

Supporting information

A cigarette filter-derived nitrogen-doped carbon nanoparticle coating layer for stable Zn-ion battery anodes

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Supporting Figures



Figure S1. Optical image of discarded cigarette filters.

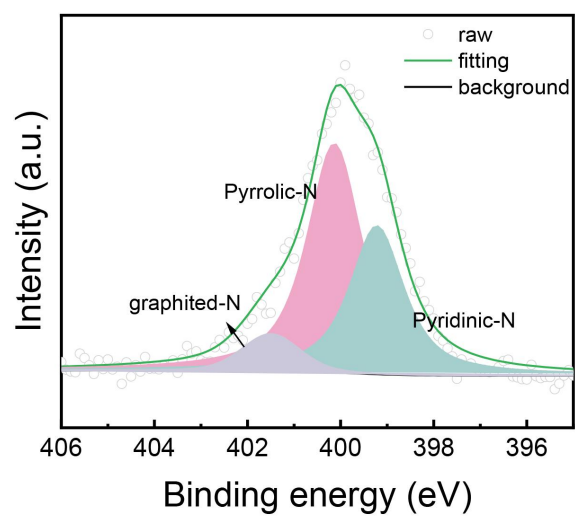


Figure S2. N 1s spectrum of N-CNP.

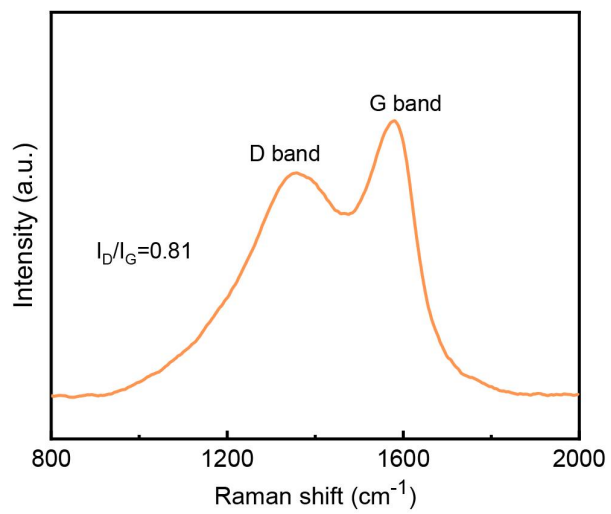


Figure S3. Raman spectrum of the N-CNP.

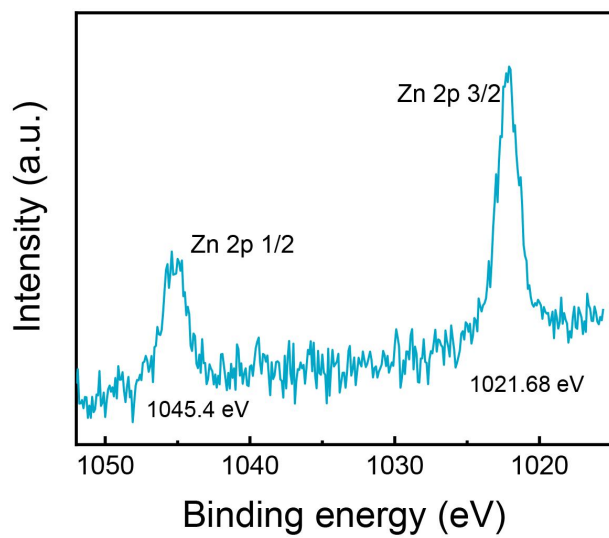


Figure S4. Zn 2p spectrum of N-CNP after soaking in electrolyte for 1 month.

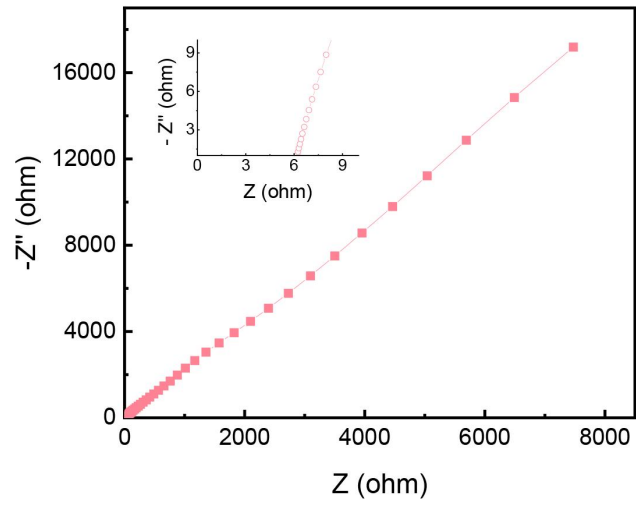


Figure S5. Nyquist plots of N-CNP membrane (inset: enlargement of the indicated curve).

