Supporting Information

Mesoporous $Co_3V_2O_8$ nanoparticles growing on reduced graphene oxide as a high-rate, long-life anode material for lithium-ion batteries

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Figure S1. EDX pattern of as-prepared $rGO@Co_3V_2O_8$ NPs, (A) shows the corresponding scanning

area.



Figure S2. XPS spectra of as-prepared rGO@Co₃V₂O₈ NPs: (A) survey, (B) Co 2p, (C) V 2p, (D) O 1s and (E) C 1s.



Figure S3. FESEM images of bare Co₃V₂O₈ aggregation.



Figure S4. Raman spectroscopy of as-prepared $rGO@Co_3V_2O_8$ NPs



Figure S5. TGA curve of the as-prepared rGO@Co₃V₂O₈ NPs in air between 100 and 600 °C with a heating rate of 10 °C min⁻¹.



Figure S6. N₂ adsorption-desorption isotherm of the as-prepared $rGO@Co_3V_2O_8$ NPs and the pore size distribution curve (inset) obtained by the BJH method.



Figure S7. Cycling performance of bare $Co_3V_2O_8$ aggregation at a current density of 50 mA g⁻¹ between 0.005 and 3.0 V.



Figure S8. Nyquist plots of the hybrid rGO@Co₃V₂O₈ NPs and the aggregated Co₃V₂O₈ electrodes measured with an amplitude of 5.0 mV over the frequency range of 100 kHz and 0.01 Hz by applying a sine wave.



Figure S9. (A, B) FESEM images and (C, D) XRD patterns: (A, C) rGO@CoO, (B, D) rGO@V₂O₅.



Figure S10. Electrochemical evaluation of (A, C, E) rGO@CoO and (B, D, F) rGO@V₂O₅ NPs for LIBs: (A, B) CVs at a scan rate of 0.5 mV s⁻¹ between 0.005 and 3 V, (C, D) discharge-charge voltage profiles and (E, F) cycling performance at a current density of 200 mA g⁻¹ between 0.005 and 3 V.