

Supplementary Information for:

Hierarchical porous Co_3O_4 films as cathode catalysts of rechargeable Li-O_2 batteries

Guangyu Zhao, Zhanming Xu and Kening Sun*

Academy of Fundamental and Interdisciplinary Sciences, Harbin Institute of Technology, Harbin, Heilongjiang 150080, PR China

Corresponding author: Tel/Fax: +86 451 86412153.

E-mail address: keningsun@yahoo.com.cn (K. Sun).

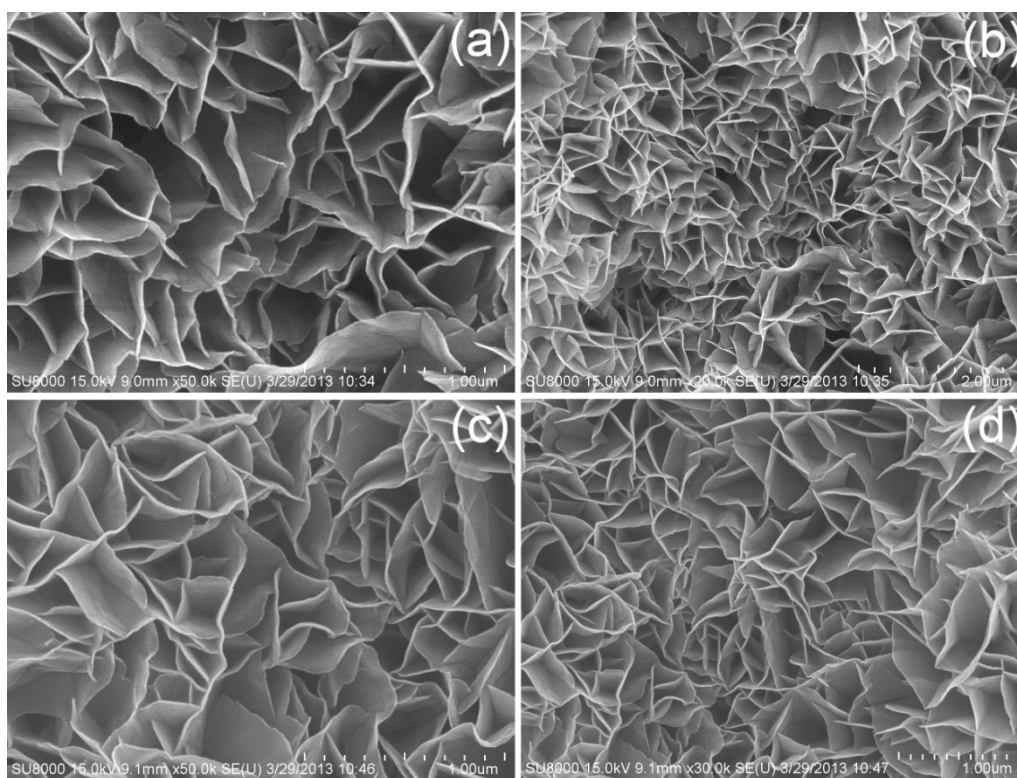


Figure S1. SEM images of as-deposited films on different substrates: Ti wafer (a, b) and Cu wafer (c, d).

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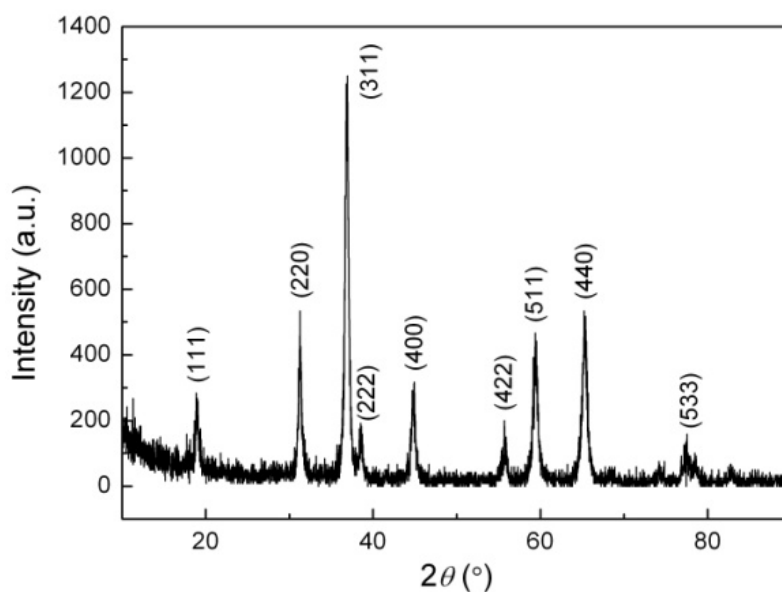


Figure S2. X-ray diffraction (XRD) patterns of Co_3O_4 scraped from the as-prepared $\text{Co}_3\text{O}_4/\text{Ni}$, indicating the successful preparation of Co_3O_4 film.