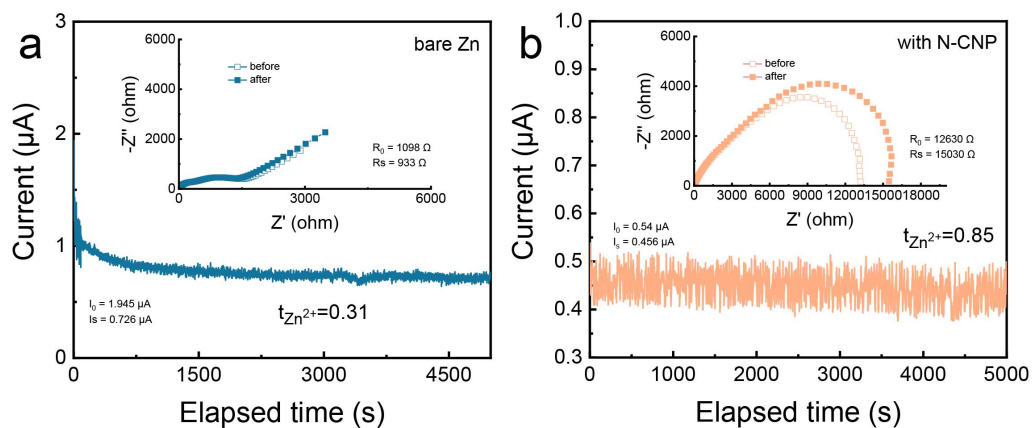


Figure S6. Current–time curve of the symmetrical cell with bare Zn (a) and N-CNP-Zn (b) at an overpotential of 5 mV, inset: EIS spectra before and after CA test.

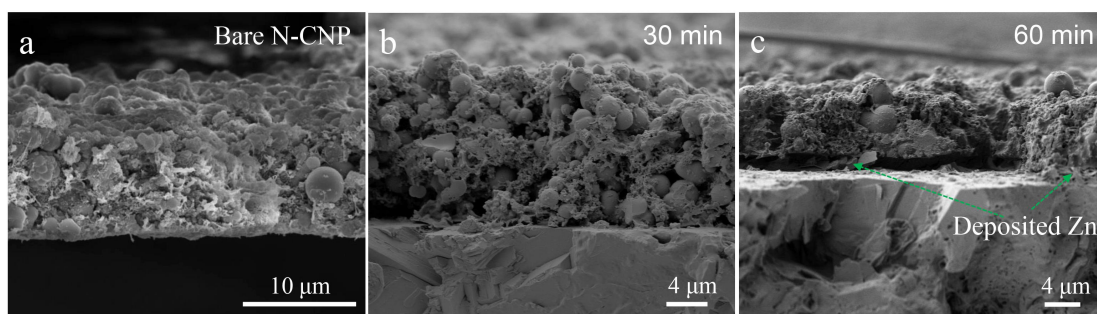


Figure S7. SEM images (side view) of the bare N-CNP membrane (a), and N-CNP layer on the surface of the Zn electrode after deposition for 30 min (b) and 60 min (c) at a current density of 1 mA cm^{-2} .

