

Electronic Supplementary Information (ESI)

Na₃V₂(PO₄)₃@C core-shell nanocomposite for rechargeable sodium-ion batteries

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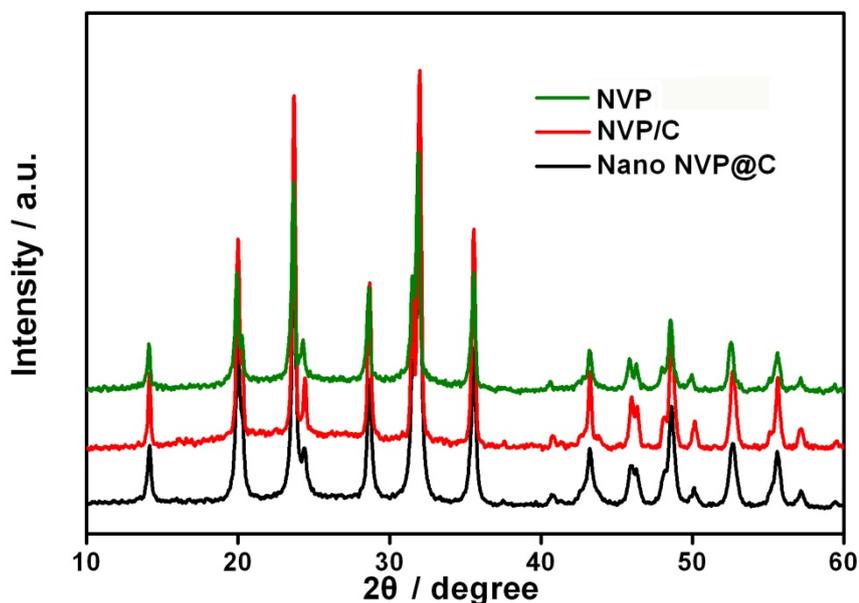


Fig. S1 XRD patterns of the obtained nano NVP@C, NVP/C and NVP.

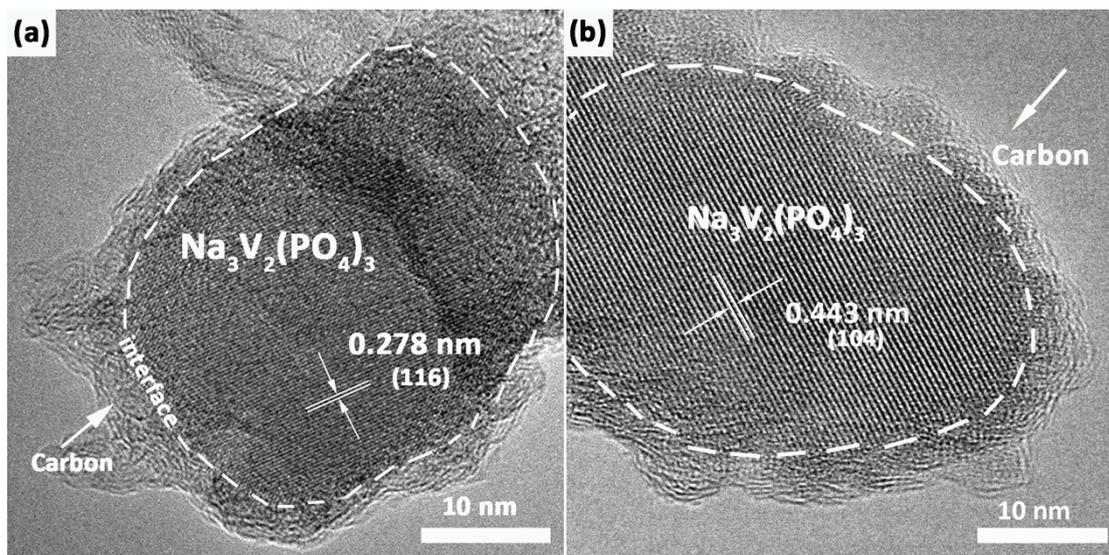


Fig. S2 More TEM images of the obtained nano NVP@C.

