Electronic Supplementary Information for

# Adhesive Nanocomposites of Hypergravity Induced $Co_3O_4$ Nanoparticles and Natural Gels as Li-ion Battery Anode Materials with High Capacitance and Low Resistance

Jie Yang, [a] Xinhua Liu, [a] Jianliya Tian, [b] Xiao Ma, [b] Baofeng Wang, *[b] Wenjun Li, *[a] and Qigang Wang, *[a]

***Figures***

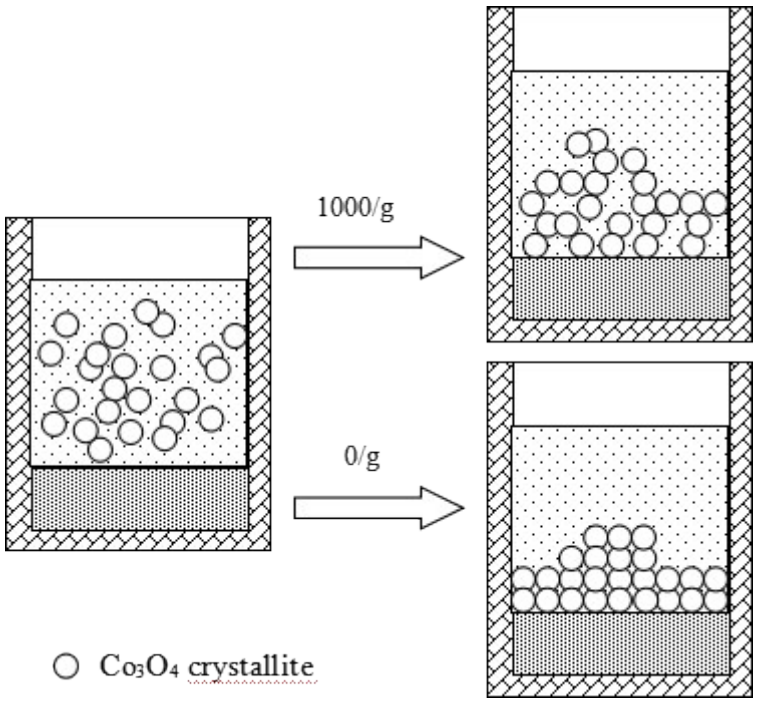


**Fig.S1.** The Mechanism of the growth process of $Co_3O_4$ particles prepared by hypergravityhydrothermal method based on the water-oil interface.

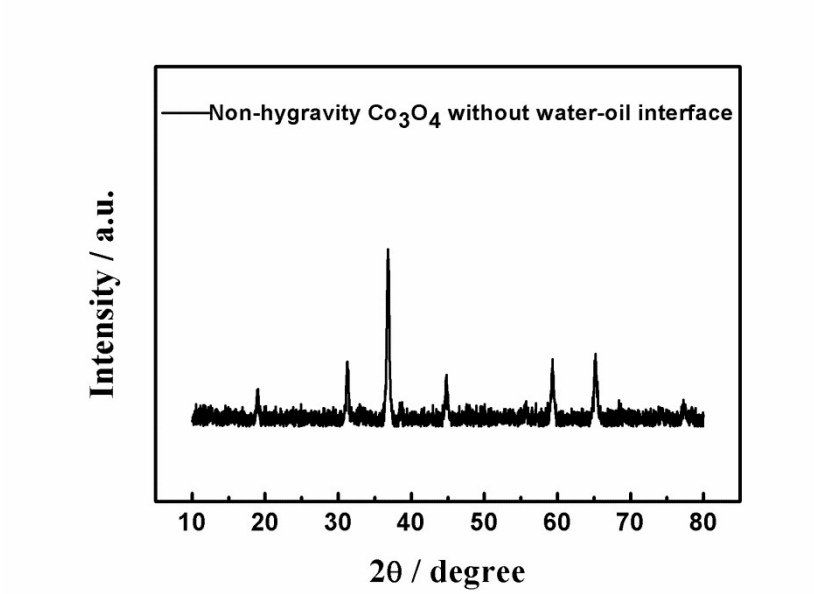


**Fig.S2.** XRD patterns of $Co_3O_4$ nano-particles prepared by non-hypergravity hydrothermal method without water-oil interface.

