Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Influence of Cu^{2+} doping concentration on the catalytic activity of $Cu_xCo_{3-x}O_4$ for rechargeable Li-O_2 batteries

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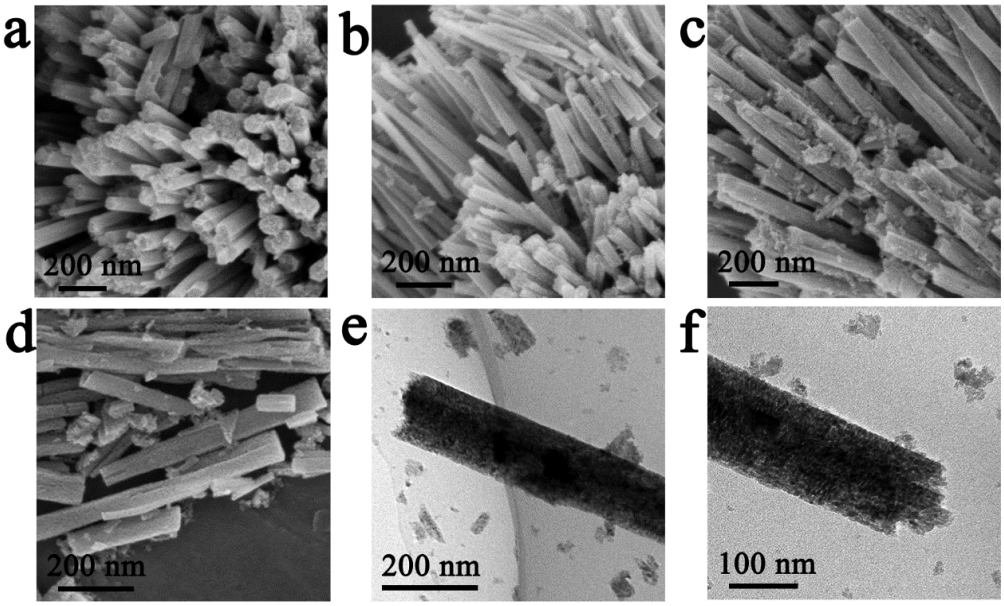

Figure S1. SEM images of CuCoU-0.4-2.6 (a), CuCoU-0.6-2.4 (b), CuCoU-0.8-2.2 (c) and CuCoU-1.2-1.8 (d). TEM images (e and f) of CuCoU-0.4-2.6.

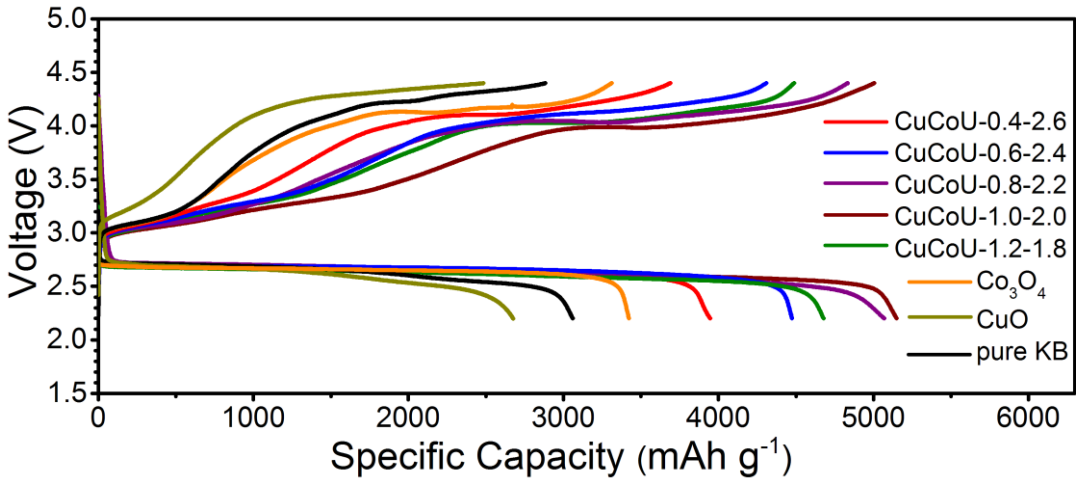

Figure S2. Discharge-charge profiles of the first cycle of Li-O_2 batteries using eight different electrodes based on corresponding samples in the potential window of 2.2~4.4 V at a current density of 100 mA g^{-1}.