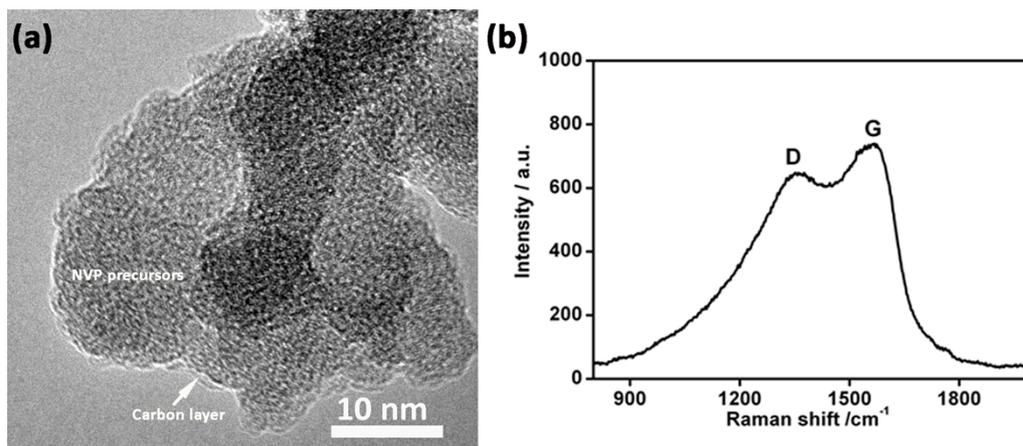


Fig. S3 (a) TEM image and (b) Raman spectroscopy of the nano NVP@C precursor which is being treated by hydrothermal process and washed with ethanol. The TEM image reveals that nano structured grains with a coating layer have been generated during the hydrothermal process, while the Raman spectra exhibits the characteristic carbon signatures. These results confirmed that the ascorbic acid partly carbonized during the hydrothermal process.