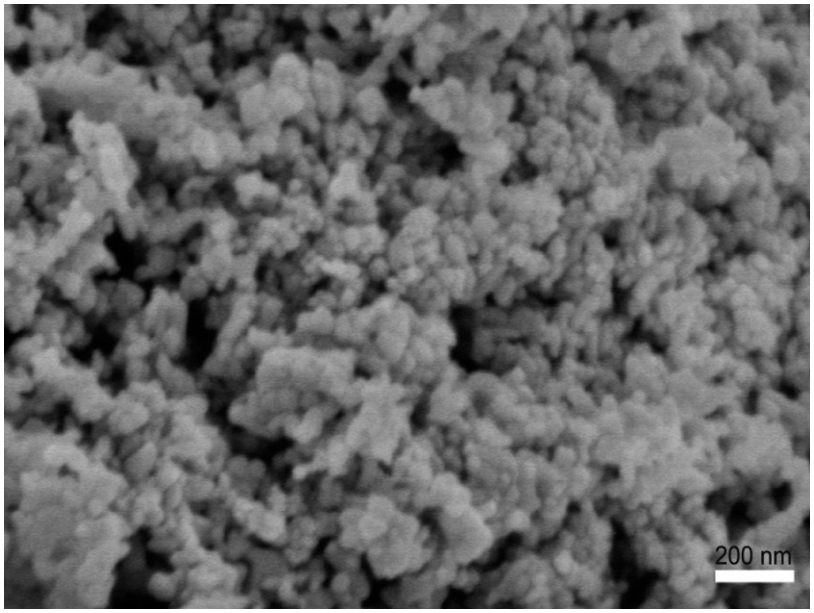


**Fig.S3.** SEM images of as-prepared $Co_3O_4$ particles by the hydrothermal method without high gravity field and water-oil interface.

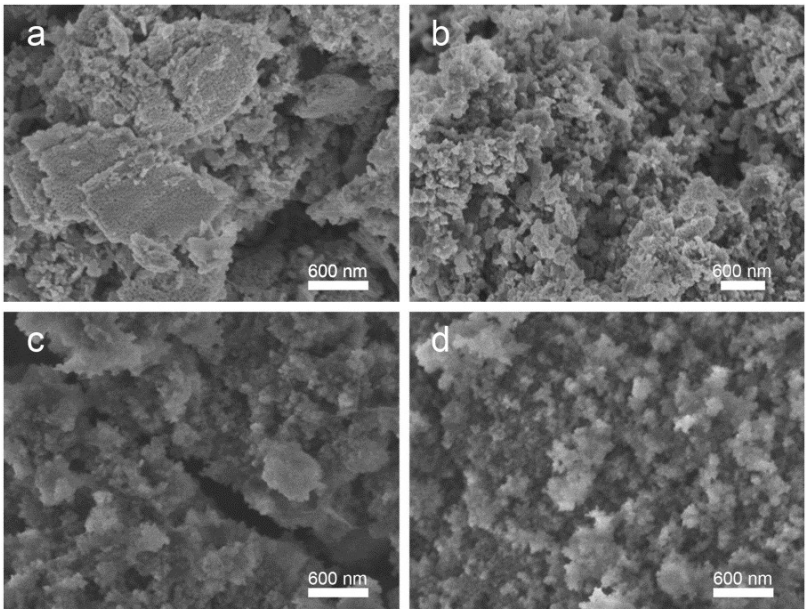


**Fig.S4.** SEM images of different $Co_3O_4$ anodes with PVDF binder in following conditions: (a) before cycling, 0/g; (b) before cycling, 1000/g; (c)after 25 cycles, 0/g (d) after 25 cycles, 1000/g.