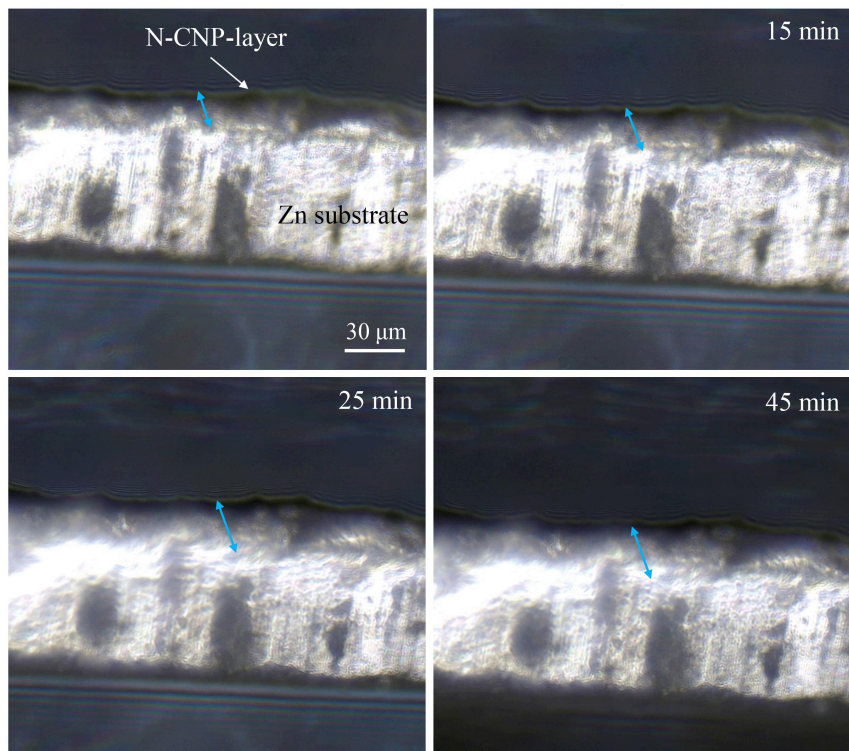


Figure S8. Cross-sectional Zn deposition morphology on N-CNP-Zn electrode at a current density of 1 mA cm^{-2} . Zn substrate is coated by a dark N-CNP layer, where the uneven edge of the substrate is caused by cutting zinc foil with scissors.

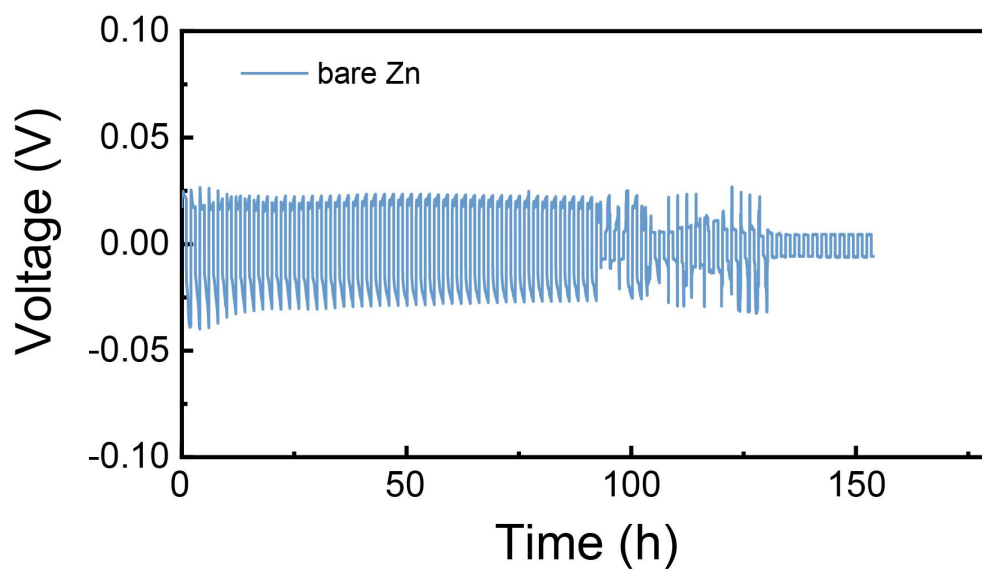


Figure S9. Cycling performance of symmetric cell with bare Zn electrode at a current density of 1 mA cm^{-2} .

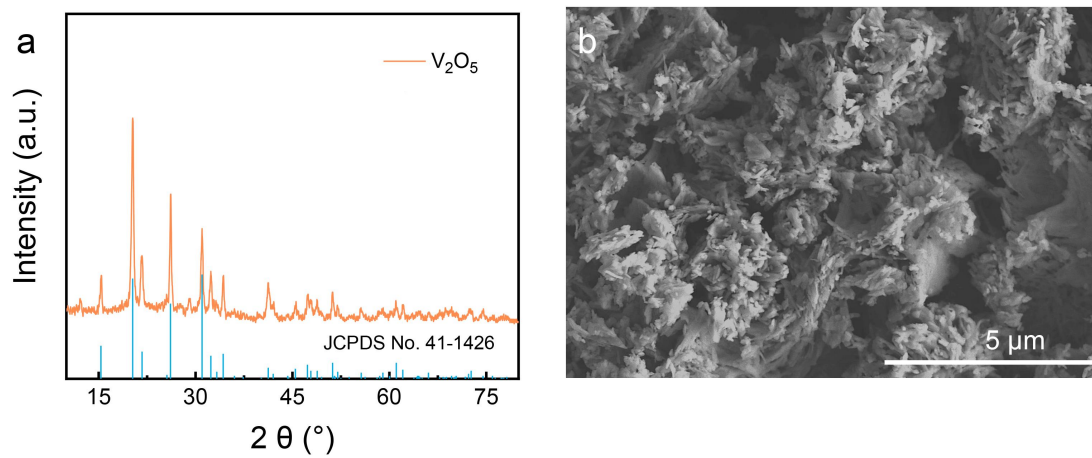


Figure S10. XRD pattern (a) and SEM image (b) of as-prepared V_2O_5 .