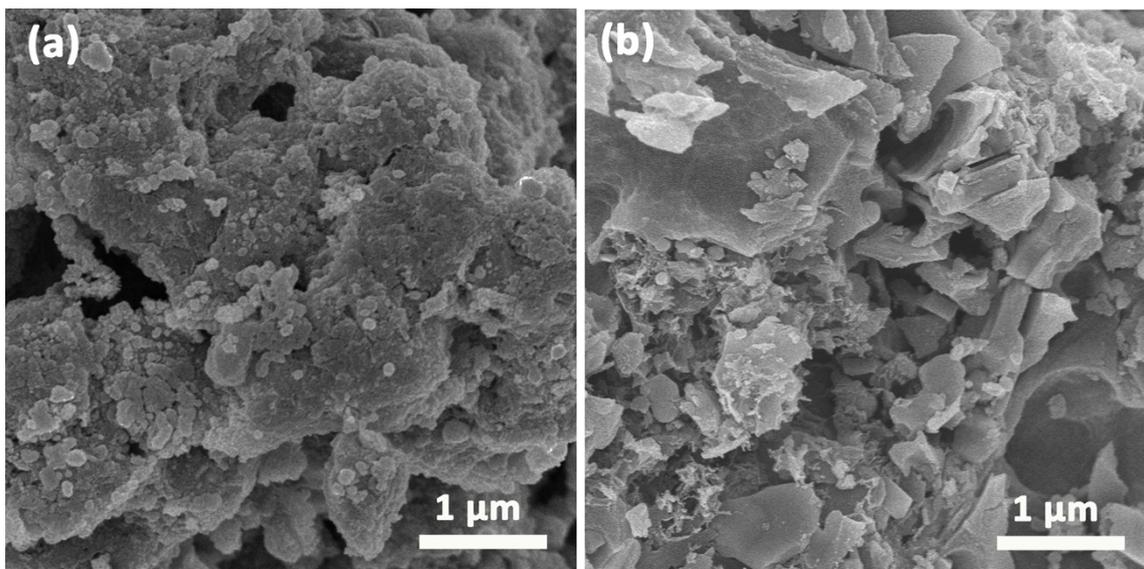


Fig. S4 SEM image of as-prepared samples synthesized with different amount of ascorbic acid and PEG-400: (a) 6 mmol ascorbic acid, no PEG-400; (b) 6 ml PEG-400, no ascorbic acid. When no PEG-400 was added into the precursor mixture, the sample showed severely agglomerated morphology. Without ascorbic acid, the sample displayed large particles and irregular shape. Therefore, ascorbic acid and PEG-400 synergistically worked for the formation of the core-shell nanocomposite.

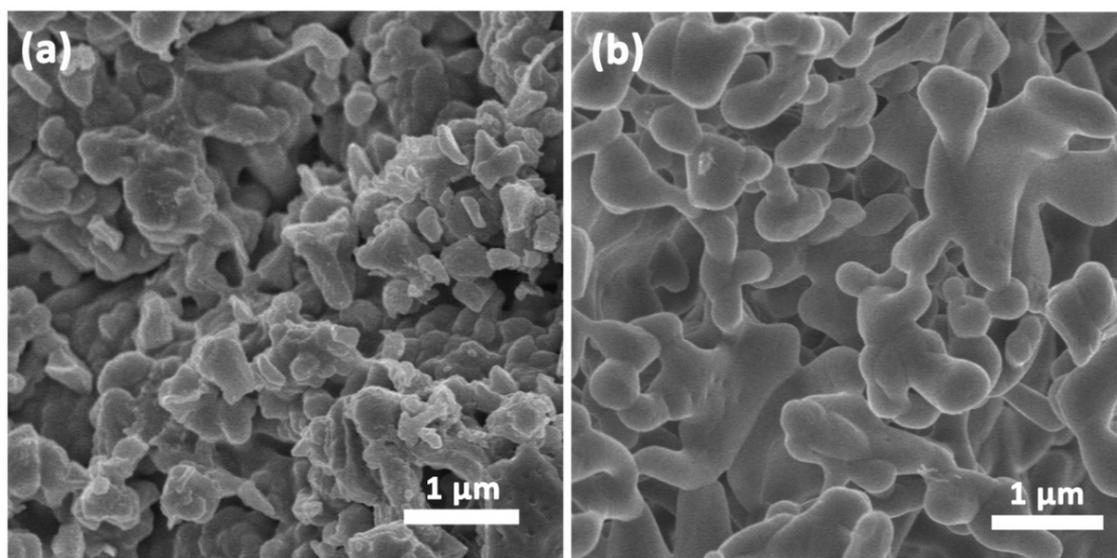


Fig. S5 SEM images of (a) NVP/C and (b) NVP.

