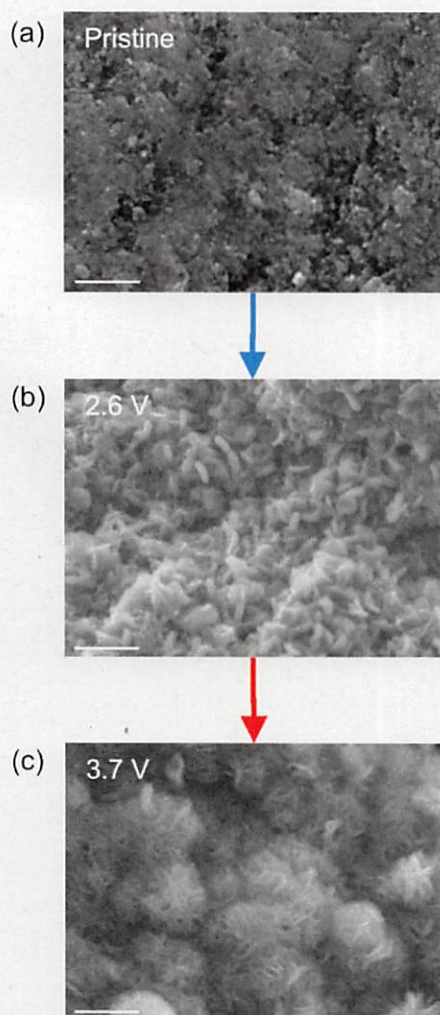


Figure S4. SEM images of (a) the pristine cathode surfaces and the cathode surfaces (b) after discharging process at 2.6 V (4.0 mAh/cm^2) and (c) after the charging process at 3.7 V (3.2 mAh/cm^2). The scale bar is $1 \text{ }\mu\text{m}$.

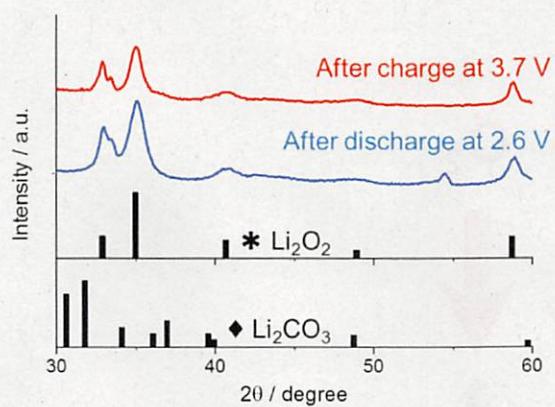


Figure S5. XRD patterns of the cathode surfaces (blue) after discharging process at 2.6 V (4.0 mAh/cm²) and (red) after the charging process at 3.7 V (3.2 mAh/cm²).

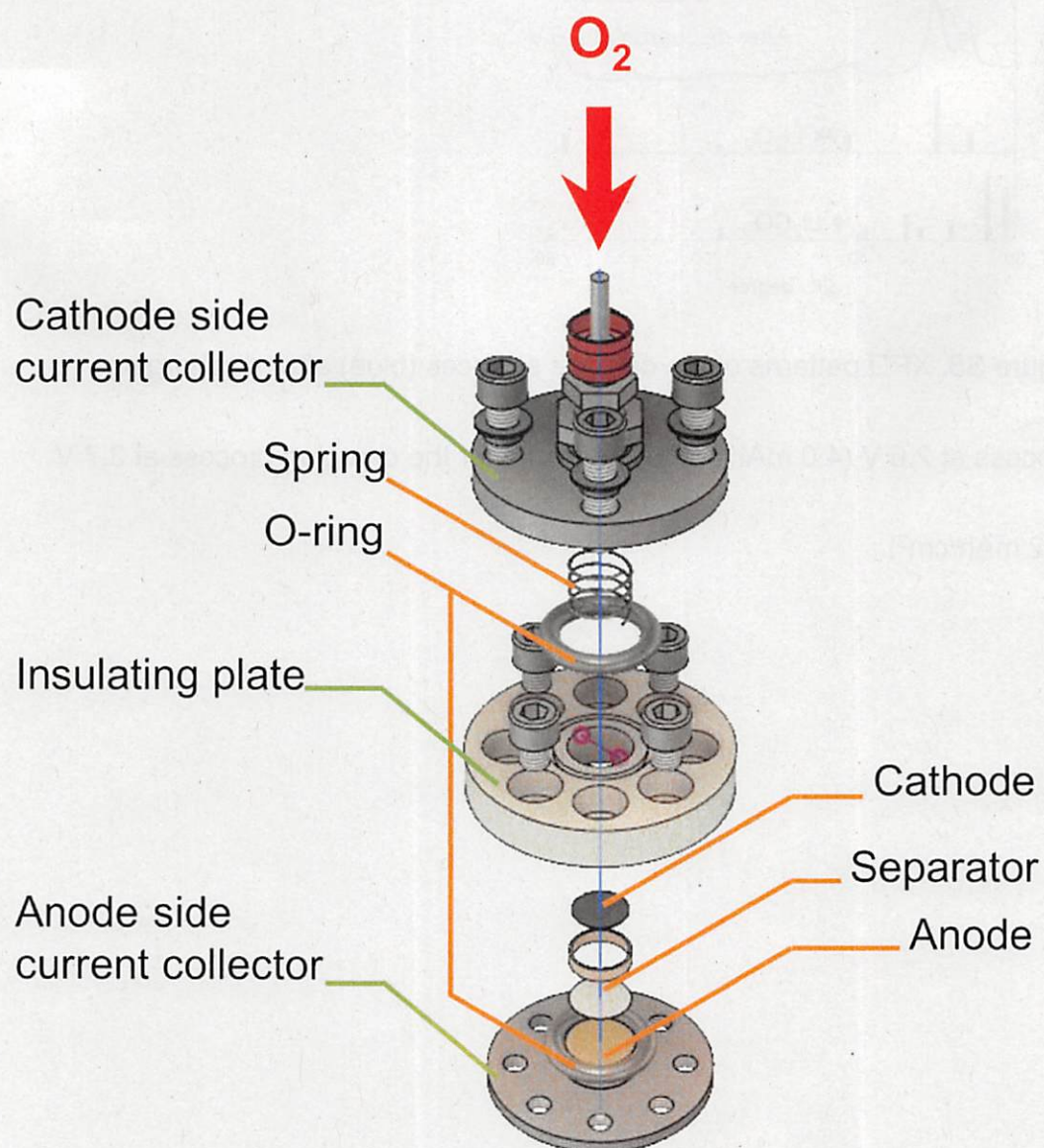


Figure S6. The schematic image of an electrochemical cell for Li-O₂ battery used in this study.