Table S1. BET and BJH results of Co_3O_4 flakes scraped from Ni foams.

Sample	BET surface area ($\text{m}^2 \text{g}^{-1}$)	Pore volume ($\text{cm}^3 \text{g}^{-1}$)	BJH average Pore size (nm)
Co_3O_4 250 °C	87.90	0.22	10.33
Co_3O_4 300 °C	54.18	0.14	11.66
Co_3O_4 350 °C	43.47	0.18	22.77
Co_3O_4 400 °C	27.12	0.11	25.84

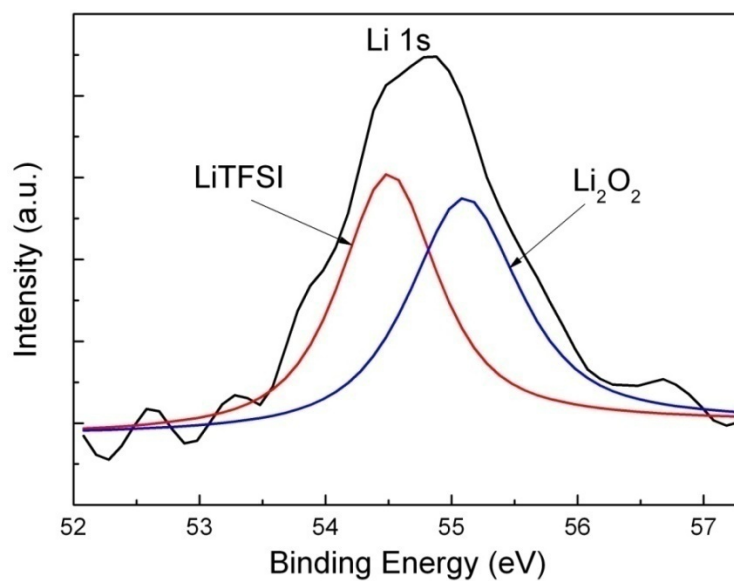


Figure S3. High resolution XPS pattern of Li 1s in Co₃O₄ films after the first discharge.

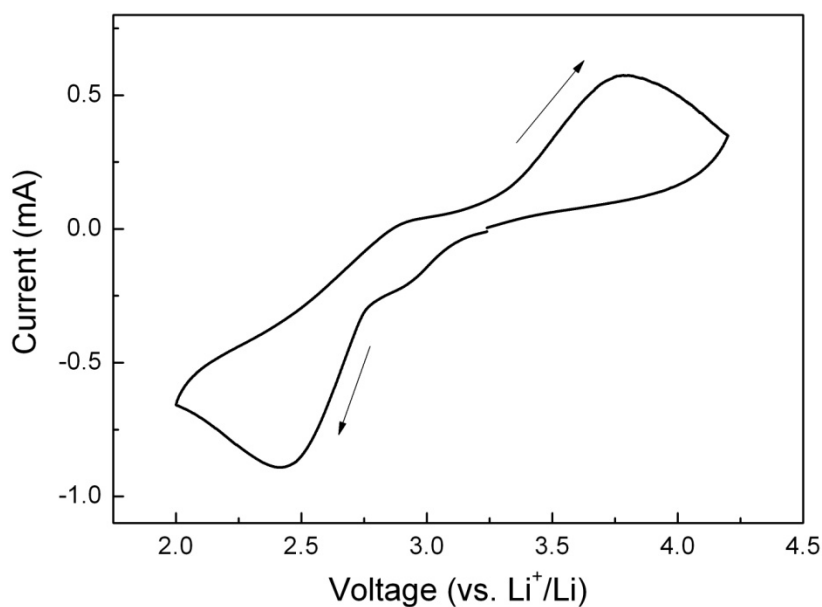


Figure S4. CV curve of the Li–O₂ batteries with the porous Co₃O₄ films as cathodes, potential window is 2.0–4.2 V (vs. Li⁺/Li), scan rate is 1 mV s^{−1}.