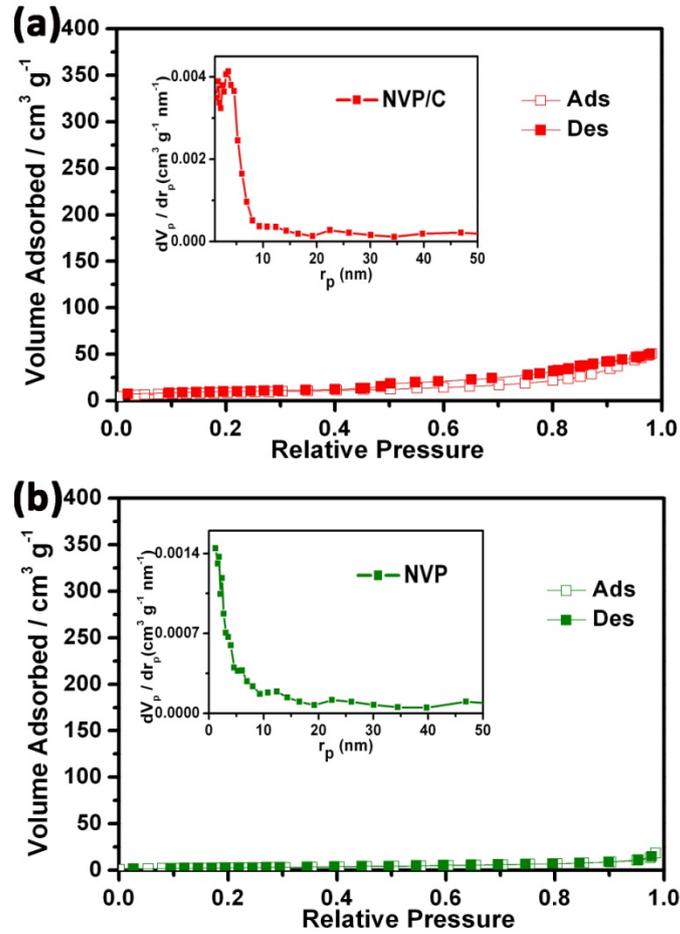


Fig. S6 Nitrogen adsorption and desorption isotherm of (a) NVP/C and (b) NVP. (inset: Pore size distribution curves)

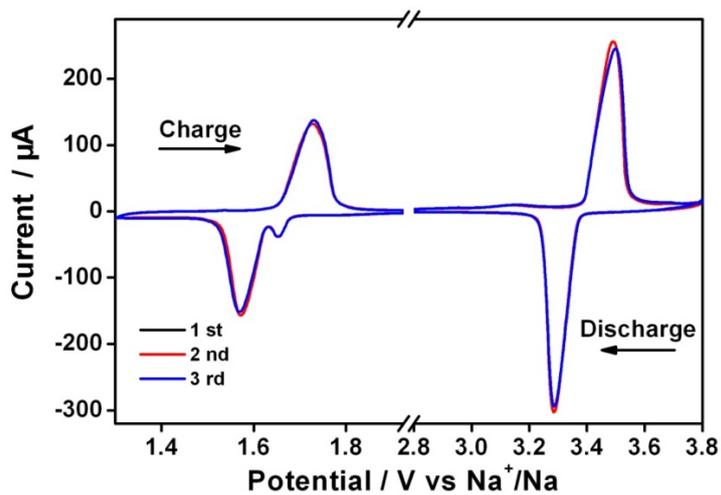


Fig. S7 Cyclic voltammograms of nano NVP@C half cell at a scan rate of 0.2 mV s^{-1} in the potential range of 1.3–3.8 V.

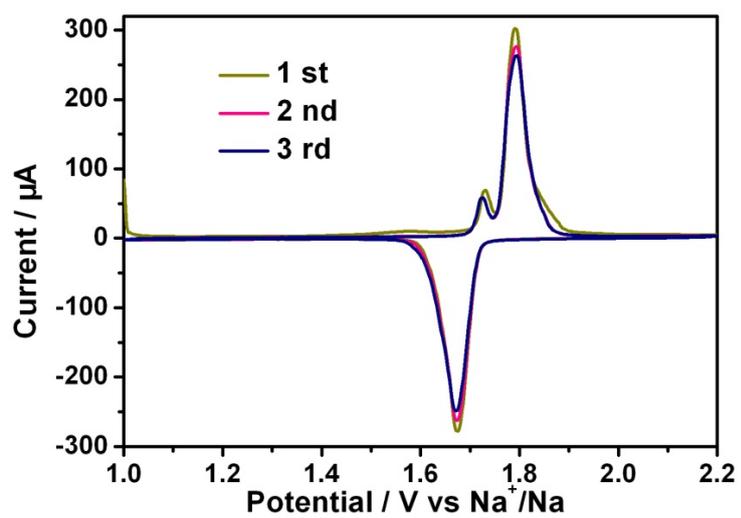


Fig. S8 Cyclic voltammograms of the nano NVP@C full cell