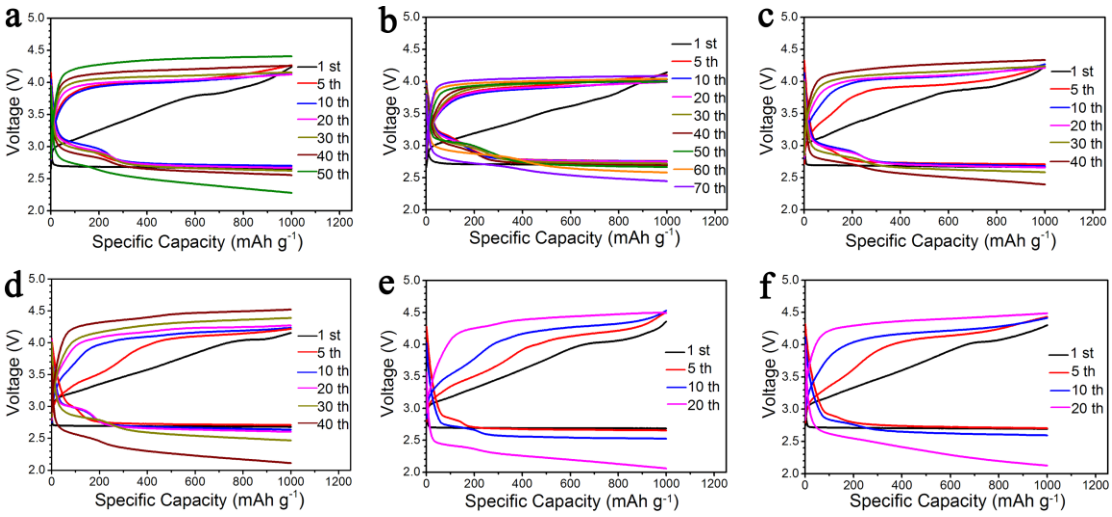

Figure S3. Discharge-charge profiles of the Li-O_2 batteries using electrodes based on CuCoU-0.6-2.4 (a), CuCoU-0.8-2.2 (b), CuCoU-1.2-1.8 (c), Co_3O_4 (d), CuO (e) and pure KB (f) with a fixed capacity of 1000 mAh g^{-1} at a current density of 100 mA g^{-1}.

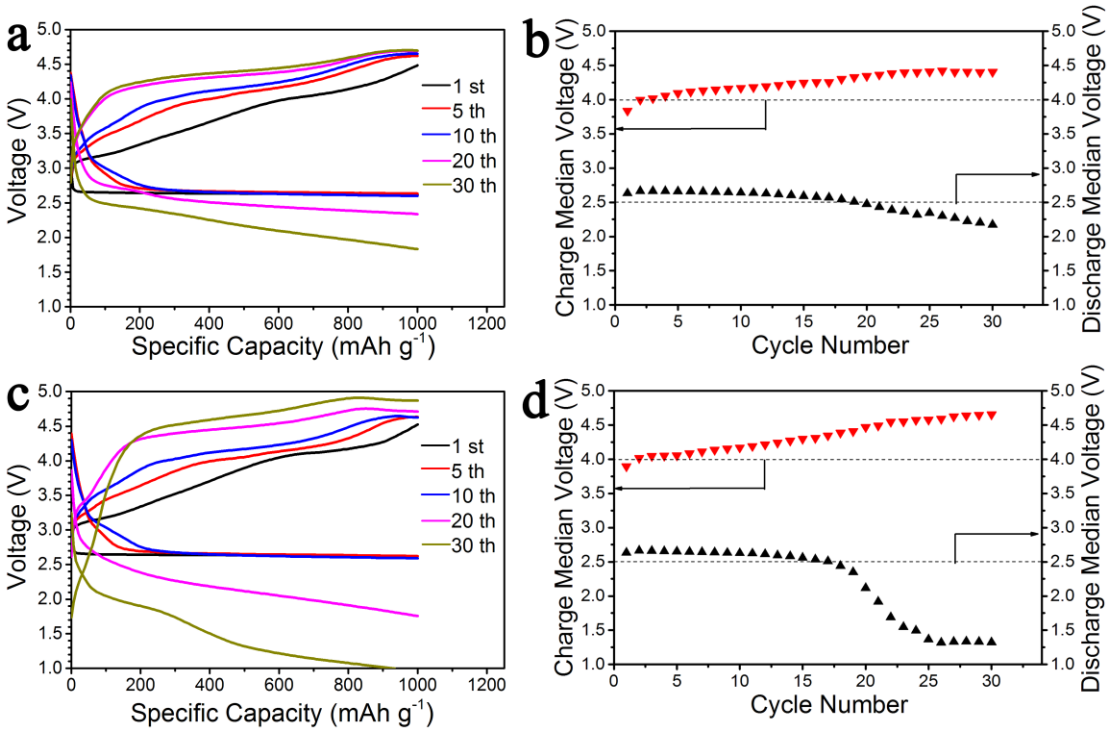

Figure S4. Discharge-charge profiles of the Li-O_2 batteries using electrodes based on CuCoU-1.0-2.0 (a) and CuCoU-0.4-2.6 (c) with a fixed capacity of 1000 mAh g^{-1} at a current density of 400 mA g^{-1}. Corresponding variation profiles of the discharge and charge median voltages with the cycle number (b and d, respectively).

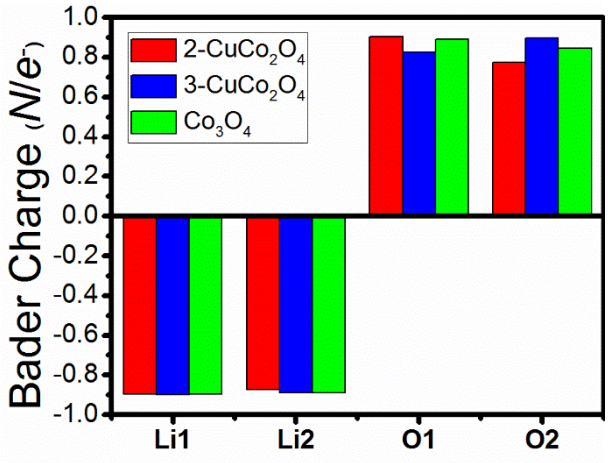

Figure S5. Bader charge analysis of Li1, Li2, O1 and O2 associated with the interfacial structures of Figs 7a, 7b and 7c. The charge voltages of OER path as Li1→Li2→O2, which is marked in the 7a, 7b and 7c structures, are 3.31, 2.95, 3.08 and 3.32 V for pure Li_2O_2, $CuCo_2O_4$ electrodes without and with doped-Cu at the surfaces, and pure Co_3O_4 electrode, respectively.