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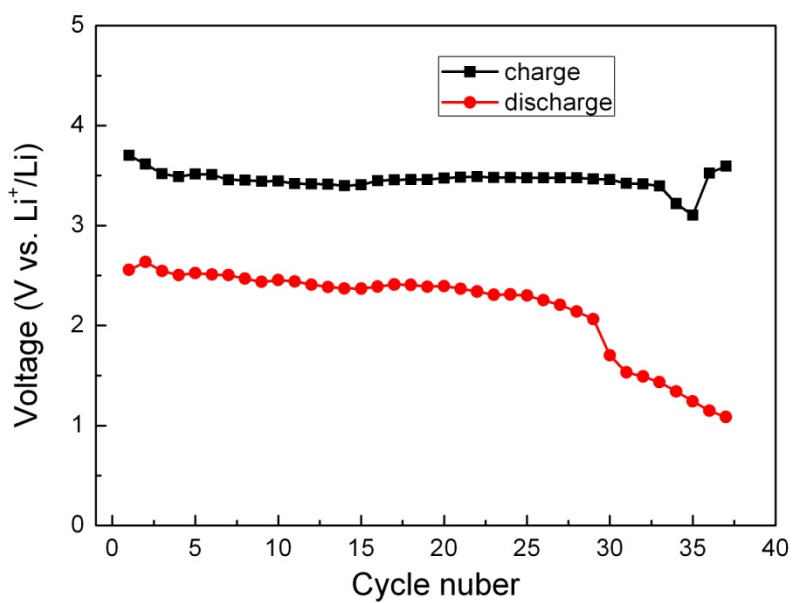


Figure S5. Cell voltage upon completion of each discharge (red) and charge (black) segment over the 37 cycles in Fig. 6(b).

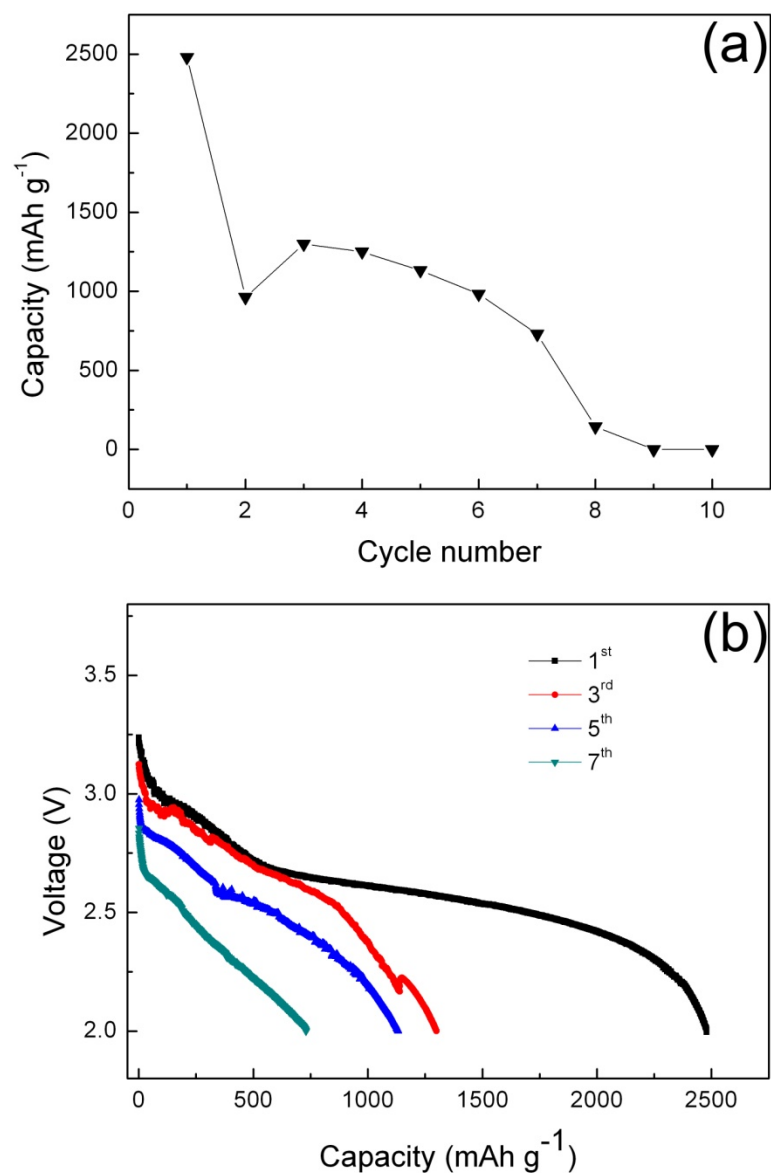


Figure S6. Cycle performances of the hierarchical porous Co_3O_4 films calcined at 300 °C with a discharge cut-off voltage of 2.0 V and charge cut-off voltage of 4.2 V (a), and the discharge curves of the 1st, 3rd, 5th and 7th cycles.