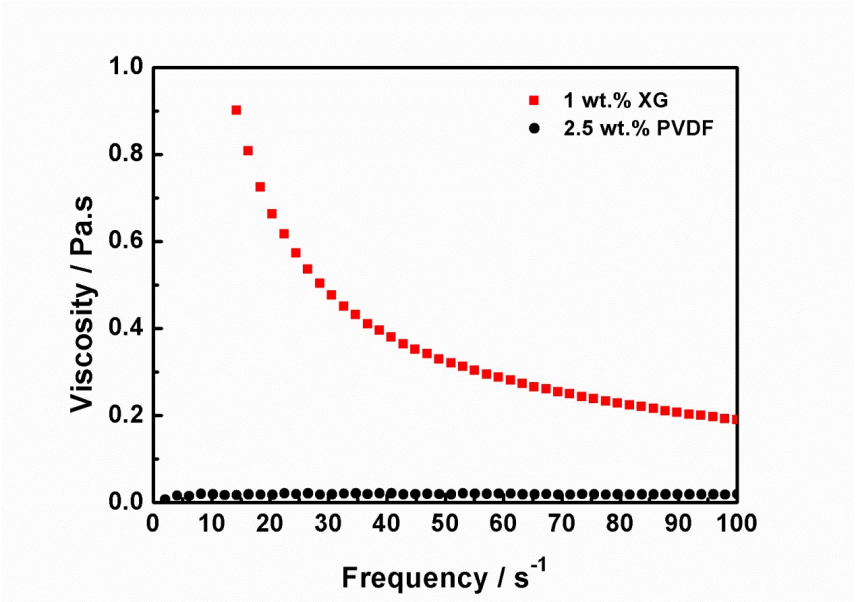


**Fig.S5.** The dynamic viscosity curves of the 1 wt. % XG binder and the 2.5 wt. % PVDF binder.

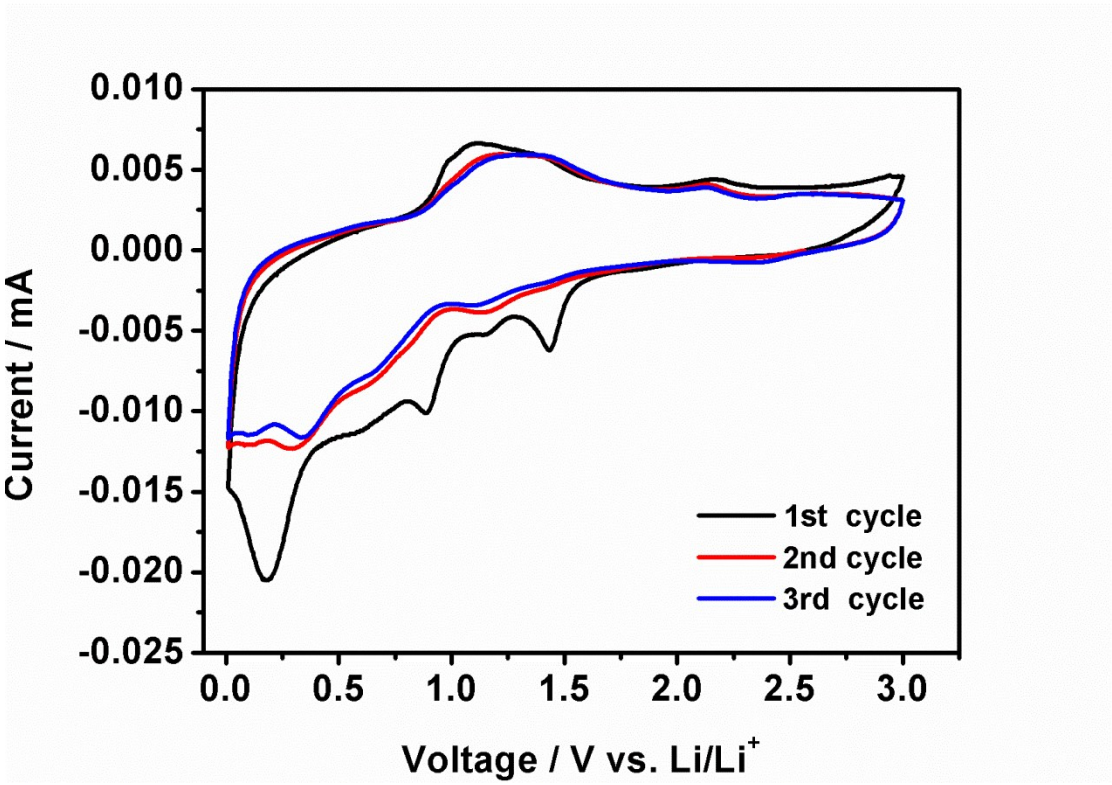


**Fig.S6.** CV curves of the pure XG at a scanning rate of 0.1 mV $s^{-1}$.

**Table S1.** Evaluation of electrochemical performance of present work and other related studies.

| Samle | 1st DCHG (mAh/g) | Coulombic efficiency (%) | Current density (C) | Reversible capacity (mAh/g) |
|---|---|---|---|---|
| Hyper-gravity $Co_3O_4$ with XG binde（present work） | 847.7 | 74.6 | 0.5 | 811 (at 40th cycle) |
| $Co_3O_4$ micropowder with PVDF binder | 790 | ----- | 0.1 | 460 (at 30th cycle) |
| $Co_3O_4$ hollow-microsphere with PVDF binder | 1241 | 85 | 0.1 | 633 (at 25th cycle) |
| $Co_3O_4$ nanoplatelets with PVDF binder | 1282 | 64 | 0.1 | 620 (at 40th cycle) |